Semantic and Pragmatic Aspects of some Particular Uses of Contrast Marking

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genehmigte Abhandlung

vorgelegt von

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Danksagung

Die früher eher unernste Frage „Gibt es ein Leben nach der Diss?“ stellt sich nach all der Zeit, die mich die Dissertation in Haft genommen hat, nicht mehr ohne quälenden Hintersinn. Dennoch, es soll eine Themaverfehlung in diesem ersten Kapitel nicht geben. Jeder durchstandenen, überstandenen Lebensphase steht man doch schließlich in Dankbarkeit gegenüber. Zum Dank:

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Meinen Eltern, ohne die dieses nicht möglich gewesen wäre. Wie nur kann man etwas von alldem zurückgeben?

Zusammen ein Vergelt’s Gott!

Rosenheim, Februar 2006

Zusammenfassung

Gegenstand

Gegenstand dieser Arbeit ist der Anteil des englischen Lexems but an der Bedeutung von es enthaltenden Äußerungen. Die hier untersuchten Fälle dieses Lexems sind von vornherein beschränkt auf seinen Gebrauch als koordinierende Konjunktion von Hauptsätzen. Dabei spielt keine Rolle, ob ein Konjunkt elliptisch realisiert ist oder nicht. Außerdem soll nicht von Bedeutung sein, ob die Konjunkte selbständige Sprechakte darstellen—z.B. bei but als Äußerungsbeginn in Dialogen—oder nicht. Nicht eingeschlossen sind ferner Verwendungen, in denen but den Beginn einer Korrektur anzeigt, wobei im vorhergehenden Satz eine overte Negation ausgedrückt ist; z.B.: „He didn't play cards but worked hard."* Diese Abhandlung ist im Prinzip nicht auf but begrenzt. Auf der einen Seite wird Bezug auf eine Analyse genommen, die das Gegenstück im Deutschen, aber , behandelt. Auf der anderen Seite gibt es im Englischen Lexeme, die manchmal, mutatis mutandis, but ohne merkliche Veränderung der Bedeutung substituieren können, z.B.:

(1) Paul plays passionately, *but* he has no chance of winning.

(2) Paul plays passionately. *However*, he has no chance of winning.

(3) Paul plays passionately. *Yet* he has no chance of winning.

(4) *Although* Paul plays passionately, he has no chance of winning.

(5) *Because* Paul plays passionately, he has no chance of winning.

Die kursiven Wörter in (1) bis (4) kennzeichnen alle im Prinzip dieselbe ‚Kontrastrelation' zwischen zwei Sätzen. Es scheint kein erkennbarer Unterschied zwischen diesen Ausdrücken in ihrer Bedeutung zu bestehen. In all diesen Beispielen gibt es einen ‚Gegensatz' zwischen den konjungierten Sätzen, der nur

* Bei diesem Gebrauch wird but z.B. ins Spanische mit sino oder ins Deutsche mit sondern übersetzt. Diese Lexeme sind charakteristisch und obligatorisch für diesen Gebrauch bei Korrekturen. Das Gegenstück zur Konjunktion but in ihren anderen Verwendungen sind pero im Spanischen und aber im Deutschen. Des weiteren ist die Korrekturverwendung nur angebracht in Kontexten, die eine Aussage enthalten, so dass das erste Konjunkt ihre direkte Zurückweisung ist. Daher ist diese Verwendung in folgendem Kontext, wie er von Sprecher A generiert wird, nicht zulässig: A: He didn't play cards. — B: Yes. He didn't play cards, but he worked hard.
In dieser Verwendung kennzeichnet but keine Korrektur und gehört deshalb i.a. zum Gegenstand dieser Untersuchung.

auf unterschiedliche Weise gekennzeichnet ist. Jedoch scheint diese gekennzeichnete Relation in (5) ‚umgedreht' zu sein. Weil also die Bedeutung, die hier analysiert werden soll, nicht ausschließlich dem but zu eigen ist, können wir davon sprechen, dass dieses Token nur ein Beispiel für Kontrastmarkierung ist. Dabei ist die mittels but markierte Relation jedoch neutraler als die Markierung durch eines der anderen Lexeme. Das bedeutet, dass die Realisierung mittels der anderen Ausdrücke bei genauerem Hinsehen eine besondere Spielart von Kontrast hervorbringt, auf die but nicht eingeschränkt ist. Zum Beispiel legt (4) nahe, beide Sätze auf leicht unterschiedliche Weise einander gegenüberzustellen als es (1) tut, obwohl dieser Unterschied nicht genau bestimmt und nicht leicht zu vermitteln ist: In (4) wird der Sprecher davon ausgehen, die Bedeutung beider Sätze auf einer objektiveren Grundlage miteinander zu kontrastieren; diese Grundlage mag in einer Regel (einer allgemeinen Erwartungsregel, eines Gesetzes, eines Zusammenhangs nach geteiltem Allgemeinwissen, etc.) bestehen, die unabhängig vom Urteil oder der Erwartung des Sprechers ist und gegebenenfalls auf einer dritten, ungenannten Proposition basiert, so z.B.: ‚Wenn jemand nur leidenschaftlich genug spielt, dann wird er auch Erfolg im Spiel haben.' Auf der anderen Seite legt (1) einen Gegensatz zwischen beiden Sätzen auf Grundlage einer Verbindung zwischen der aktuellen Situation oder des aktuellen Ereignisses, die sie jeweils denotieren, nahe. In diesem Fall wird die Verbindung gewöhnlich als eine zurückgewiesene (epistemische) Erwartung (denial of (epistemic) expectation) des Sprechers gelesen werden, die an die Situation gebunden ist, in der Paul leidenschaftlich spielt.

Diese Studie will keinen Überblick über mögliche Realisierungen der Relation und ihre Bedeutungsspielarten schaffen. Für eine umfangreiche Sichtung und Beschreibung der verschiedenen Ausdrucksarten dieser Relation (und ihrer Varianten) in verschiedenen Sprachen siehe Rudolph (1996). In der vorliegenden Untersuchung gehe ich davon aus, dass alle Varianten von Kontrast im Prinzip mittels but ausgedrückt werden können. D.h., es werden weder die diversen Realisierungsformen betrachtet, noch die zahlreichen Verwendungskontexte berücksichtigt. Das Ziel der Arbeit ist vielmehr, den Gebrauch von but in einem wohldefinierten Kontext zu analysieren. Daher nähern wir uns seiner Bedeutung an, indem wir die Kontexteigenschaften der Äußerungen von but analysieren, mit denen es voraussichtlich auf eine bestimmte Art und Weise in Beziehung steht. In einem engeren Sinn ist diese Untersuchung eine Fallstudie zum Gebrauch von but in Antwortsituationen: Es ist eine Frage, die den Kontext der Äußerung von but vorgibt.

Aus diesem Grund ist die Bestimmung dieser Kontexte ein weiterer zentraler Aspekt dieser Untersuchung. Es scheint dafür eine Fragesemantik angemessen, die Fragen über ihre möglichen Antworten definiert (Groenendijk & Stokhof 1984). Es können dann die Bedingungen, welche die Äußerungen in Antwortsituationen erfüllen müssen, in sehr direkter Weise angegeben werden. Insbesondere gibt ein Fragekontext einen Fragebereich (*Domäne*) vor, dem eine Antwort genügen muss. Die Auswirkung einer solchen Domäne auf die Äußerung und ihre Interpretation als Antwort nimmt einen zentralen Platz

in dieser Arbeit ein. Ein erweiterter Kontextbegriff entsteht, wenn zusätzlich ein übergeordnetes Problem (*Issue*) ins Bild rückt. Ein plausibles Motiv für das Stellen einer Frage sind Issues, ein eingeführtes Konzept in der linguistischen Literatur, wenn es um die Gründe für eine konkrete Äußerung aus handlungstheoretischer Sicht geht.† Ein Modell für ‚Issue' wird vorgestellt, wodurch eine andere Art von Domäne in den Kontext eingeführt wird. Wird erst eine Issue angenommen, so ist ein Diskursteilnehmer angehalten, auch die Existenz einer solchen Domäne anzunehmen. Die Verwendung von but wird zu dieser Domäne in Beziehung gesetzt: ‚Kontrast' wird dann durch einen Wechsel der jeweils betrachteten Domäne erklärt. In einem gelungenen Diskurs sollten dann eine Issue, die hinter einer Frage steht, und die Antwort auf diese Frage auf charakteristische Weise miteinander in Einklang stehen: Ein mit but markierter Domänenwechsel sollte sich auch grundlegend auf die Entscheidung der Issue auswirken.

Hintergrund

Die Motivation zu diesem Aufsatz über but und zu zahlreichen fundierten früheren Untersuchungen dazu in der linguistischen Literatur ist die Suche nach der Bedeutung des Kontrast anzeigenden Lexems; was bedeutet ‚Kontrast'? Als die formale Logik Einzug in die Sprachwissenschaft hielt, wurde die Bedeutung von but mit der von and gleichgesetzt, insofern diese Konjunktionen in ihren Wahrheitsbedingungen äquivalent sind:

> Das Wort „aber" unterscheidet sich von „und" dadurch, daß man mit ihm andeutet, das Folgende stehe zu dem, was nach dem Vorhergehenden zu erwarten war, in einem Gegensatze. Solche Winke in der Rede machen keinen Unterschied im Gedanken. [. . . S]ie berühren den Gedanken nicht, sie berühren das nicht, was wahr oder falsch ist.‡

Jedoch nennen Freges Anmerkungen drei wesentliche Aspekte des Beitrags von aber: (i) Es hat die Funktion, einen Gegensatz zur Erwartung anzuzeigen; (ii) diese Funktion erstreckt sich über einen bestimmten Bereich, d.i. über ein erstes Argument—bestehend aus einem unmittelbar vorangehenden Ausdruck—, und über ein zweites Argument (bestehend aus einem unmittelbar nachfolgenden Ausdruck); (iii) trotz dieses Gegensatzes ist der Gesamtausdruck wahr, falls jedes der konjungierten Ausdrücke wahr ist (unter der Maßgabe, dass es sich um wahrheitswertige Ausdrücke handelt).

Die Schwierigkeit, diesen „Wink in der Rede" zu erfassen, liegt in der Ableitung der ‚Erwartung', die mit dem Ausdruck verknüpft ist, welcher

† Einige Konzepte, die den diskursiven Kontext einer Äußerung abzubilden suchen, um damit den Kontext in die Evaluierung des geäußerten Ausdrucks einzubeziehen, sind z.B.: ‚Conversational Topic' (van Kuppevelt 1996), ‚Question under Discussion' (Roberts 1996) und ‚Decision Problem' (Parikh 2001; van Rooy 2003b).

‡ Frege (1918, p 64). Sæbø (2002) erwähnt diese Skizze als den Ursprung der Analyse von but als ‚Denial of Expectation', siehe S. 11, 2.1.1.

dem Kontrast anzeigenden Lexem vorangeht. Dessen nachfolgender Ausdruck weist dann diese Erwartung zurück. Wir stehen vor einer zweifachen Schwierigkeit: Welches genau sind die Ausdrücke, die an der Herleitung des Erwartungsgegensatzes beteiligt sind? Und welche Art von Funktion ist ‚aufgrund von y wird x erwartet' ? Dieser Ansatz mag an das Kompositionalitätsprinzip erinnern: Die Bedeutung oder der Beitrag von but ist das Ergebnis einer Funktionsanwendung auf die Bedeutungen seiner benachbarten Ausdrücke. Diese Herangehensweise scheint in diesem Fall problematisch zu sein, da keine Methode erkennbar ist, wie der Kontext, der in diese Funktion eingehen muss, bestimmbar wäre. Was also sind die Argumente von but ? (Die richtige Auswahl der Ausdrücke, die als Argumente dienen sollen, löst dieses Problem nicht; vielmehr hängt das Problem mit der Bedeutung, d.h. mit der Interpretation dieser Ausdrücke zusammen: Und ihre Bedeutung kann oft nur relativ zu einem nochmals erweiterten Kontext bestimmt werden (vergleiche die Diskussion in Kapitel 4).) Entsprechend weichen die Analysen, die in der Literatur für but gegeben werden, voneinander ab. So versucht die Bedeutungsbeschreibung von but als ‚semantic opposition' (Lakoff 1971), nur die Bedeutung der beiden konjungierten Sätze oder nur die zweier einander strukturell entsprechenden Konstituenten zu berücksichtigen. Am anderen Ende des Spektrums wäre z.B. Spooren (1989) zu nennen, der statt dessen von einer „global contrastive coherence relation" spricht. Diese für but angenommene Relation kann sich über zwei Diskurseinheiten erstrecken, die viele Sätze umfassen oder auch nur jeweils einen. Zusammenfassend heißt dies, dass für die Behandlung der Kontrastrelation die Frage nach dem Beitrag des benachbarten Kontextes eine zentrale Rolle spielt.

Ein weiteres Motiv ist die Vorgabe, Polysemie zu vermeiden und eine einheitliche Bedeutung für but anzustreben, welche auf alle Gebrauchsarten zutrifft. Eine Bedeutungsbeschreibung, die dies zusichert, muss allgemein genug sein. Angewandt auf but in verschiedenen Kontexten kann das heißen, dass seine Bedeutung mit Bedingungen einhergeht, die durch den Kontext oder kontextuelle Parameter (auf unterschiedliche Weise) erfüllbar sind.

Ein zweites wichtiges Prinzip sollte der linguistische Charakter der Bedeutungsbeschreibung sein. Zumindest sollten, wenn die Analyse auf Begriffe wie z.B. „die Erwartung dass" hinausläuft, diese eine Herleitung basierend auf sprachwissenschaftlichen Konzepten erhalten. So ist es erstrebenswert, die eventuelle Rolle des Kontextes bei der Bedeutungsbeschreibung von but mittels *linguistischer* Parameter offenzulegen.

Abriss

Die Abhandlung richtet sich auf den Gebrauch einer prototypischen Kontrast markierenden Partikel, der Englischen Konjunktion but. Das Ziel besteht letztlich darin, nach einer semantischen Operation zu suchen, die den vielfältigen Gebrauchsarten von but zugrunde liegt, die in der Literatur angenommen wer-

den. Da jedoch eine Vereinheitlichung dieser Gebrauchsarten auf direktem Weg scheinbar nicht erreicht werden kann—vergleiche Funktionen wie ‚Denial of Expectation', ‚Semantic Opposition' (Lakoff 1971) und den argumentierenden Gebrauch (Anscombre & Ducrot 1977)—, ist es gerechtfertigt, einen neuen Versuch zu unternehmen: und eine ausführliche Gebrauchsanalyse in nur einem besonderen Kontext vorzunehmen, hierin aber die Bedeutung von but , soweit möglich, in semantischer Begrifflichkeit zu formulieren. Dadurch, dass die betrachteten Äußerungskontexte von Beginn an ausführlich erörtert werden, wird es möglich, all diejenigen Eigenschaften des Diskurses in Betracht zu ziehen, die schließlich in die Bedeutungsbeschreibung von but einfließen.

Zu diesem Zweck stellen die ausgewählten Kontexte besondere Bedingungen an eine (but enthaltende) Äußerung: Wenn ein Deklarativsatz, der but enthält, als Antwort zu einer Frage geäußert wird, gibt es eine kontextuelle Domäne. Im Fall einer W-Frage, die über eine Individuenmenge quantifiziert, besteht die kontextuelle Domäne, welche eine angemessene Antwort berücksichtigen muss, aus dieser (evtl. schon im vorherigen Diskurs) eingeschränkten Individuenmenge. Und sofern der Fragende die deklarative Erwiderung für eine angemessene Antwort halten kann, die dies leistet, gilt die exhaustive Interpretation dieses Deklarativs. (Die vorausgesetzte Ausgangssituation gibt weiterhin einen kooperativen Sprecher vor, der umfassend kompetent in bezug auf den Fragegegenstand ist.) Was aber ist für die Interpretation zu berücksichtigen, wenn but die Erwiderung scheinbar in zwei direkte Antworten aufteilt („Paul plays passionately, but Pete plays very well too.") ? Folgende Hypothese wird für diese Situation vorgeschlagen: But zeigt dann eine bestimmte, auf die Äußerungssituation bezogene Ausdehnung der betrachteten kontextuellen Domäne an. ‚Inkonsistenz', d.h. ein falscher Glaube des Fragenden, kann dann auftreten, wenn die vom Antwortenden in Betracht gezogene Domäne (d.i. die für die Antwort intendierte Domäne) die kontextuelle Fragedomäne nicht vollständig umfasst. Ein defekter gemeinsamer Hintergrund kann also entstehen, wenn der Fragende für die exhaustive Interpretation des Antwortdeklarativs eine Domäne zugrunde legt, welche über die intendierte Antwortdomäne hinausgeht. Die mit but konjungierten ‚Teilantworten' einer Erwiderung können dagegen anzeigen, dass die Antwort mit unterschiedlichen Fragedomänen korrespondiert, also zu zwei unterschiedlichen Äußerungskontexten in Beziehung steht. So eröffnet die Verwendung von but dem Antwortenden die Möglichkeit, Mißverständnisse in einer Antwortsituation zu vermeiden, in der er die Fragedomäne nicht mit Gewissheit kennt.

Allerdings ist diese Analyse nicht ausreichend, auch nicht für direkte Antworten. Für eine allgemeinere Beschreibung der Bedeutung von but wollen wir konzeptuell an der Idee der ‚Inkonsistenz', hervorgerufen durch eine für die Interpretation angenommene kontextuelle, in die propositionale Bedeutung eingehende—doch ungeeignete—Domäne festhalten. Wir gehen daher wiederum vom Begriff ‚Domäne' aus, wobei nun propositionale Domänen erwogen werden. In der linguistischen Literatur werden solche propositionalen Domänen z.B. für die Charakterisierung von modalen Ausdrücken oder Konditionalen (als hypothetischer gemeinsamer Hintergrund oder Hilfsprä-

missen) herangezogen. Eine präsupponierte Domäne ist dort Schnittstelle zwischen Äußerungskontext und propositionaler Bedeutung. Aber auf welche Weise können propositionale Domänen in unseren Äußerungssituationen relevant sein? Die Lösung dieses Problems kommt von einer Überlegung aus der Pragmatik: Es kann angenommen werden, dass der Grund für das Äußern einer Frage ein allgemeineres Entscheidungsproblem sein kann, dem sich der Fragende konfrontiert sieht. Gehen wir davon aus, können Fragesituation und Entscheidungsszenario über ein Konditional miteinander verknüpft werden. Analog zur ‚Inkonsistenz' bei der exhaustiven Interpretation (und einer spezifischen, vorausgesetzten Individuendomäne) kommt ‚Inkonsistenz' auf dieser Beschreibungsebene zustande, wenn die Antwort in einem Kontext interpretiert wird, der eine ungeeignete propositionale Domäne von Hilfsprämissen annimmt, die abweicht von der für die Antwort intendierten Domäne. Die Interpretation der Antwort relativ zu einer ungeeigneten Domäne hat einen falschen Glauben und eine falsche Entscheidung zur Folge. Notabene: In diesem Modell ist eine kontextuelle Domäne von Hilfsprämissen an die Annahme eines kontrafaktischen Konditionals geknüpft, welches wiederum das anliegende Entscheidungsproblem spiegelt. Unter dieser Analyse zeigt but auch wieder einen Wechsel zwischen verschiedenen zugrundegelegten kontextuellen Domänen an. Die Analyse hält sich an die Charakterisierung von kontrafaktischen Konditionalen mittels Partitionsfunktionen (Kratzer 1981a).

Die Arbeit ist wie folgt aufgebaut. **Kapitel 2** gibt einen kritischen Überblick über eine Auswahl aktueller Untersuchungen zu besonderen Verwendungsweisen von but oder, wie in 2.1, von aber im Deutschen. Die Analysen zielen entweder darauf ab, eine vereinheitlichende Beschreibung herkömmlich klassifizierter Verwendungen zu geben (s. 2.1), oder sie konzentrieren sich auf den Beitrag von but in ausgesuchten Kontexten, die sich entweder gemäß linguistischer Terminologie (s. 2.2) oder gemäß nicht-linguistischer (s. 2.3) als besondere Kontexte auszeichnen. Zur Auswahl:

Sæbø (2002) betrachtet drei traditionell unterschiedene Gebrauchsarten von but (2.1) : ‚Semantic Opposition', ‚Denial of Expectation' und ‚Concession'. Er schlägt eine vereinheitlichende Analyse vor. Er berücksichtigt hierbei nicht nur die Ausdrücke, die aber (auf Satzebene) konjungiert. Er greift auch auf eine vorausgesetzte kontextuelle ‚Alternative' zurück. Unter bestimmten Bedingungen kann diese Alternative aus dem Kontext hergeleitet werden kann. Kritische Punkte sind, wie und ob eine Alternative auch unter anderen Bedingungen hergeleitet werden kann, sowie welche Rolle sie im Kontext spielt. Die vorgeschlagene Bedeutung von aber besteht in einer Präsupposition, die im allgemeinen strukturell aus den Satzkonjunkten durch Substitution der kontextuellen Alternative abgeleitet wird.

Umbach (2001) betrachtet dialogische Äußerungssituationen für but enthaltende Deklarativsätze (2.2) : Antwortsituationen stellen einen Kontexttyp dar, der ein Topik für (but enthaltende) Antworten vorgibt; darüber hinaus haben die betrachteten Antworten eine (intonatorisch) markierte Fokuskonstituente. Akzeptabilitätstests zeigen, dass sich die Polaritätsverteilung auf Ant-

worten, die mit but konjungiert sind, unterscheidet von den Polaritäten der mit and konjungierten Antworten. Darauf aufbauend wird für but enthaltende Erwiderungen eine Verneinungsbedingung postuliert. Zusammen mit dieser Bedingung führt das kontextuelle Topik zu einer erwarteten Alternative aus der Menge des ‚Focus Semantic Value' der fokussierten Konstituente. Substituiert man diese erwartete Alternative im zweiten Satzkonjunkt, so entsteht eine Proposition, die wiederum eine präsuppositionale Rolle spielt: Diese Proposition muss Teil des Kontextes sein, wenn er eine geglückte Äußerung der (Teil)Antwort zulassen soll, welche mittels but eingeleitet wird. Die Analyse kann auf Schwierigkeiten stoßen, wenn es um die Ableitung der erwarteten Alternative aus dem Kontext geht.

In 2.3 dient eine ganz andere Art von Kontext als Ausgangspunkt der Untersuchung. Die hier betrachteten Dialoge beinhalten ein gemeinsames faktisches (nicht-sprachliches) Ziel, das über eine planorientierte Abfolge von Handlungen kooperativ erreicht werden soll. Das Ziel der gemeinsamen Interaktion geht über einfachen sprachlichen Informationsaustausch also hinaus. Um dies zu modellieren, werden Repräsentationen von Handlungsplänen benötigt, in denen nicht-finale Zustände als Teilziele durch Aktionen miteinander verbunden sind. In solchen Situationen folgt der sprachliche Diskurs vorgeblich einem Plan; der Diskurs wird auf einen Plan abgebildet: Durch Äußerungen können vom aktuellen Zustand ausgehend weitere Anweisungen gegeben werden oder Einwände zum laufenden Vorgehen, das gemeinsame Ziel zu erreichen, vorgebracht werden. Korpora zeigen für solche Diskurse einen spezifischen Gebrauch von but an. Es wird dann verwendet, wenn eine Handlung vorgeschlagen oder ein Zustand erreicht wurde, so dass das (Teil)Ziel nicht ohne Korrektur erreicht werden kann. Anders als bei erwartungsbasierten Analysen sind hier durch den Bezug auf (Teil)Ziele nicht nur die konjungierten Ausdrücke involviert; außerdem spielen, bedingt durch einen Handlungsplan, auch deontische Präferenzen eine Rolle. Jedoch scheint die Anwendung dieses Ansatzes auf andere Gebrauchsarten von but nicht unmittelbar möglich.

Merin (1999a), 2.4, untersucht but auf Grundlage des Argumentationsansatzes von Ducrot (1973). Durch but verknüpfte Konjunkte sind mit gegensätzlichen Erwartungen verbunden, die zu gegensätzlichen Schlüssen führen und auf diese Weise rhetorisch als Argument und Gegenargument verwendet werden können. Merin formalisiert den Erwartungsgegensatz, der zwischen beiden but-Konjunkten bestehen soll, indem er den epistemischen Hintergrund von Partizipanten mit Hilfe von bedingten Wahrscheinlichkeiten repräsentiert. Ziel seiner Untersuchung ist eine Überprüfung der Erwartungsgegensatz-These auf ihre allgemeine Gültigkeit. Merin kommt zu dem Ergebnis, dass der Erwartungsgegensatz nicht auf alle Verwendungen von but zutrifft. Seine formale und umfassende Analyse stellt eine Äußerung der Konjunktion in einen größeren Kontext, der eine Hypothese bereitstellt. Gegenüber dieser sind beide Konjunkte unterschiedlich relevant. Grundannahme aller betrachteten Verwendungssituationen ist allerdings eine eindeutige epistemische oder deontische Präferenz für oder gegen die kontextuelle Hypothese durch den Sprecher. Das

heißt, indem er bestimmte Inhalte durchsetzen will, ist der Sprecher nicht neutral; seine Kooperativität ist eingeschränkt.

Eine Zusammenfassung der gesammelten charakteristischen Eigenschaften der speziellen Verwendungen von but und ein Ausblick beschließen dieses Kapitel.

Kapitel 3 gibt einen knappen Überblick über Domänenbeschränkungen. Quantifizierende Ausdrücke präsupponieren die Existenz einer (nicht-leeren) Domäne, über die sie quantifizieren. Semantisch ist eine Domäne konstituierender Bestandteil des Quantorenrestriktors. Kontextuell kann die Domäne jedoch schon gegeben und damit von vornherein eingeschränkt sein. Zum Beispiel kann es eine im Diskurs naheliegende (saliente) Menge von Objekten geben, die die Grundlage für eine eventuelle anaphorisch wiederaufgenommene Domäne und ihre weitere Einschränkung durch den Quantorenrestriktor bildet. Daher sind quantifizierende Ausdrücke in der Regel eine wichtige Schnittstelle zwischen Ausdruck und Äußerungskontext. Neben Quantoren, deren Domäne eine Individuenmenge ist, gibt es auch solche, deren Domäne eine Menge möglicher Welten ist, z.B. Modaloperatoren. Über modale Subordination können in den Diskurs eingeführte hypothetische Hintergründe fortgeführt und sukzessive modifiziert werden. Das Kapitel sammelt einige Beispiele für beide Typen von Domänen und will darauf hinweisen, dass die propositionale Bedeutung vieler Ausdrücke mittels einer angenommenen, kontextuell gegebenen Domäne gebildet wird. Umgekehrt heißt dies, dass eine Modifizierung der Domäne den Kontext solcher Ausdrücke maßgeblich verändert. Solche Ausdrücke können durch die Vorgabe einer spezifischen Domäne in ihrer Bedeutung eindeutig festgelegt werden; eine Spezifizierung der Domäne macht eine Desambiguierung zwischen verschiedenen kontextuell möglichen Bedeutungen erst möglich.

Kapitel 4 bereitet die Analyse eines besonderen Gebrauchs von but in Antwortsituationen vor. Grundlage hierfür ist die Fragesemantik nach Groenendijk & Stokhof (1984). Es werden nur einstellige W-Fragen mit *einer* Individuendomäne betrachtet. Der Antwortkontext wird charakterisiert durch die Präsuppositionen einer solchen Frage und die in der Äußerungssituation intendierte spezifische Fragedomäne. Diese muss nicht explizit ausgedrückt sein; Selektionsbeschränkungen in der Frage und deskriptiver Gehalt der W-Phrase können ein Hinweis auf die vorausgesetzte Fragedomäne sein oder eine kontextuell naheliegende Domäne als Fragedomäne weiter einschränken. Die angewandte Fragesemantik geht von einer exhaustiven Interpretation direkter Erwiderungen aus—auch wenn nicht alle Individuen der intendierten Fragedomäne in der Erwiderung ausdrücklich erwähnt werden. Wie die Frage selbst, so ist auch ihre Fragedomäne Teil des Kontextes von Antwortsituationen. Die Rolle der Fragedomäne bei der Antwortinterpretation wird hervorgehoben. Der Begriff ‚Perspektive' wird eingeführt; ‚Perspektive' kennzeichnet die vom Antwortenden angenommene kontextuelle Fragedomäne oder die vom Fragenden intendierte Fragedomäne, die er als kontextuelle Domäne für die

Antwort annimmt, wenn er sie interpretiert. Weil wir davon ausgehen, dass es eine spezifische intendierte Fragedomäne gibt, macht die ‚Perspektive', die für die Antwort eingenommen wird, einen wichtigen Bestandteil sowohl ihres Interpretations- als auch ihres Äußerungskontextes aus. In diesem Kapitel wird der im Diskurs bestehende Zusammenhang einer Antwort sowohl mit ihrem Äußerungskontext als auch mit ihrem Interpretationskontext über den Begriff ‚Perspektive' (Domäne) dargestellt.

Kapitel 5 behandelt die möglicherweise fehlende Übereinstimmung der Domäne des Antwortenden mit der des Fragenden und erörtert ihre Auswirkungen. Wir gehen von der Situation des Antwortenden aus. Solange die Domäne nicht sicheres beiderseitiges Hintergrundwissen ist, ist es dem Antwortenden nicht möglich, Fehlinterpretationen seiner direkten Erwiderung in jedem Fall zu vermeiden, indem er seine Perspektive auf eine hinreichend große Domäne ausweitet. Eine Fallstudie zeigt auf, unter welchen Umständen möglicherweise ein defekter gemeinsamer Hintergrund daraus entsteht. Die Bedingung für einen weiterhin intakten gemeinsamen Hintergrund ist die ‚Konsistenz' der Perspektive des Antwortenden (siehe Definition in 5.2.2). Haben bis hierher einfache direkte Antworten gedient, wird nun auf die Rolle eingegangen, die but in Antworten spielen kann. In 5.3.1 werden auf Grundlage des Begriffs ‚Konsistenz' Gebrauchsbedingungen für but vorgeschlagen. Diese Bedingungen unterstützen ein plausibles Motiv für seinen Gebrauch in Antworten: Eine Fehlinterpretation der Antwort auf seiten des Fragenden kann verhindert werden, indem man auf die Grenzen der betrachteten Domäne hinweist. Doch daneben gibt es einfache Beispiele, die von den vorgeschlagenen Bedingungen nicht erfasst werden; obwohl diese Gegenbeispiele von derselben Form sind, scheint es, dass die Gebrauchsbedingungen für but hier nicht mit der Fragedomäne in Beziehung stehen. Abschließend wird die Frage erörtert, ob es eine andere kontextuelle Domäne geben könnte, welche geeigneter ist, in die Gebrauchsbedingungen für but in diesen Fällen einzugehen.

Der Ansatz, der in **Kapitel 6** vorgebracht wird, besteht daher darin, in jenen Fällen eine andere Domäne für die Analyse von but zu nutzen. Als Grundannahme wird der Kontext um ein Entscheidungsproblem (‚Issue') des Fragenden bereichert. Ein hintergründiges Entscheidungsproblem ist mit der aktuellen Frage verwandt: Eine Frage ist Teil der Strategie des Fragenden, zu einer Lösung seiner Issue zu gelangen. Durch diese Annahme wird auch das Ziel einer Frage erweitert. Ein Entscheidungsproblem selbst wird wie eine Frage repräsentiert, als Partition. Frage und Entscheidungsproblem sind verwandt dadurch, dass es gemäß der Intention des Fragenden bestimmte Entscheidungszusammenhänge zwischen Zellen der einen Partition und Zellen der anderen gibt. Das Konzept der ‚Issue' ist nicht neu in der sprachwissenschaftlichen Literatur. Verwandte Begrifflichkeiten sind z.B. ‚Decision Problem' oder ‚Question under Discussion'. In einer Antwortsituation kann der Zusammenhang zwischen einer Frage und einem angenommenen Entscheidungsproblem als kontrafaktisches Konditional repräsentiert werden. Das Entscheidungs-

problem stellt sich dann dar als eine Vermutung des Antwortenden, wie der Fragende entscheiden würde, wenn er die Antwort wüsste. Auf der Grundlage der Prämissensemantik für kontrafaktische Konditionale (Kratzer 1981a) wird eine Form von ‚Perspektive' vorgeschlagen, die die propositionale Bedeutung eines solchen Konditionals festlegt: Eine Perspektive besteht aus der Menge derjenigen Propositionen, die in der angenommenen Antwortsituation die relevanten Prämissen des Konditionals sind. Die Auswirkungen einer fehlenden Übereinstimmung der Antwortperspektive mit der Frageperspektive werden beleuchtet. ‚Konsistenz' dieser Perspektiven wird definiert. Wenn es ein Entscheidungsproblem im Kontext gibt, kann die Verwendung von but in der Antwort wieder eine Fehlinterpretation der Antwort durch den Fragenden—diesmal im Hinblick auf das Entscheidungsproblem—vermeiden helfen. Es kann gezeigt werden, wie ‚Inkonsistenz' aus Kapitel 5 als Inkonsistenz in bezug auf ein Entscheidungsproblem repräsentiert werden kann, da Fragen eine besondere Form von Entscheidungsproblemen sind. Zuletzt werfen wir einen Blick auf den so genannten argumentativen Gebrauch von but , eine Gebrauchsweise, die von anderen Äußerungsgrundlagen als den hier angenommenen ausgeht.

Kurze resümierende Bemerkungen in **Kapitel 7** beenden die Arbeit.

Abstract

The thesis focuses on the use of a prototypical contrast marking particle, the English conjunction but. The final goal is to look for a common semantic operation that underlies the various classified uses of but which have been analysed in the linguistic literature. However, since a unification of these uses cannot be achieved directly—see functions like 'Denial of Expectation', 'Semantic Opposition' (Lakoff 1971), and the argumentative use of but (Anscombre & Ducrot 1977)—, it seems justified to start over: and considering its use in only one paricular kind of utterance context, but describing the use — as far as possible — in terms of general semantic concepts. By elaborating the considered contexts of utterance at the outset, it will be possible to take discourse properties into account, which might then take part in the meaning description of the particle.

To do so, particular conditions are applied on the contexts of utterance (of an expression containing but) which are to be considered: When a declarative that contains but is used as the proper answer to a question, then it relates to a contextually given domain, the question domain. In case of a wh-question quantifying over a set of individuals, the contextual domain that any appropriate answer has to address consists of this restricted domain of individuals; it is possible that a previously restricted domain exists in the discourse that is resumed for that purpose, though. And as long as the questioner has reason not to take the answering declarative for an appropriate answers, an exhaustive interpretation of the answering declarative is called for, which covers the question domain. (The setting further assumes a co-operative answerer who is competent w.r.t. the subject matter of the question.) But what about the interpretation in case but splits the reply into what seems to be two direct answers ("Paul plays passionately, but Pete plays very well too")? The hypothesis is: But indicates a particular extension of the considered contextual domain; the extension itself is subject to the utterance situation. 'Inconsistency', i.e. a wrong belief of the questioner, and a defective common ground can result if the domain taken into account by the answerer does not completely cover the contextual question domain. In other words, a defective common ground can result if the questioner—when interpreting the reply exhaustively—takes a domain for granted that exceeds the intended answer domain. When a reply does conjoin its 'partial answers' with but , a correlation with two different question domains (consequently, with two different utterance contexts) is indicated. By the use

of but the answerer can prevent misconceptions on the part of the questioner in case he (the answerer) is not certain about the question domain.

However, this analysis is not sufficient, not even for direct answers. To give a more general description of the meaning of but, we stick to the idea of 'inconsistency'. 'Inconsistency' comes about by assuming an improper contextual domain for the interpretation; improper contextual domains thus take part in propositional content. Again the concept 'domain' plays an important role in a more general account, but now we consider propositional domains instead. In the linguistic literature propositional domains are suggested when it comes to the semantic analysis e.g. of modals or conditionals (as a hypothetical common ground or auxiliary premises). A presupposed domain serves as an interface between propositional meaning and the context of utterance. But in what respect can propositional domains be relevant in our utterance settings? A pragmaticist's consideration lets us get on the right track: The reason for uttering a question can be a (more general) decision problem, which the questioner faces. Then the connection between the question setting and a decision scenario can be represented by means of conditionals; an answer is regarded as a premise, the corresponding solution of the problem is regarded as the consequent. Parallel to the previous case of an exhaustive interpretation of an answer (which is meant to cover a particular domain of individuals), 'inconsistency' at this level comes about by interpreting the answer relative to a context that provides an inappropriate propositional domain of auxiliary premises; an inappropriate domain always differs from the domain that has been intended and taken for granted by the answerer. And interpreting the answer relative to an inappropriate domain means to hold a wrong belief and to make a wrong decision. Note that in this model a contextual domain of auxiliary premises is tied to the assumption of a (counterfactual) conditional, which in turn mirrors the decision problem at stake. Also under this analysis the use of but indicates the treatment of two different contextual domains within the answer. The analysis makes use of the description of counterfactuals in terms of a partition function.

Chapter 1

Introduction

1.1 Subject of Inquiry

The subject of this thesis is the contribution of the lexical item but to the meaning of utterances. The occurrences of but considered here are restricted to its use as a conjunction of sentences. It is not essential whether a conjunct is elliptical or not; neither is it essential whether the conjuncts are speech acts on their own—e.g. in case of a turn-initial but—or not. Not included are uses where but marks the beginning of a correction to the previous sentence containing an overt negation operator, e.g.: "He didn't play cards but worked hard." In these uses, translations of but are e.g. Spanish sino or German sondern. These specific lexemes are restricted to corrections; the counterparts of the conjunction but in other users are Span. pero and Ger. aber. But is used in corrections (i.e. in the sense of Span. sino or Ger. sondern) only if the utterance situation provides a claim s.t. it is a rebuttal that precedes "but/sino/sondern . . . ". This means that, in the context of A's claim in the following example, B does not utter a correction and thus but is not used in the sense of sino/sondern:

(6) A: He didn't play cards.
B: Yes. He didn't play cards, but he worked hard.

But does not introduce a correction here. B rather utters "but . . . " in a concession context. There is no controversial issue at stake in this context; there are no contradicting utterances exhibiting contrary beliefs. The considered uses of but assume a context like this, which lacks an overtly controversial issue.

This inquiry is concerned not only with the English lexeme but. On the one hand, a study that will be discussed analyses the German counterpart aber; there are grammatically equivalent lexical realisations of the meaning of but in many other languages as well. On the other hand, there are English lexemes which sometimes are, mutatis mutandis, interchangeable with but without any noticeable change in the meaning of the expressions per se, e.g.:

(7) Paul plays passionately, *but* he has no chance of winning.

(8) Paul plays passionately. *However*, he has no chance of winning.

(9) Paul plays passionately. *Yet* he has no chance of winning.

(10) *Although* Paul plays passionately, he has no chance of winning.

(11) *Because* Paul plays passionately, he has no chance of winning.

The italicised items in (7) to (10) all mark a similar relation between both sentences; prima facie there seems to be no noticeable difference in the meanings of these four expressions. Common to (7)–(10) is a 'contrast' between both sentences, which is expressed in several ways, besides but. (This relation does not hold between the sentences in (11); the juxtaposed contents are regarded to be accordance with each other in a causal manner.) However, on closer examination we find that but is the more general marker. That is, substituting the alternative expressions can bring about a nuance of 'contrast' that might to correspond to specific contextual circumstances. But lacks these nuances, whereas it is acceptable in utterance situations of (8), (9), and (10). E.g., in (10) the intersentential relation expressed with although seems to be more specific than the intersentential relation in (7): Intuitively, a speaker of (10) seems to consider an intersentential contrast that arises from a rule (of (epistemic) expectation, of law, of common sense knowledge, etc.). This relation exists independently of the contingent facts expressed by (10): "If someone plays passionately, she is likely to be successful in it." On the other hand, it seems that (7) does not per se point to a contextual connection like that. But then, what does 'contrast' mean here?

This study is no overview of possible realisations of the 'contrast' relation and its nuances of meaning. For an extensive survey of the various ways to express the relation (and its variants) in different languages, see Rudolph (1996). But is regarded as the most general way to express 'contrast'. The aim is to analyse the use of but in well-defined contexts. The contextual properties of the utterances of but will play an important role, since but might correspond with its utterance context in a particular way. In a strict sense, this inquiry is a case study of but in question-answering situations: Then questions represent the context of the considered utterances.

The definition of these contexts is thus another important aspect. A semantics of questions is applied that defines questions by means of possible answers (Groenendijk & Stokhof 1984). So the conditions which utterances in a question-answering situation must satisfy can be expressed in a straightforward way. In particular, a question context provides a *question domain*, which an answer must correspond with. A central point of the thesis is the effect of this question domain on the interpretation of the utterance as an answer. Besides a question domain, an *issue* can be a parameter of the utterance context. Being a plausible motive for a question, issues are a familiar pragmatic concept in the literature.[1] A model for 'issues' is introduced that resembles the definition of questions. I will argue that issues provide another kind of domain. So once an issue is

[1] Notions in different frameworks are: 'Converational Topic' (van Kuppevelt 1996), 'Question under Discussion' (Roberts 1996), and 'Decision Problem' (Parikh 2001; van Rooy 2003b).

assumed, a participant is forced to assume the existence of such a domain, too. The use of but can then be related to this domain: Again, 'contrast' amounts to a change in the considered domain. In a felicitous discourse, an issue behind an actual question and the answer to this very question ought to be aligned with one another: A change of the question domain (indicated by but) also changes the decision on the issue.

1.2 Motive

The motive for this essay and of many other analyses of but has been the quest for the meaning of the contrast marking item; what is 'contrast'? In the early days of the application of formal logic to the analysis of language, the meaning of but was equated with the meaning of and, for their truth conditions are equivalent. Other aspects have not been prominent:

> Das Wort „aber" unterscheidet sich von „und" dadurch, daß man mit ihm andeutet, das Folgende stehe zu dem, was nach dem Vorhergehenden zu erwarten war, in einem Gegensatze. Solche Winke in der Rede machen keinen Unterschied im Gedanken. [... S]ie berühren den Gedanken nicht, sie berühren das nicht, was wahr oder falsch ist.[2]

However, these remarks imply: (i) But indicates some contrast as regards 'expectation'; (ii) its 'contrast' is conceived of as a two-place function, one argument consisting of an immediately preceding expression, the other one is the immediately following expression; (iii) the whole expression is true if each of the conjoined (truth-valued) expressions is true.

The difficulty to grasp this "Wink in der Rede" (i.e. cue) lies in the derivation of the 'expectation', which is connected with the expression that precedes the contrast marking item. Its following expression then denies this 'expectation'. The difficulty is twofold: Exactly which expressions take part in the derivation of 'contrast' in terms of expectation? And how is an expectation relation 'x is expected due to y' to be understood? This approach reminds us of the Compositionality Principle: The meaning or contribution of but is a function of the meanings of its neighbouring expressions. This approach seems problematic here, for there might be no clear-cut way to determine the argument expressions for such a function. So, what are the arguments of but? (This is a matter not only of the appropriate choice of the argument expressions, but rather depends on their meaning, i.e. on the interpretation of these expressions: Their meanings might be properly specified only under consideration of an even wider context (cf. the discussion in chapter 4).) Consequently, the analyses of but in the literature differ in the context they consider. E.g., the 'Semantic Opposition' account of but, proposed by Lakoff (1971), tries to consider only the meaning of the two conjoined sentences

[2] Frege (1918, p 64). Sæbø (2002) says this is the origin of the analysis of but that is known under the label 'Denial of Expectation', see p 11, 2.1.1.

or of two corresponding constituents. At the other end of the spectrum, Spooren (1989) conceives of the relation marked by but as a "global contrastive coherence relation"; the discourse units connected with but can consist of single sentences or even of paragraphs. So, central to the treatment of the relation marked by but is the issue of the contribution of its neighbouring context.

Another important motive is the principle of avoiding polysemy, setting up one common meaning for all uses of but. A common meaning description must be general enough and must cover various appropriate uses. Therefore, in terms of restrictions on linguistic parameters, contexts of appropriate use might play a prominent role.

A second principle is the linguistic character of a meaning description. E.g., in case an analysis is based on terms like 'expects that', these should have an explication in linguistic terminology. As regards context, it is desirable that its essential role in the contribution of but can be made manifest in terms of *linguistic* contextual parameters.

1.3 Outline

The thesis is structured as follows. **Chapter 2** gives an account of some current analyses of the use of but or of German aber. The analyses either attempt to unify traditional accounts of the use of but/aber (2.1) or they focus on the contribution of but in contexts which are particular ones either in linguistic (2.2) or in non-linguistic terms (2.3). The accounts are:

In 2.1, Sæbø (2002) covers three traditionally distinguished basic uses of but: 'Semantic Opposition', 'Denial of Expectation', and 'Concession'. He proposes a unified treatment of these. He considers not only those expressions which aber does conjoin; he makes use also of a hypothesised contextual 'alternative'. He shows how, under some circumstances, the alternative can be derived from the context. It is open, though, how the alternative can be derived from the context as well as the alternative's role in the context otherwise. The proposed semantics of aber results in a presupposition by substituting the alternative in the conjoined expressions.

In 2.2, Umbach (2001) considers the use of but in specific dialogical settings. Her question–answer settings establish a context that provides a topic for the considered answers, which contain but; additionally, these answers contain focused constituents. Acceptability tests show that the distribution of the polarity of but-conjoined (partial) answers differs from the distribution in case of the conjunction and. So but and and differ in the polarities of the answers they can conjoin. A denial condition for but is proposed that reflects this difference. Further, the contextual topic together with the denial condition give rise to an expected alternative out of set of the 'Focus Semantic Value' (Rooth 1992) of the focused constituent. Substituting the expected alternative in the second conjunct results in a proposition that plays a presuppositional role: A context in which the (partial) answer beginning with but can be uttered felicitously has

to entail this proposition. In case there is no other way besides deriving the expected alternative from the context, however, there seems to be a gap in the explanatory procedure of this analysis.

In 2.3, a different kind of context is the starting point. The dialogues considered here involve a common substantive goal that can be reached only through a plan-based sequence of actions; the goal of the participants' co-operation is beyond plain information exchange. Therefore representations of plans are required. These include partial goals and actions, which are non-final states and transitions between them respectively. In a setting like this, dialogues are tied to the progression in a plan: Utterances may recapitulate and confirm the current state or action, give further orders (referring to subsequent actions) or there can be objections to the current way of realising the goal. Natural language corpora show a specific use of but in plan-oriented discourse: It marks that some action has been proposed or some state is reached that does not enable the goal without correction. In contrast to expectation-based analyses, the characteristic feature of these approaches is the consideration also of deontic preferences (i.e. the goal). However, the application of this approach to a wider variety of uses of but is not straightforward.

Merin (1999a), 2.4, analyses but based on the explanations of Ducrot (1973); but is considered as a means in argumentation. Conjuncts connected with but are assigned to contrary expectations: Although it is improbable that both conjuncts hold true at the same time (because it is more probable that they exclude each other), they are true nevertheless. Since both conjuncts support mutually excluding conclusions, the purpose of but is to introduce an argument against a conclusion that is supposed to hold. Merin formalises this expectation-related contrast between both conjuncts by representing the corresponding epistemic backgrounds of the participients by means of conditional probabilities. The aim of his investigation is to verify or falsify this scheme as a general explanation of the use of but. His result is a falsification. According to Merin, this calls for an extension of the context to be considered: It must be assumed that there is a contextual hypothesis. Both conjuncts differ in their relevance to this hypothesis. However, it is a premise throughout that the speaker epistemically or deontically prefers the contextual hypothesis (or its counterpart). This means that he is interested in pushing through specific contents. The speaker is not neutral but biased. His co-operativeness is restricted.

A summary of the collected characteristic properties of the specific uses of but and an outlook conclude this chapter.

Chapter 3 is a short introduction to domain restrictions. Quantifying expressions presuppose the existence of a (non-empty) domain, over which they quantify. Semantically, a domain constitutes the restrictor of a quantifying expression. Contextually, however, a domain can have been introduced and restricted already. E.g., there might be a salient set of objects in the discourse that provides the choice for the domain that might be resumed (e.g. anaphorically) and is further restricted in the restrictor of a quantifying expression. For this reason, quantifying expressions involve an important interface of linguistic

form and utterance context. In addition to quantifying expressions whose domain is a set of individual-type objects there are quantifiers whose domain is a set of possible worlds, e.g. modals. By way of modal subordination, various hypothetical common grounds can coexist in a discourse. After they have been established, they can be resumed and restricted further. The chapter collects some instances of both types of domains and gives examples of how to construe the meaning of expressions by picking up a contextually given domain. Vice versa, by providing a domain the meaning of such context-dependent expressions can be specified. Also, by providing a specific domain these expressions can be disambiguated—in case their domain is underspecified.

Chapter 4 sets the stage for the analysis of a particular use of but in question contexts. It provides a sketch of the semantics of questions according to Groenendijk & Stokhof (1984). Only individual-type one-place wh-questions are considered. The context of answers is defined through the question's presuppositions and the intended question domain, which might be covert. The question semantics assumes that a reply is interpreted as exhaustive answer—although not all individuals of the question domain might be mentioned. Besides the question itself, a question domain is part of the context in question-answering situations. The prominent role of the question domain in the interpretation of answers is clarified. The notion 'perspective' is introduced; it labels the domain that is taken for granted by the answerer (when giving the answer in a question-answering situation) or by the questioner (when interpreting the answer). Although the question itself imposes some selectional restrictions on the possible question domain, a more specific domain must be assumed for pragmatic reasons. Otherwise the range of possible domains would be too large to be feasible. Therefore the 'perspective' taken for an answer is an essential ingredient of the context in question situations and question-answering situations. In this chapter, the interrelation between an answer and its context is spelled out in terms of a contextual (question) domain.

Chapter 5 deals with a potential misalignment between the questioner's and the answerer's domain and with the misalignments' effects. We consider the situation of an answerer; it is impossible for him to avoid misinterpretations by just taking a sufficiently large perspective for the answer. A case study reveals the circumstances under which a defective common ground can occur. For a discourse to be intact, the answerer's perspective must be 'consistent'. This is defined in 5.2.2. After the discussion of plain direct answers, the role of but in answers is in focus (5.3). We consider uses of but where it conjoins two direct replies. Felicity conditions of this use of but are proposed in 5.3.1. Furthermore, a plausible motive for giving such a two-part answer can be identified: By adding a constraint on the question domain, an answerer can prevent a misconception of his reply. However, the proposed explanation does not cover many other instances. Counter-examples show that it is not always possible to relate the use of but to a constraint on the considered question domain. Can we think of a different, contextually available domain that would relate to the use of but in a similar way?

In **chapter 6**, a different kind of domain is proposed, because the analysis of but in the previous chapter failed to explain many instances. So, the concept of context is expanded to include an 'issue'. An 'issue' is what the questioner inquires after; it is another concept of the wider goal of a question. Although an 'issue' is represented as a (more general) question, it is independent of a question. An uttered question is considered as belonging to the questioner's strategy to decide his issue. Related concepts can be found in the literature, e.g. 'decision problem' and 'question under discussion'. In a question-answering situation, a postulated 'issue' can be represented as a counterfactual: The answerer assumes that if the questioner were to know the answer, then he would also take some other proposition to be true. But the problem with (the meaning of) counterfactuals is that the conclusion might depend on further, unspoken suppositions. Because of the suppositions' indeterminacy, a counterfactual is ambiguous. Based on the premise semantics' account of counterfactuals (Kratzer 1981a), an appropriate 'perspective' can disambiguate a counterfactual. A 'perspective' consists of the set of those propositions which are the counterfactual's relevant premises (suppositions) in an utterance situation. Both the questioner and the answerer holds a perspective. The effects of a possible misalignment between the questioner's and the answerer's considered premise set are discussed. If these sets are aligned, the participants' perspectives are 'consistent' with one another. But more often then not 'consistency' cannot be taken for sure. But a contextual issue at stake can contribute to anchoring the utterance situation here. Contextual issues are treated like particular questions. It is argued that—in case a contextual issue exists—the answerer makes use of but to prevent a misconception on the part of the questioner w.r.t. the contextual issue. With this use of but , the answer is split up in two perspectives: The perspectives must be such that—at the moment they apply—they decide the contextual issue differently. No matter what the contextual issue exactly is, it is assumed that it is an invariable property of but that both perspectives must differ in this way (with regard to any contextual issue that is assumed). It is shown that instances of inconsistency (as presented in chapter 5) can turn to issue-related inconsistency. At last we have a glance at so-called argumentative uses of but. These differ in some basic assumptions from the instances discussed before.

Finally, the thesis ends with a few concluding remarks in **chapter 7**.

Chapter 2

Some Current Approaches

The following survey is not exhaustive; there may be more accounts than the mentioned ones. More traditional descriptions like 'semantic opposition', 'concession', and 'denial of expectation' (Lakoff 1971) are not explicated in detail. When a focused account depends on one of those, it will be introduced alongside. Rather, I chose more recent analyses, which differ in whether and how they refer to some utterance context. Whereas more 'structural' approaches widely abstract from utterance context, operating on sentence meanings, there are also accounts specifying the utterance context more elaborately. In this case, utterance contexts have more impact as to how meaning is construed. E.g., Umbach (2001) explicitly refers to question–answer contexts and Thomas (2003b) takes plan-oriented discourses into account. One way or the other, all reviewed accounts of but involve a notion of context. But it seems that the accounts can be ordered along a scale of how detailed utterance context is conceived.

The following accounts differ in the sort of context they consider: We will move from monologue to dialogue, accordingly. In the considered dialogue contexts it is further distinguished between but (and both its conjuncts) embedded in one turn (Umbach 2001) and a "cross-speaker but" (Thomas 2003b).

The main purpose of the survey is to identify various context properties as usage conditions. By restricting our analysis to sharply determined contexts, we can verify or discard co-occurrence of but with particular context features. We can then try to generalize from those features in order to find a more general co-occurrence scheme for but. Please note that the following discussion of different accounts is more a collection of—in my opinion—relevant ideas and does in no way claim to be a comprehensive treatment of possible utterance contexts of but. The discussion is but a starting point. Aspects of interest with regard to the described accounts are:

1. Does a particular characteristic of the utterance situation play a role?
   - Which utterance contexts are to be distinguished?
   - What are their properties? To which degree are they included in the analysis? Which of the analysis' descriptive parameters are determined by the context?
   - In particular, are instances monological or dialogical? Which speech act types are involved?
2. How do the considered utterance situations determine the analyses?
3. Are findings of analyses focusing on a small class of utterance situations limited to those specific situations?

First, a structural approach is presented that abstracts from the utterance context to a high degree. In 2.2, we move on to an account that is concerned in particular with question–answer contexts; what is more, context is made up of dialogues here. So we turn from monologue to dialogue. Finally, the treatment of plan-oriented discourse is discussed. Whereas still belonging to the dialogical domain, it seems that there is a different communicative goal inherent to plan-oriented discourse: Substantive, i.e. factual goals will be at stake in 2.3. This differs from the more prominent 'argumentative' discourse type; information exchange and operations on belief states are generally the main object of 'argumentative' utterances. This is why in many analyses assertions had been playing a more prominent role than commands. But with plan-oriented discourse, commands and orders are the speaker's means to strive for his substantive goals.

2.1 A Structural Approach

Although strictly structural explanations like the semantic opposition analysis of Lakoff (1971) are outdated, there have been further analyses since then which focus on semantic characteristics of the involved sentences alone. The standard objection against such approaches is that their instances also comply with conditions of other analyses—when they obtain an appropriate context. This is a problem even if one considers but to be polysemous, like Lakoff (1971) does. The other analyses always include aspects of the context, be it in the terms of "expectation" (see (B), 2.1.1), or in terms of an "argumentative" function in discourse with regard to some hypothesis (see (C), 2.1.1). Characterising the meaning of but by its conjuncts' semantic content and structure alone does not suffice as long as this description does not cover or disprove other explanations that refer to context.

The structural approach chosen here is not strictly structural in the described sense. Utterances, not sentences, are considered to be the entities of linguistic data investigated. Thus, the meaning component that is characteristic for but is presuppositional. The reference to context is captured by two

parameters which describe its impact on the interpretation: (i) A topic function T allows to identify a constituent of a sentence as the topic in discourse. And (ii) there is an 'alternative', a semantic entity which is an integral part of the contrast presupposition and the cognitive accessibility of which is assumed for any context of utterance.

2.1.1 Sæbø (2002)

In a recent paper, Sæbø (2002) tries to unify the traditional variants of contrastive interpretation. The starting point is to treat the conventional implicature of aber as a presupposition common to all three variants: *semantic opposition*, *denial of expectation*, and *concession*.[1] The motive for this approach rests on the preference for avoiding polysemy, i.e., for having one uniform *meaning* description which covers all variants of the lexical item in question, viz.: Aber in German. This necessitates a general meaning from which these variants can be derived:

A) Semantic Opposition: It is due to Lakoff (1971) and is characterised by some antonymy between the predicates of but-conjoined sentences the relation is said to hold of; the predicates are at least comparable in some sense.

B) Denial of Expectation: Traced back to Frege (1918, p 64), an aber-introduced sentence is in opposition to some expectation emerging from the aforementioned. Thus, with this label a direct connection of reversed expectation is assumed between conjoined sentences; the second sentence directly expresses the reversed expectation.

C) Concession: Turning to Anscombre & Ducrot (1977) and Dascal & Katriel (1977), to the but-alternatives French mais and Hebrew aval, a third parameter is involved. "The first sentence counts pro, the second sentence counts contra some conclusion (or *topos*)." Along with Dascal & Katriel (1977), this description is subsuming uses in accordance with type (B).

The idea is further that a contrast presupposition interacts with topic, i.e. with the structure of the sentences which aber connects. Expressions of the sentences are resumed in the process of presupposition resolution—i.e. accommodation in most of the cases—much like the focus of a sentence plays its role in presupposition of e.g. too (Rooth 1985). An aspect of the meaning of the corresponding English item but, which has also been considered as being 'pragmatic' or 'procedural' in the literature (Blakemore 2000), should instead be encoded in the (dynamic) semantics of the lexical item, according to Sæbø. For comparison, he refers to Blakemore (2000) and Dascal & Katriel (1977), who suggest to consider the concession and the denial (of expectation) interpretation as subcase-related to each other. However, there still remains the interpretation along the analysis of semantic opposition, which, as it seems, cannot be covered in terms of denial or concession. And it remains to be

[1] For this distinction, Sæbø refers to Oversteegen (1997). References for these analyses are given below.

asked whether this peculiarity of semantic opposition can be avoided. This is, roughly, Sæbø's program (2002).

But even besides the denial of expectation interpretation, there seem to be other usages of the lexical item. Sæbø observes that there are two paradigmatic classes of examples for which a denial interpretation is not feasible at all. The instances are s.t.

a) the first sentence of the relation contains a counterfactual embedding or

b) it gives rise to a scalar implicature.

In case of (a), the second sentence semantically entails a proposition which is embedded in a counterfactual context in the first sentence, see examples (1) and (2); for (b), implicatures triggered by scalar expressions in the first clause are asserted in the second clause, cf. (3) to (5) :

(1) Der Lokführer hätte sein Haltesignal aus dieser Entfernung sehen müssen. Dies sei aber nicht der Fall gewesen.

(2) Harte Strafen erwecken den Eindruck, der Staat würde viel für die Opfer tun. In Wirklichkeit aber lenken sie von der schlechten Stellung der Opfer ab.

(3) Viele Vögel sind schon da, aber nicht alle.

(4) Das stimmt beinahe, aber nicht ganz.

(5) Die Waldwege sind steil, aber nicht sehr steil.

Whereas for (3)–(5) a concessive interpretation is possible intuitively, for (1) and (2) neither denial nor concession is obtainable, Sæbø claims: If there is a salient expectation with these two examples, then it is denied in the first sentence already. This seems clear intuitively. Let me note that with these counterfactual examples, it is the *hearer's* (or reader's) expectation that cannot arise and thus cannot stand for a denial of expectation analysis. The cause for why the reader cannot expect what is denied in the second sentence anymore—after having conceived the first sentence—is a perspectivisation: The proposition under discussion is embedded into a context that deviates from the actual state of affairs as described from the speaker's (or writer's) point of view.

For (1), the matter is further complicated due to indirect speech. The opaque context, although it is the same for both sentences, brings another perspective/point of view into play. To deny a denial of expectation analysis here does not seem to me obviously correct. The accessibility of a denial of expectation interpretation also depends on the origin of the expectation: Who holds the expectation? Is it the hearer or does it e.g. originate from a plausible common ground assumption? Correlated with this issue is the cancellation of the expectation. Is it cancelled on the basis of some actual state of affairs, or is it possible that some participant's opinion, i.e., somebody's epistemic ground, can cancel an expectation? In the latter case some expectation does not hold

anymore according to the participant's beliefs. Here we see how these two issues ought to be regarded as interrelated: When we talk of the denial of an expectation as the basis of a corresponding explanation of the use of but, it might matter who holds the expectation; and so we ought to examine this kind of perspective more closely.

2.1.1.1 Forms of Abstraction

To account for (1)–(5), the starting point is the examination of semantic opposition instances along their structural similarities. Whereas Lakoff (1971) stated semantic opposition between sentences due to complementary predicates as in (6), a more general formulation for 'semantic opposition' has to be based on mutually excluding *propositions*, Sæbø argues. The antonymy of the idealised, scale-abstracted predicates short and long is depicted in (7).

(6) John is short, but Bill is tall.

(7) $(\text{short}(x) \models \neg\text{tall}(x)) \wedge$
$(\text{tall}(x) \models \neg\text{short}(x))$

In addition to Oversteegen (1997)'s description of semantic opposition, also Spooren (1989)'s description, which belongs to a series of publications which elaborate on the term 'semantic opposition', is adopted by Sæbø. Because I think that these sources are important contributions which show how Lakoff's idea has been developed further, I will cite their descriptions here, although these accounts would deserve a closer look.

> "A relation between two conjuncts each having different subjects, to which properties are attributed that are mutually exclusive in the given context." [2]
>
> "There need not be two entities (corresponding to two different subjects). There may also be only one entity to which different properties are ascribed, either at different times or places or in different possible worlds." [3]

Sæbø refers to these definitions and endeavours to extend this scheme. Note that, according to Oversteegen's definition, the predicates of the conjoined sentences do not have to have disjoint meaning extensions: The properties which are entailed by the sentences' predicates are relativised w.r.t. times, places or "different possible worlds". I think that this is a significant attempt to spell out what Spooren means by properties being "mutually exclusive *in the given context*". It means that otherwise antonymous predicates might be compatible as soon as their contexts differ in time or place (i.e. in the index), or as soon as they are evaluated otherwise relative to different sets of worlds. This seems to be a hint that the prototypical condition of contrast, which was first defined

[2] Spooren (1989, p 31).
[3] See Oversteegen (1997, p 61). This is a direct comment on and a resumption of Spooren's aforementioned definition.

in semantic-structural terms (namely as a truth-functional incompatibility between the predicates of conjoined sentences), might be anchored to 'context' or 'perspective' (Spooren 1989).

2.1.1.2 Digression

Because the critical discussion of previous accounts of contrast serves to develop alternative ideas as well, let me elaborate on the last thought. If the predicates are in fact "mutually exclusive", what does that mean for both subjects? [4]

If the domain of individuals under consideration consists of the set of the subjects only, then the second conjunct semantically entails the exhaustive interpretation of the first conjunct: For ex (6) this means that John is the only individual in the domain under consideration, {John; Bill} , of whom the property of being short holds; the property does not hold of Bill nor of both Bill and John. Because of the antonymous predicates, this is an entailment of the second claim "Bill is tall", i.e. tall(Bill) $\models \neg$short(Bill) , cf. (7). But note that, on the other hand, the second claim can contribute more than that, and here it indeed does. E.g., from the meaning postulate (7) it does not follow that short and long are binary opposites: Interpreting the first conjunct "John is short" exhaustively w.r.t. {John; Bill} , we do not necessarily arrive at "Bill is tall", though. This is so, because (7) does *not* ensure $\neg$short(Bill) $\models$ tall(Bill) .

The exhaustive reading of the first conjunct (w.r.t. {John; Bill}) is obligatory here and can even be regarded as an epiphenomenon, deriving from the conjunction's meaning—otherwise contradiction results. Neverthless, I think that this kind of exhaustivity is usually overlooked in such cases of semantic opposition, where there are different subjects + antonymous predicates. So it is natural to ask whether the applicability of an exhaustive interpretation here is contingent or exhaustivity does play a role for contrast in general. The issue then is

- whether this mutually exhaustive reading is also preferred in more general constructions with contrastive conjunctions, where this is not necessarily the only available reading,
- and if so, then what is the underlying principle and reason for this interpretation?

I will continue with these considerations in 2.2.1, where another classification of contrastive conjunctions will give rise to a connection with exhaustivity, too.

Now, applying Oversteegen's and Spooren's condition—i.e., both sentence predicates have to be evaluated relative to a given context / set of possible worlds—to a case like ex (6), we notice: Being antonyms, the predicates define contexts in which they exclude each other. In other words, within any given context short (i.e. the set of "short" entities) does not satisfy the other predicate, being tall—and vice versa. And if we do not change context or perspective,

[4] Sæbø (2002, p 4) more generally states "that mutually exclusive sentence frames are attributed to two different things."

i.e., if we interpret both predicates in the same context, this mutual exclusion of both predicates is constant for all interpretations; this exclusion is part of their meanings.

Sæbø's extension of this scheme construes 'context' in a more structural way—on the basis of the conjoined sentences. Instead of just predicates, he tries to extract *sentence frames*. These do not just consist of the sentences modulo the filler of the subject position. The abstraction 'sentence frame' has to be more general than just abstracting from the subject, with its predicate as functor; this is apparent e.g. if the subject involves a generalised quantifier ("Viele sind berufen, aber wenige sind auserwählt" [5]). The core tasks of determining contrast by structure are

- deriving a *sentence frame* (inheriting possibly also some context properties) and
- stating the contrast as contradiction in a still *truth-functional* way (semantic entailment).

This is captured in a first gloss of Sæbø's semantic opposition definition:

> The first sentence contradicts the result of replacing something in the second sentence by something in the first sentence.[6]

This definition is elaborated further in two directions. First, "something" in the second conjunct can be determined via the *sentence topic* ('contrastive topic' according to Büring (1999)).[7] Second, the definition is to be integrated into an update semantics: A formulation as a presupposition is pursued, with the second sentence as the presupposition's scope. The trigger of the presupposition is the contrastive lexical item.

This latter point changes the definition above substantially: (i) It is not necessarily the immediately preceding sentence that provides the substitute for "something" in the second sentence; (ii) by the same token, it is not the first sentence that contradicts the modified second sentence, but the contradiction *is entailed by the context*, which is assigned to the second sentence. This change can be seen as a side-effect of describing the meaning in a presuppositional way. Because the sentence bearing the presupposition trigger is evaluated relative to a context that already entails the first sentence's content, the first sentence can usually not—as in standard DRT discourse analysis (Kamp & Reyle 1993)—be separated from this current context when the contradiction is derived. What is more, it is not clear as yet, whether the presupposition is locally accommodated. It follows that the derivation is in general not based on two sentences but rather on an utterance and its context. As it turns out, however, the examples which Sæbø proceeds to discuss all exhibit the same behaviour: It is the preceding sentence which directly provides the alternative expression for a substitution

[5] Sæbø (2002, p 4).
[6] Ibid., p 4 .
[7] For an explanation of the term topic see the discussion of example (17), p 22 .

operation. But the unspecificity of this new formulation of contrast meaning makes it more difficult to arrive at a suitable alternative for the second sentence's topic:

> The context entails the negation of the result of replacing the topic of the sentence by an alternative (Sæbø 2002, p 6).[8]

2.1.1.3 Presupposition Accommodation

Starting from a description of the focus particle too, Sæbø proposes to construct the meaning of aber in much the same way. To do so, he formulates the presupposition of contradiction in update semantic terms and makes use of Beaver's (1997) formulation of the presuppositional meaning of too. Its presupposition imposes constraints on the current context. The constraints involve the information state prior to the utterance that triggers the presupposition and the utterance's post-state. They can be expressed in a straightforward way as follows. Assuming that there is a topic function T for each sentence, mapping a sentence to its topic, as well as some alternative α, the transition between the information pre-state σ and the resulting information state τ is determined by the semantics of aber like this:

(8) $\sigma \, [\![\Phi \text{ aber}]\!] \, \tau \iff$

a) $\sigma \, [\![\Phi]\!] \, \tau$ and

b) for some α:
$\sigma \models (\lambda x \,.\, \neg\Phi[T(\Phi)/x])\,(\alpha)$ or
$\sigma \models (\alpha)\,(\lambda x \,.\, \neg\Phi[T(\Phi)/x])$

Condition (b) is a restriction on the pre-state σ. The information state has to ensure a negation of a proposition, which is a structural derivation from the sentence containing the item aber. But note that this still does not explicate *how* to deduce the alternative α, especially if it is not given explicitly. While in Beaver's definition of too only primitive entities of type e are taken into account as elements of the alternative set, aber allows alternatives of other semantic types as well. This complicates the matter further. The only viable ad hoc method to determine a pair of contrasting expressions that I see is based on the topic of the second clause: The contrasting expressions have to be comparable in their semantic type and also in the selectional restrictions connected with the positions in which one is to be replaced for the other. A closer look at the last condition of definition (8) clarifies this. Type 'comparability' must also include raised types, as the following acceptable example shows. In "Alle sind nicht gekommen, Karl aber ist da", the individual Karl, which is the topical expression of the second clause, allows for replacement by the generalised quantifier alle. In this case, $\sigma \models (\alpha)\,(\lambda x \,.\, \neg\Phi[T(\Phi)/x])$ from above applies.

[8] Note that Sæbø gives no explanation for "the context entails". It is important, though, whether the idea is compatible with the notion 'contextual entailment' of Roberts (1996), or whether this entailment is meant to be strictly semantic. This point can only be clarified by a precise formulation of a representation of 'context' and a definition of 'entailment'.

But there is a class of syntactically definable constructions, for which the proposed description (8) cannot be adequate. If the second sentence resumes the preceding subject and the topic is identified with its predicate, then the entailment ends up in a contradiction, see (10). Substituting previously introduced expressions for the topic, it seems, clearly results in an inadequate presupposition: In a sound discourse it can never be satisfied. This is a hint that a straight structural explanation is not appropriate in general. Consider (9):

(9) Die Waldwege sind steil, aber kurz.

(10) $\sigma, [\![\text{“die Waldwege sind steil”}]\!] \models \neg[\![\text{“die Waldwege sind steil”}]\!]$

For (9), (10) represents the presupposition—when taking as alternative α the only comparable predicate that is available in the preceding sentence—, which is not valid. The contradiction says that a construed presupposition can never be satisfied. So Sæbø proposes to take the complement (antonym) of the predicate kurz—i.e. lang—as topic ('implicit topic') instead. This means that (9) is paraphrased by (11). Then the substitution only refers to the predicate modulo the negation, see (12).

(11) Die Waldwege sind steil, aber nicht lang.

(12) $\sigma, [\![\text{“die Waldwege sind steil”}]\!] \models \neg[\![\text{“die Waldwege sind nicht steil”}]\!]$

(13) $\sigma, [\![\text{“die Waldwege sind steil”}]\!] \models [\![\text{“die Waldwege sind steil”}]\!]$

That is, (12) results in the accommodated presupposition (13).[9] So far the account of (9) according to Sæbø (2002, p 10). But here I want to object that the presupposition does not add any condition on the information state for the second conjunct; the information state already entails "die Waldwege sind steil". This means that there is no substantial justification for the use of the contrastive item under this analysis and in cases like these. The presupposition is satisfied here by semantic entailment, and so the contrast condition does *not* explain the use of but vs. using and instead.

Another way to avoid a contradictory presupposition is to choose a different alternative for steil, nicht steil. Choosing the negation of the contextually given alternative is equivalent in case of (9), yielding (13) as well. In doing so, the alternative α is no longer taken from the preceding linguistic context directly. The contrast condition crucially depends on a procedure to derive an alternative, especially where there is no topic constituent; instead, it may be the case that an alternative for the whole sentence that contains but is to be found (see exx (15) and (16)), which is a sentence as well. Example (9) shows that establishing an implicit topic via a negation seems to be merely a workaround to avoid the contradiction in (10).

However, following Sæbø's model further and taking the implicit topic lang for granted, what is the reason for calling lang and steil *alternatives*? Occasionally taking the antonym of the topic (as an implicit topic) like in (13) seems

[9] Taken for granted the assumption of binary antonymy between the predicates, i.e., $\neg[\![\text{“lang”}]\!] \models [\![\text{“kurz”}]\!]$.

arbitrary and ad hoc. Again, one cannot avoid an elaboration on this issue when analysing the contrast relation. The accommodation of a presupposition according to scheme (8) implies a notion of 'alternative'. A conclusion might be to regard elements of definition (8) as triggers for further implicatures. In short, there is a need for an appropriate utterance context to supply some connection between 'alternatives'. Sæbø picks up an idea of Lang (1984): Whatever is being treated as alternatives has to be related to each other via some 'common integrator'. Both alternatives can be *(inversely) relevant* with respect to a common integrator. This has to be derived pragmatically, Sæbø points out. For the case given, he refers to Grice's maxim of relevance as the underlying principle for justifying the alternativeness relation between lang and steil.[10]

According to Sæbø, the common integrator amounts to a *(conversational) concession implicature*, which is triggered via the accommodation of the contrast presupposition. The presupposition is due to the contribution of the lexical item aber. The common integrator is an instrument to instantiate alternatives or an alternative-relation. It allows or makes necessary an 'implicit topic': An implicit topic may be just some instantiation for $T(\Phi)$ in (8) other than the actual topic of Φ. Or the implicit topic is the only possibility and thereby is necessary if there is no topic of Φ.

In principle there are endless possibilities to derive what is called the 'implicit topic'. We encountered antonymy or negation as a possible relation to derive an implicit topic already. For denial of expectation, Sæbø states that a *specific* connection between a topic and its alternative must hold (ibid., p 11): "It could be that the topic stereotypically [i.e., according to world knowledge] accompanies the alternative—then we have denial of expectation[.]" This incidence might be concomitant to an antonymous implicit topic or even serve as a more general justification for choosing the antonym/negation as implicit topic. That is, sometimes the implicit topic is expected—though not valid—with respect to its contextual alternative. E.g., in (14), the property of being poisonous can be said to be expected w.r.t. its contextual alternative "resemble land scorpions" (ibid., p 13). This can be expected, but it is not valid.

(14) Wasserskorpione sehen Landskorpionen ähnlich, sind aber ungiftig.

Two other probative instances are discussed, where the sentence containing aber does not contain a contrastive topic (but just a focus/rheme). So again, an implicit topic has to be derived. The implicit topic is assumed to be the negation of the topic, as was done for (9). But if there is no topic at all, the negation of the focus element will serve as 'implicit topic'. We will see that—similarly to (9)—there will be a problem with the instantiated/accommodated presupposition. Consider Sæbø's examples (15) and (16):

[10] Sæbø applies the maxim of relevance here by way of some conversational necessity for an explanation of 'alternativeness'. I think that the primary necessity for applying the maxim of relevance is due to the void contribution of the accommodated presupposition, see e.g. (10). So the question would be, how can the contribution of this presupposition be justified in terms of relevance?

(15) Wir würden sie gerne im Nationaltheater zeigen, uns fehlen aber noch Sponsoren.

(16) Der Ball trudelte aber nicht über die Linie.

According to Sæbø, for (15) the alternative pair ⟨implicit topic, contextual alternative⟩ is ⟨"have (enough) sponsors", "want to show them in the National Theatre"⟩. What is the reason to use aber with an alternative pair like this one? The choice of the implicit topic resembles previous derivations, because it is an antonym / negation. In this case the scope of the negation is the predicate of the aber-containting sentence. Can the choice of the alternative pair be justified in a more general manner? Sæbø suggests that such a justification could be given by explaining how the alternative pair might reasonably be seen as *relevant*: One alternative of the pair is a necessary condition for the other. Note that via construing a *relevant* pair of alternatives, i.e., via a necessity-condition relation between the alternatives, the presupposition of contrast is also compatible with a denial of expectation interpretation here.

But let us have a closer look at this suggestion. Does "have (enough) sponsors" make up a necessary condition for "want to show them in the National Theatre" in a plausible sense? I want to argue that the consequent of such a relation is more appropriately represented modulo the intensional operator here: For "showing them in the National Theatre" it may be necessary to "have (enough) sponsors". For just having the wish to do so, to "have (enough) sponsors" does not embody a precondition. Sæbø's choice of the relevant contextual alternative here seems to depend on an appropriate instantiation that makes the 'contrasting' role of the aber-containing sentence plausible, e.g. in the sense of a denial of an expectation.

Comparing this explanation with the case of the counterfactual subjunctive (1) above reveals an inconsistency. Sæbø argued that the intensional embedding in (1) makes a denial of expectation interpretation impossible: The proposition in its scope is an improper, i.e. invalid antecedent of some knowledge-based inference rule. So, the aber-preceding sentence as a whole is not an appropriate inference's antecedent at all, whereas its embedded proposition is. Similarly, the preceding sentence of (15), including the intensional operators—"wir würden sie gerne im Nationaltheater zeigen"—, does *not* give rise to an expectation, which can be derived from the sentence that contains aber by way of negation ("wir haben (genug) Sponsoren"). Thus, there are different principles for determining a relevant contextual alternative for (8). Sæbø's discussion of (1) includes the intensional operator (counterfactuality) in the contextual alternative, whereas for (15) he does not: A criterion for doing so is not given.

The problem of determining an appropriate contextual alternative is even more apparent if there is no topical expression in the sentence that contains aber. Then the whole sentence is the expression that instantiates $T(\Phi)$ in (8); also, the contextual alternative is more difficult to determine because its description is based on world-knowledge. Let us have a look at (16). A plausible alternative is given by Sæbø with "the team has a chance to win". In the absence of an explicit

topic, the *implicit* topic is taken to be the negation of the whole aber-containing sentence. What does presupposition formula (8) result in then? In no matter which proposition instantiates α, (8) results again in α and the alternative is entailed by σ. So the presupposition's role is *to ensure*, but not to determine the instantiation of the alternative α. Summing up, this means:

- In many cases, the presupposition (8) does not directly contribute any new piece of information to the current information state σ, which is subject to updating.
- What remains of (8) is: "Yet what does need to be accommodated is the alternativeness [. . .]. It seems, then, that we must recognize the possibility that the presupposition reduces to the requirement *that some alternative proposition follows from the context*." (Ibid., p 13, emphasis added)
- The presupposition itself does not deliver any linguistic criterion or logical constraint for accommodating its determinants here.

2.1.1.4 Discussion

Sæbø presents an elegant idea to derive the traditionally distinct interpretations concession and denial of expectation as conversational implicatures, departing from a common presupposition (scheme) for a contrastive lexeme like aber. Even the use of the lexeme labeled 'semantic opposition' by Lakoff (1971) is covered by presupposition (8). The differences among those three come about by the different ways of instantiating the presupposition's parameters. Nevertheless, instantiation becomes tricky where information structuring of the involved sentences does not directly support the process of instantiation. I.e., if it is not possible to derive the contribution of aber from expressions occurring in the aber-containing sentence and the sentence preceding it, the presupposition itself cannot *determine* it.

So, a weak point seems to be the derivation of an 'implicit topic'—and to choose one among a bunch of alternatives one can possibly think of. The maxim of relevance, related merely to *informativity* of linguistic contributions, as Sæbø is inclined to do, is not a sufficient selection principle. Where an alternative expression is at hand, e.g. by way of parallel sentence structures (cf. (6)), the presupposition contributes a piece of information[11]—but still: What does motivate the reader to choose one particular alternative and not some other one instead? Sæbø is aware of the contingency of the relevance of contrast on specific utterance situations. But he does not elaborate on a systematic connection between relevance and contrast, e.g. by introducing a 'goal' as an integral part of the utterance situation which might supply a perspective for contrast.

Moreover, utterance situations are not taken into account at all. Neither are information structures—with the exception that on the basis of a preceding

[11] It can be argued, however, whether this is in fact *additional* information that is not already entailed by σ.

sentence, a topic, which is a resumed expression, can be defined. Also, we should want to keep in mind the parallel of the presupposition's contribution and an exhaustive interpretation (see p 14).

In this discussion and the examples we considered in the cause of it, various explicit embeddings of propositions have been noticed. But their treatment or role w.r.t. contrast was not consistent, see (1) versus (15). I want to suggest that their role is essential not only for determining what aber amounts to, but that these embeddings should also be *inherent* in a more appropriate concept of contrast. So, instead of following Sæbø in treating (1) differently to (15)[12], we might look for a common analysis of such instances on the basis of the involved embeddings.

Therefore, let me come back to (9) on page 17. We saw: Assuming "der Lokführer mußte das Haltesignal aus dieser Entfernung gesehen haben" (i.e. modulo counterfactuality, "mußte" instead of "müßte") to be a rule's antecedent fits a denial of expectation analysis of (9) perfectly. This is a clue that there are perspectives involved which can be expressed by e.g. counterfactual contexts. Those perspectives of the two sentences in (9) can be specified by different (local) models: There is a model for the domain of counterfactual worlds, participating in the interpretation of the first sentence; and there is a model for actual worlds for the second sentence. Let me sketch how contrast might be understood then. The interpretation of the modal necessity operator takes place *relative to the set of counterfactual worlds only*. Then, given an evaluation of necessity under this accessibility restriction, this resulting new information state does not support any world where "der Lokführer hat das Haltesignal *nicht* gesehen" is true. All this is still to be executed within a model for the domain of counterfactual worlds. So, by way of the (counterfactually embedded) modal statement of the first sentence, and not leaving the counterfactual model, one is forced to infer "der Lokführer hat das Haltesignal gesehen", of course.[13]

By leaving the model for the following sentence's interpretation, this expectation cannot become effective on the part of a hearer of (9). So, the proposition of the second sentence, which is now evaluated within *a model assigned to the actual state of affairs*, denies the expectation which was due to a different background / model. The change of the model (i) avoids contradiction in this case and (ii) allows us to assign perspectives which differ in the expectations they raise. What I want to argue for here is not that the common meaning of aber is to be stated in terms of expectations. Rather, a shift across modal contexts might preserve contradiction of propositions or antomymy of predicates as an inherent property of contrast. And concerning the rather vague terminus technicus 'denial of expectation', the discussion shows how important it is to reflect on the origin and assignment of 'expectation' w.r.t. participants, perspectives, models, etc. in discourse.

[12] Resulting in the effect that the latter is compatible with a denial of expectation interpretation, while (1) is not.

[13] 'Expectation' corresponds to logical entailment here.

2.2 A Topic-related Approach

To begin with, it is worth distinguishing between contrast as a discourse relation and a notion of contrast that is involved in the construction of alternative sets. Alternative sets over scoped expressions have been employed as a way to describe presuppositional content of scope-spanning particles, e.g. too—cf. Rooth (1985). Presuppositions again are a way to describe contextual restrictions for the use of such sentences containing these particles. Accordingly, a sentence's (α) interface to context, its 'focus semantic value' $[\![\alpha]\!]^f$, can be defined. It is the set of alternative propositions which originate from the sentence's semantic value by substituting alternatives for the focus constituent. The alternatives are entities of the very focus constituent's semantic type, e.g. individuals. Besides by semantic type, the alternative's domain may be restricted further by context. However, nothing can be said about how specific a set of alternatives is in a given context.

In the discussion to follow, relevant concepts are sentence topic or sentence focus; they can be marked by means of intonational accentuation, as we will see. I also will describe in short what is meant by 'contrastive topic', following Büring (1999, p 145). What is 'focus'? Assuming that there is (a possibly implicit) corresponding question to an assertion, which consists of a *focus* and its *background*, focus can be defined as that constituent of the assertion that was asked about, i.e. the part that corresponds e.g. to the wh-constituent. The other part of the assertion, the background, corresponds to the content of the question. A *sentence topic*, then, is part of the background. It can be topicalised by grammatical means, e.g. by fronting (as for). In instances of '*contrastive topic*', an alternative of the same semantic type substitutes for the topical constituent. This means that, in a strict sense, not the actually corresponding question is answered, but a modified one that is concerned with the alternative instead. This deviation from the current question has to be marked—an unmarked deviation from the actual question would result in infelicity otherwise. It is time for an example, viz. (17) (ibid.):

(17) A: Do you think that Fritz would buy this suit?
B: Well $[\text{I}]_T$ certainly $[\text{WOULDN'T}]_F$.[14]

Capitals indicate intonational accentuation; topic (T) and focus constituents (F) are square-bracketed. In the present case, the accentuated constituent exactly corresponds to the topic/focus constituent.

2.2.1 Umbach (2001)

In her paper "Contrast and Contrastive Topic" (2001), Umbach gives an account of the meaning of but where context is parameterised by questions. The context for the examined assertive but-conjunctions is dialogical, and it is delimited to the immediately preceding question. That is, context consists of a

[14] Capitals indicate intonational accentuation; topic (T) and focus constituents (F) are square-bracketed. In the present case, the accentuated constituent exactly corresponds to the topic/focus constituent.

minimal question–answer discourse here. Furthermore, this idealised model of context suggests—as I think—a representation within a framework of information structure. Essential to Umbach's analysis is a distributional difference between conjunctions but vs. and in conjoined answers w.r.t. their pairwise preceding conjoined questions. The observations lead to an explanation that aims at unifying the traditionally diverging uses of 'semantic opposition', 'denial of expectation', and 'topic change'. Two claims concern the focus sensitivity of but and the denial property w.r.t. a question.

In ex (18)—examples (18) to (22) are taken from Umbach (2001)—, B answers the question completely, while in ex (19) the answer is "over-informative"; already the first conjunct is a complete answer. In the examples below, the marking of topic (*T*) and focus constituent (*F*) in brackets is added, following Büring (1999); accentuation of topic and focus (capitals) is according to Umbach (2001). According to Büring (1999, p 144) and the notation of Pierrehumbert (1980), the phonetic realisation of topic marking in an English sentence would be done by a *rising* pitch contour (L-H*), whereas a focus would be realised by a *falling* pitch contour (H-L*). The distributional difference between but and and (as in (19)B) seems to correlate with over-informativity of the answer, entailing information about an additional topic.

(18) A: What did the children do today?
B: The [SMALL]$_T$ children [stayed at HOME]$_F$ and/but the [BIGGER]$_T$ ones [went to the zoo]$_F$.

(19) A: What did the small children do today?
B: The [SMALL]$_T$ children [stayed at HOME]$_F$ *and/but the [BIGGER]$_T$ ones [went to the zoo]$_F$.

But how can we say that—despite being over-informative—(19)B still is an answer to (19)A? The problem with (19) is that the topics are focused (accentuated) but do not mark a partial answer, as suggested by Krifka (1999).[15] Concerning (19)A's question, the topics are not congruent with it, while in (18) they are: Both topics mark a partial answer here. In other words, the alternative set spanned by a *contrastive topic* has not yet been introduced (by the question). In the context under consideration in (19), the second topic really is an *additional* topic. And while topics in (19)B correspond to each other, there is no complete congruence of B with question A.

[15] According to Krifka, (i) '*congruence*' of an answer with a question is defined relative to the focus within the *comment* (i.e. the non-topical part of the answer, written as C_F). With a question concept due to Hamblin (1973)—defined as the set of possible (not necessarily exhaustive) answers—, congruence of an answer with a question Q basically means that the result of substituting an alternative for the focused comment constituent C_F of the answer entails a proposition in Q. The set of the relevant domain which the question constituent quantifies over and the answer's focus alternative set are identically equal; answer focus and question are in tune.
(ii) A *'partial congruent answer'* is defined relative to an alternative set as well; roughly, it is an answer s.t. the result of a substitution is entailed by a proposition in Q.
(iii) A '*contrastive topic*' (i.e. a focus within the sentence topic C_T) in the answer does extend partiality in two ways. It introduces a second alternative set and indicates that there are substitutions (of $C_T \times C_F$) which do entail a *true* proposition in Q. That is, a contrastive topic indicates that there are other true answers by replacing $C_T \times C_F$ in the given answer.

As a way out, Umbach proposes an implicit question to play a role in such cases. Why does an implicit question matter? An implicit question could turn answer (19)B into a congruent one. Then the topical constituents smaller and bigger indicate partiality of each of the conjoined answers and so we would get rid of the second topic bigger as an additional one. This implicit question, which can easily be reconstructed from answer (19)B, is called 'quaestio'. Because even so-called over-informative but-introduced answers become felicitous under this perspective, answer–question congruence becomes a matter of extension through an implicit quaestio: If their quaestio entails the question, all answers are congruent with a question. This amounts to stating that also every direct but over-informative answer is congruent as long as it completely answers the (explicit) question. For the further analysis, answers are taken to be congruent and complete; thereby they are not over-informative. So, in effect, only *quaestio*-answer pairs are considered.

Besides the distributional difference w.r.t. and , which other premises are there in Umbach's analysis? The meanings of the conjoined partial answers (and of but-conjoined sentences in general) cannot by themselves figure as source of the contrast and they cannot be identified with the contrastive meaning of but . On the other hand, Umbach also rejects common world knowledge or default knowledge as parameters in the definiens of but. And as far as traditional 'denial of expectation' analyses of but utilise sentence meanings and default world knowledge (in order to derive expectation), those analyses are not appropriate either.[16] This is so due to the following reasons:

- There are instances where a derivation of an expectation is intuitively possible even without previous knowledge about some of the conjuncts' denotations. The possibility to do so is ascribed to the contrast marker but . E.g., the hearer's interpretation of (20) below would entail that the speaker also conveyed that it was probable or expected to find "loosestrife" in July. I.e., (20) induces an expectation even if the hearer has no idea of what "loosstrife" might be; a denial of expectation interpretation seems obvious:

  (20) It was July but we couldn't find any loosestrife.

- When altering the linguistic embedding of conjoined sentences which refer to the same situation each time, it is implausible why the differently embedded sentences can trigger different expectations. See the embedding questions in (21) and (22). In principle, answer (21)B cannot be distinguished in content from (22)B and, what is more, both answers describe the same situation. Only the distribution of the information among the first and the second answer's conjunct differ. It means that a strictly conjunct-oriented derivation of contrast seems inappropriate.

[16] For a world knowledge based account see Asher (1993). Winter & Rimon (1994) abstract from the conjuncts' inner structure and parameterise the propositions as a whole. The conjuncts are propositional parameters in an elaborate implication mechanism for propositional possible world semantics to define the contrast relation, but they do not try to spell out which kind of world domain 'expectations' actually relate to.

(21) A: Have all of the participants been affected by the accident?
B: Jeffrey is dead and Katherine is seriously injured, but Almasy is unhurt.

(22) A: Do all of the participants need a doctor?
B: Jeffrey is dead and Almasy is unhurt, Katherine is seriously injured.

Umbach (2001) concludes that an appropriate account has to be based on the assumption that contrast can depend neither on world knowledge nor on the conjuncts' meanings alone. Instead, it is suggested that but triggers and contributes a *presupposition* to the meaning of the conjuncts: Contrast is seen as a specific case of context restriction of an utterance. At the same time, the *descriptive content* of contrast is assumed to be an expectation in the traditional sense. 'Expectation' is implicitly meant to be epistemic expectation. This term will be exemplified for minimal question–answer discourses, but 'epistemic expectation' will not be determined in general.

So now the question is *how* something like 'expectation' can be given content and how it can be construed, especially when accommodating the presupposition in case it is not yet entailed by the preceding discourse.

2.2.1.1 The Role of Focus and Alternative Sets

Departing from two observations of specific classes of instances, see below, Umbach (2001) presents a focus-semantic analysis, which is then generalised. Starting point are these suppositions:

a) Given a sentence bearing a focused, i.e. accentuated, constituent and being introduced by but , it is assumed that the focused constituent induces an alternative set and that this alternative set plays a role when interpreting but , i.e. contrast. Evidence comes from the fact that the interpretation of such instances intuitively differs with respect to the particular constituent that is focused. Cf. (23) vs. (24) :

(23) ... but Bill has washed the DISHES.[17]

(24) ... but BILL has washed the dishes.

b) Let the quaestio of a but-conjoined (complete) answer—which is congruent with the quaestio—be two conjoined, explicit polar questions. Then a nearly complementary distribution of and vs. but with respect to the answer patterns given below can be observed. It means that in an answer like "(Yes,) John cleared up his room and (, yes,) he washed the dishes" (pattern (26)), but is *not* acceptable.[18] Generalising the observation, it means that a but-conjoined answer must imply strictly one partial denial:

[17] Ibid., p 7.

[18] A direct answer "yes" is a confirmation, whereas "no" is a denial, both w.r.t. a plain positive polar question w/o a negated predicate nor polarity items. A negative answer does not necessarily bear overt negation. For an answer to be negative, it is sufficient that its predicate is complementary to the question predicate.
Note that the use of and as conjunction of contrary answers—as in " 'yes' and 'no' " or in " 'no' and 'yes' "—is not totally unacceptable; however, it is "at least marked" (ibid., p 7).

(25) "yes" and "yes"

(26) #"yes" but "yes"

(27) #"no" but "no"

(28) "yes" but "no"

(29) "no" but "yes"

Item (a) is an intuitive assumption under the condition that the first sentence / conjunct[19] is comparable to the second one: In each one there is a focused constituent; additionally, their foci are also "corresponding foci (in the first and in the second conjunct, respectively) which establish alternatives with respect to each other." [20]

But how does but interact with focused constituents and their alternative sets? In particular, Umbach examines the use of but in complete answers to polar questions, i.e. patterns as given by (28)—answers with a "confirm + deny characteristics".[21] There may be just one or two focused constituents in each conjunct. In fact, in most of the cases it is a 'regular focus', i.e. a single sentence focus, which then determines the focus–background partition of the declarative sentence. So, if there is just one focus in the but-conjoined sentence, then there is also just one possible constituent but can be associated with. If there are two foci in a sentence, but is associated with the focused topic, i.e. the contrastive topic. The major issues here are (i) the induction of an alternative set for the focus that is associated with but and (ii) the role this alternative set plays in the construal of what has to be accommodated as but's meaning component 'contrast'.

In the simpler case of corresponding regular sentence foci with a confirm + deny characteristics (pattern (28)), the denial relates to the first conjunct C_1 in this way: The denial is the negation of C_1 after a substitution of an alternative for the focused constituent C_F of C_1 .[22] As a result, the meaning of but comprises three components: The two conjuncts' meanings—do not forget that, besides its specific contrast meaning, but is still a conjunction—and the so-called *denial condition* (boxed part), which is the mentioned negation:

[19] Comma and full stop are taken as orthographic variants here. The name for one (of the two) sentential relatees of but will arbitrarily alternate between 'sentence' and 'conjunct'.

[20] Ibid., p 8.

[21] Note that for pattern (29), the results of this analysis are said to apply analogously.

[22] 'Focus alternative set' originally is due to Rooth (1985). Both conjuncts C_1 and C_2 are 'contrasting phrases' (Rooth 1992), i.e., the ordinary semantic value of C_2 is element of the focus semantic value of C_1 : $[\![C_2]\!]^o \in [\![C_1]\!]^f$. The description of the denial condition itself (Umbach 2001, pp 8,11) does not explicitly refer to focus alternative sets, but it makes use of an equivalent concept: "[O]ne of the alternatives renders a true proposition and the other one is denied with respect to the first alternative's background."

(30) $[\![C_1]\!]^o \wedge [\![C_2]\!]^o \wedge \boxed{\neg[\![\, C_1[C_F/EA]\,]\!]}$, where:

a) $EA \in [\![C_F]\!]^f$ is the 'expected alternative', and

b) $C_1[C_F/EA]$ is the result of substituting (the semantic entity) EA for the meaning component of the focused constituent C_F in the first conjunct C_1.[23]

The purport of the distinction between the four cases (A)–(D) below is the introduction of the denial condition as a general principle for the use of but. In all of the cases, the second conjunct is partly a repeat of the first conjunct: The second conjunct repeats the background (i.e. the non-focused part) of the first conjunct. This can easily be seen in (A), (31)[24], and in (B), (32), which bear regular foci. However, the background of C_1 does not have to be realised overtly in C_2.

A) Same subjects, predicates differ:

(31) A: Did John both clear up his room and wash the dishes?
B: John [cleared up his ROOM]$_F$, but he [didn't wash the DISHES]$_F$.
B′: John [cleared up his ROOM]$_F$, but he [skipped the WASHING-UP]$_F$.

$\neg[\![\, C_1[C_F/EA]\,]\!] = [\![$"It is not the case that John washed the dishes"$]\!]$

B) Same predicates, subjects differ:

(32) A: Did both John and Bill clear up their rooms?
B: [JOHN]$_F$ cleared up his room, but [BILL]$_F$ didn't.

$\neg[\![\, C_1[C_F/EA]\,]\!] = [\![$"It is not the case that Bill cleared up his room"$]\!]$

C) Subjects and predicates differ, predicates being comparable:

(33) A: Did both John and Bill clear up their room?
B: [JOHN]$_T$ [cleared up his ROOM]$_F$, but [BILL]$_T$ [did the DISHES]$_F$.

$\neg[\![\, C_1[C_F/EA]\,]\!] = [\![$"It is not the case that John washed the dishes"$]\!]$

D) Subjects and predicates differ, predicates being not comparable:

(34) A: Is it raining, and are we going to stay at home?
A′: Is it raining, and are we going to go for a walk?
B: [It is raining]$_F$, but [we are going to go for a walk]$_F$.

$\neg[\![\, C_1[C_F/EA]\,]\!] = [\![$"It is not the case that we are going to stay at home"$]\!]$[25]

[23] In this form, the definition—in particular the boxed denial condition—only covers answers with a confirm + deny characteristics.

[24] Examples are according to Umbach (2001, pp 9f); brackets for topic and focus constituents are added. The denial condition $\neg[\![\, C_1[C_F/EA]\,]\!]$ is paraphrased.

[25] This provisionally depicts just one possibility to instantiate EA; here the denial condition is computed w.r.t. A. Later, on pages 29ff, I will discuss the difficulties which arise here.

Let us have a look at case (A). In (31)B, the predicate "didn't wash the dishes" is the focus constituent associated with but. It induces an alternative set with elements of type predicate. The focus of the preceding conjunct is a corresponding one: So both alternative sets conflate. The background of both conjuncts is the subject "John", which they have in common. The denial condition is met: (i) The but-introduced second conjunct is a congruent partial negative answer to the quaestio. (ii) $[\![C_2]\!]$ itself entails that the expected alternative ("did wash the dishes") does not hold true of "John", the background of C_1. This entailment is even semantically valid here, because the denial condition is realised explicitly in C_2. For (31)B'—another possible congruent answer to A—, the negation of the denial condition would have to be reconstructed; this obligatory step is easy to achieve for this instance. But note that B' is no answer to "Did John clear up his room and skip washing the dishes?", since it would not be any denial to this quaestio. On the other hand, however, the denial condition of but does not depend on overt negation.

Whenever a *focused topic* is available, the topic, instead of the regular focus, is associated with but, cf. (C).[26] Here, accommodation and resolution of the denial condition would actually *increase* the amount of information conveyed by the literal meaning of the conjuncts. Interestingly, if we want to describe the effect of contrast in other words, in this case the denial condition alternatively comes about by construing C_1 *exhaustively w.r.t. the predicates' alternative set as the domain under consideration*, i.e., by interpreting C_1 exhaustively w.r.t. the set {"did clear up the room"; "did wash up the dishes"}: Stating in C_1 that John did clear up his room entails that he did not do anything else among the other alternatives besides that, and so did not wash the dishes either. This is exactly what the denial condition in (33) says. All additional propositions induced by an exhaustive interpretation like that have the topic constituent in common and vary in their focus constituents. This finding is also true for (C) if the contrastive topics are arranged crosswise: [27]

(35) A: Did John both clear up his room and wash the dishes?
B: [JOHN]$_T$ [cleared up his ROOM]$_F$, but [BILL]$_F$ [did the DISHES]$_T$.

$\neg[\![\, C_1[C_F/\mathrm{EA}]\,]\!] = [\![$"It is not the case that John washed the dishes"$]\!]$

Note that but associates with focus here, since the topics are not contrastive. The topics do not correspond to each other and so do not set up a common alternative set, although the semantic types of the topics "washing the dishes" and "John" could be generalised. With (35) as well as with (33), the

[26] Ibid., p 10. Of course, there has to be a corresponding topic (contrastive topic) in the preceding conjunct, too. Contrastive topics can also be arranged in a 'crossed' way, besides their 'parallel' arrangement in (33)B, cf. (35).

[27] Note that the quaestio is a different one, as compared to parallelly arranged contrastive topics like in (33)B. This time the focus' alternative set (of C_2) is determined by the *topic* of C_1, not by the focus of C_1. Apparently, the hearer cannot rely on strictly corresponding topic constituents, i.e., on contrastive topics, in order to set up a common alternative set for C_1 and C_2. For C_2 to be in accordance with the denial condition and, therefore, to be a negative answer to "Did John wash the dishes?", we must interpret C_2 exhaustively w.r.t. a set of mutually excluding answers like {"It was John who washed the dishes"; "It was Bill who washed the dishes"; "It was John and Bill who washed the dishes"}.

exhaustive interpretation of C_1 is inherent in the denial condition. We can say that across the instances of but at hand, the respective constituent of C_2 that belongs to the contextually relevant alternative set may vary. However, all the instances have in common that (i) there is a previously (prior to C_2) introduced alternative set and that (ii) a constituent of C_2 corresponds with this alternative set; this may be the topic constituent but more often seems to be the comment part of the sentence. I will come back to exhaustivity in the conclusion.

It has been stated that (33), case (C), bears an additional topic if the explicit question is not about both topicalised constituents, cf. (19). The additional topic has been justified in terms of the distinction quaestio vs. explicit question. Reply (33)B is sound, because it is embedded not only in the context of A, but also in a corresponding quaestio context. And because the quaestio is the (potentially implicit) question the answerer refers to and because it can be reconstructed from the complete answer, Umbach (2001) explains and justifies such answers that introduce an additional topic on the grounds of *relevance considerations* of speaker B. *Why* an additional topic might seem relevant to an answerer is not investigated any further.

Even if we assume that a reconstruction of the denial condition based on alternative sets and the denial of an appropriate quaestio is plausible for the instances we have seen so far in (A) to (C), the last case (D) will make the matter puzzling. The difficulty, as I see it, is to instantiate the variables in the denial condition appropriately, with not many clues being available. I.e., adding descriptive content to this presupposition or, under a different perspective, making e.g. (34)B a congruent answer to some quaestio, is not a straightforward procedure. Because there might be no resumption of material of C_1 by which we can instantiate the denial condition, it now becomes clear that the denial condition is in fact a *context restriction*. Context, then, is the only remaining source of information in order to reconstruct the (proposition-valued) expected alternative, because for all instances of (34) it holds that:

(36) $\neg[\![\, C_1[C_F/EA]\,]\!] = \neg EA$

This is so because C_1 as a whole is subject to the substitution ($C_F = C_1$). When updating a common ground with (34)B, the expected alternative EA, of which the negation has to hold, has to be supplied.[28]

The appropriateness of quaestiones for contrastive utterances of type (D) will in 2.2.1.2 raise the issue of the kind of contradiction that exists between EA and C_1 . For now, I just want to point out how Umbach's theory relates to appropriate contexts with (34)B : We have seen that we cannot learn anything from the denial condition about the expected alternative EA itself. — So where to get EA from? (Again, material to be resumed is not available for this purpose, see (36) : The denial condition reduces to ¬EA in (D).)

[28] This can happen either way: Either a suitable accessible propositional antecedent can be found at the current stage of discourse, so the context does supply it—i.e., by way of presupposition satisfaction—, or it has to be possible to reconstruct and to accommodate the expected alternative's proposition—i.e., by way of presupposition accommodation. (However, the problem of modelling the non-factuality of this proposition for the sake of discourse consistency arises, because EA is actually denied. A *modal embedding* could be called for here.)

The denial character of C_2 and the answer–quaestio congruence will be a clue. The infelicity of (34)A′ as a quaestio for B is in accordance with the denial character a but-conjoined sentence generally is claimed to have.[29] Within the explanation framework of Umbach (2001), this aspect offers one possibility to infer *a particular* EA: The but-conjunct can be considered as the direct denial of some quaestio *?*Q .

Because it is also assumed that the focus of C_2 induces an alternative set (of which EA is an element), it can be concluded that $[\![C_2]\!]^o \in [\![C_F]\!]^f$ holds.[30] In other words, C_2 describes one of the relevant alternatives. So, can $[\![C_2]\!]^o$ be the expected alternative EA? It cannot, because the denial condition here says that ¬EA has to hold, see (36). But if we understand alternatives as *meaning complements*, also ¬EA is element of the alternative set. If we agree on this, there is not much choice left: We must choose $\neg EA = [\![C_2]\!]^o$, then. The advantage is that this coincides with the denial condition that ¬EA is entailed by the discourse once having updated with (34)B (and having resolved the denial condition this way)—whithout having to accommodate additional material.

The quaestio for conjunction (34)B would then entail a question of the form *?*EA .[31] At this stage of argument there is an objection to put forward. As Umbach's example of sequence (34)A + B shows, *?*EA may not be the only possibility of setting up a proper quaestio:

Apparently, "going for a walk" is a denial of "staying at home" at all events. The answer decides the issue "staying at home", although both propositions are not complementary.[32] Both propositions are mutually excluding for semantic reasons. But in order to be an adequate answer in a given context including the quaestio, a general requirement an exhaustive answer must meet is that—once the answer has been stated—no other possibility of all possibilities under consideration is left anymore. Under this perspective, the problem arises again: On what basis is "going for a walk" an adequate answer to (34)A ? In other words, why is it that only one of "staying at home" and "going for a walk" should hold at a time? The solution to this puzzle seems to lie in the question context that is supposed. Consequently, "it is not the case that we are going to go for a walk" —just like "it is not the case that we are going to stay at home" —could be a possible EA in that case.

[29] Keep in mind that by arranging the conjuncts in reverse order they exhibit a deny + confirm characteristics s.t. the first conjunct plays the denying role in the answer.

[30] Because C_1 and C_2 bear corresponding foci (remember that C_1 and C_2 are said to have contrastive foci), the alternative set $[\![C_F]\!]^f$ of C_1 is also relevant to C_2 . Thus, $[\![C_F]\!]^f$ and $[\![C_2]\!]^f$ describe a common alternative set s.t. $[\![C_2]\!]^o \in [\![C_F]\!]^f$.

[31] Admittedly, the notation is crude, because I said in (30) that EA stands for a *semantic entity* of type proposition, not for an expression. But since the problem of semantic equivalence of $[\![?Q]\!]$ and $[\![?\neg Q]\!]$ that arises in the partition semantic approach to questions (Groenendijk & Stokhof 1984) is neglected here, this is not a crucial issue: So we may regard *?*EA as a question of the form s.t. its negative answer "no" is equivalent to ¬EA .

[32] For "going for a walk" to be an adequate denial, it is sufficient that its proposition does not overlap with "staying at home"; it is not necessary that $\neg[\![\text{"staying at home"}]\!] \models [\![\text{"going for a walk"}]\!]$: The negative answer given here is over-informative.

The described procedure for reconstructing EA is not made explicit by Umbach (2001, p 10).[33] In summary, the theory of contrast, especially its denial condition, imposes strong limitations on the choice of the descriptive content of EA in the general case (D): It always chooses the *semantic complement* of $[\![C_2]\!]^o$. An appropriate utterance context must, according to the theory, include a quaestio of which C_2 is a direct denial, that is, the partition $\{[\![C_2]\!]^o; \neg[\![C_2]\!]^o\}$ must be at stake. As I will point out, this restricts the applicability of the theory further.

2.2.1.2 Discussion

The discussion so far revealed that all the parameters for determining contrast in the form of the denial condition are bound to sentences C_1 and C_2. In that sense Umbach's account is structure-oriented: Common to all distinguished cases (A) to (D) is the explicit givenness of the expected alternative EA, which is one parameter of the denial condition. Either EA is an expression in C_2; or, in the case of (D), EA is given by way of the semantic complement of $[\![C_2]\!]$.The denial condition is even identically equal to $[\![C_2]\!]$ for (A) and (B). Similarly also for (D): We saw that ¬EA can be instantiated by $[\![C_2]\!]$.

Context, on the other hand, comes into play via a quaestio–answer relation, which is assumed to hold for any but-conjunction: Although the reconstruction of the denial condition rests on a structural analysis, one of the conjuncts must comprise a denial to (one part of) a quaestio. The quaestio is implicit in the sense that is does not have to conflate with an overt question corresponding with the answer. But the quaestio is tied to the question: It must *entail* the question. The motive for introducing a question has been the acceptability of an over-informative answer w.r.t. an overt question, cf. (19).

Let us keep three consequences in mind:

1. Except for but-conjuncts with focused topic, viz. (C), there is no additional descriptive content that the denial condition contributes in addition to the asserted (and other presupposed) components of C_1 and C_2. This is true for (D) also:

2. As concerns the EA component of the explanation, it is given by C_2, too: In (A), (B), and (C), the expected alternative is a constituent of sentence C_2. As for (D), EA is equal to $[\![C_2]\!]$ modulo negation.[34] That is, EA is not induced contextually but is regarded as given explicitly through the conjuncts; this means that no explanation of the notion 'expectation' has been accomplished.

3. The only fruitful relation between context and a but-conjunction has been the quaestio–answer relation. The denial condition in (30) is based on the

[33] "If there is no explicit negation in one of the conjuncts, e.g. [(34)B], it has to be reconstructed."

[34] As we have seen on page 30, the only possibility to infer EA and to instantiate it in a theory-driven way is to state that ¬EA = $[\![C_2]\!]$.

justified supposition that the but-conjunction entails a partial negative reply to a contextual question, the quaestio.[35]

In section (i.) , I will elaborate on the givenness of the components which are claimed to make up the meaning of contrast, see items 1 and 2. Which further consequences do emerge? Case (D), ex (34), will be considered again. In (ii.) , p 35, I will focus on the restricted applicability of the theory. (iii.) , p 35, will take up a coincidence of the contrast interpretation with exhaustive interpretation.

(i.) Givenness and Context. Instances of type (D) have shown that the assumed answer–quaestio congruence is essential for determining EA and for the denial condition. Under this assumption, we said that EA and the denial condition are ensured through the conjuncts. So far, so good. But sequence (34)A + B disclosed that there are acceptable deviations from a *strict* answer–quaestio congruence, it seems. To be able to deal with this, I propose to draw two consequences which amount to different strategies for instantiating ¬EA ; in any case, ¬EA = $[\![C_2]\!]^o$ is supposed to hold.[36]

α) The condition of strict congruence between C_2 and possible quaestiones is too strong. However, let us stick to the answer–question relation.
Then the next issue should be to *refine* the congruence relation and to regard C_2 as being correlated even to questions which it is able to solve in a broader sense. A strong argument for giving up the strict semantic congruence of a 'denying answer' C_2 with the corresponding 'denied' question has to do with the inherent dialogue character of the instances we are dealing with here. Question and answer are attributed to different discourse participants, i.e., to the questioner and the answerer. But both participants can have differing representations of the issue, which was introduced by question A. E.g., the answerer can have a different set of potentially resolving propositions in mind—a partition of the set of the overall still possible worlds—that might be orthogonal to and does not match exactly with the original question's partition, but which nevertheless is suited to decide the question as well. For illustration, let us stick to example (34). There are two independent bipartitions; one bipartition is immediately related to the explicit question A, $\{p_A; \neg p_A\}$; the other one is *directly* decided by the answer C_2 . Since C_2 also answers the explicit question ($[\![C_2]\!] \models \neg[\![$"we are going to stay at home"$]\!]$), there must be one partition cell of A, p_A , s.t. $[\![C_2]\!] \subseteq p_A$ (in terms of possible worlds) :

- The answer put forward by B is—by way of semantic entailment—also a solution to A, see the position of the shaded set $[\![C_2]\!]$ within p_A , figure 2.1 .

[35] Again, this is valid for but-conjunctions with confirm + denial characteristics only. I will not go into the potential difficulties which emerge when analysing answers of a denial + confirm characteristics. Determining which conjunct embodies a denial might not be trivial if neither C_1 nor C_2 is bearing overt negation and the quaestio has to be reconstructed, cf. (30). Different instantiations of the denial condition or even of EA would result in that case, see e.g. (31)B' or (34)B.

[36] Cf. (*β*).

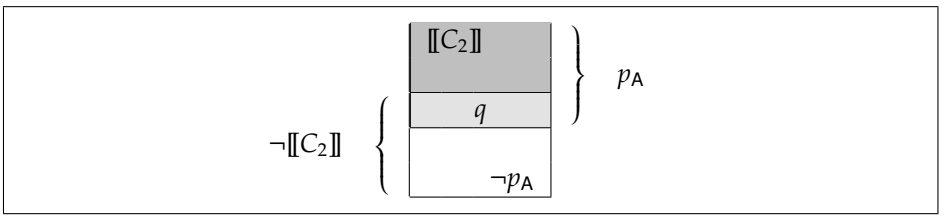

Figure 2.1: Mismatch between the posed vs. the question directly addressed by C_2.

– Vice versa, the original question's partition $\{p_A; \neg p_A\}$ cannot be reconstructed, given (the denial) "we are going to go for a walk" and "we are going to go for a walk". In other words, the hearer cannot resolve the possible quaestio context that answerer B actually refers to with his reply. (Note that the set $\neg[\![C_2]\!]$ is larger than $\neg p_A$ in q, fig. 2.1.)

β) Neglect context and the congruence to a quaestio. Instead, ¬EA is determined by way of what it refers to, as a denied 'expected alternative'. What is the definiens of EA?
The issue should be to find an appropriate definition for 'expectation' and the related domain of 'alternatives'. Starting point again is $\sim$EA = $[\![C_2]\!]$.[37] So, (i) which alternatives does the corresponding focus alternative set of C_1 provide? And (ii) which alternative is both 'expected' and subsequently denied by $[\![C_2]\!]$? Nota bene: When talking about the *denial of expectations*, negation in $\sim$EA = $[\![C_2]\!]$ is supposed to deviate from logical denial in general. Thus, EA cannot be concluded from the entailment above, because *double-negation elimination* apparently does not hold.[38]
The essential point here is that to determine what 'denied expectation' amounts to—and in particular to determine q—, one has to have recourse to non-linguistic knowledge. This leads to a type of denial/negation that apparently differs from the denial utilised in Umbach's analysis of contrast.

But why should we pay much attention to such deviations between questions and answers at all? Because answering in an indirect way is the rule rather than the exception, I think. And the reason for an answerer to decide an issue by way of referring to an orthogonal partition can be manifold. Mentioning some possibilities surely is accidental and ad hoc. Another example next to the discussion of (34), item (α), might be helpful to get a general idea of it, though.

[37] "$\sim$" is a general negation operation, which substitutes for "¬".

[38] If we consider quaestio A to be acceptable embedding of B and if we say that, for the sake of argument, its proposition "we are going to stay at home" thus represents an appropriate expectation relevant for B, then we see that EA $\neq \neg[\![C_2]\!]$, i.e., the denial of expectations, "$\sim$", is not a classical logical negation: From $\neg[\![C_2]\!]$ ("it is not the case that we are going to go for a walk") one cannot entail that "we are going to stay at home"; because, from a strictly semantic point of view, there are other logical possibilities not to go for a walk and at the same time not to stay at home. Those are the possibilities in q, see fig. 2.1.

(37) A: Do you want to stay at home?
B: We want to go to the playground this afternoon.

The way the issue in (37)A is decided by B might not so much depend on the partition {"we want to stay at home"; "it is not the case that we want to stay at home"} but rather on the fact that playing on the playground is preferred among all other alternatives. Staying at home or not is not the essential issue for the children's wish to be on the playground—it is not the decisive issue, so to speak. Rather, issue A is 'decided' in the aftermath, as *factual* consequence e.g. of the desire to go to the playground. For the children, the partition corresponding to question A might actually not be a clue as to what to decide for.

Indeed, it seems that the matter is more complicated: Is question A really decided by uttering B? I.e., do the children also *want* to go outside if they want to go to the playground? (This is what a decision about A by way of B would require.)[39] But generally, we can say that figure 2.1 applies here, too.

After this digression, let us return to (α) and (β). It remains to say that the underlying hidden, exclusive recourse to world knowledge and to the meaning of the conjuncts clearly is something that Umbach (2001, p 6) argues against.[40] But let us keep in mind that it nevertheless seems necessary to utilise either non-linguistic knowledge or an extended concept of answerhood for a comprehensive account of contrast as indicated by but. In (α') and (β') I propose two principal approaches or programmes to pursue the meaning of contrast, which are implications of my review of the analysis at hand (Umbach 2001) in (α) and (β) above:

α') Explaining contrast by means of contextual restrictions w.r.t. a *linguistic* embedding:
Which questions are dealt with by an assertion? This amounts to determining a revised concept of answerhood beyond a strict answer–question congruence.[41] E.g., the uttered question A, $\{p_A; \neg p_A\}$, *is solved* by $[\![C_2]\!]$, although A does not coincide with the directly addressed question, which answer $[\![C_2]\!]$ is actually *congruent* with, namely $\{[\![C_2]\!]; \neg[\![C_2]\!]\}$. See fig. 2.1.

β') Explaining contrast independently of a linguistic embedding, e.g. when interpreting "C_1 but C_2" in an empty discourse, uttered out of the blue:

[39] This depends on the assumption of the participants as being rational or irrational agents and on the corresponding (propositional) modal logic underlying the predicate want (≡ "$\bigcirc$"). If the following rule is an axiom or theorem of the underlying logic, then B really decides A:

$$\frac{\bigcirc N \qquad N \rightarrow M}{\bigcirc M}$$

[40] "Both examples [i.e. (20), {(21); (22)}] make it plain that a contrastive relation is neither given by the meaning of the conjuncts nor induced by common world knowledge. The expectation denied by the use of but is obviously due to a question explicitly or implicitly posed by the preceeding discourse."

[41] NB: This does not necessarily imply the possibility to define an adequate concept in linguistic terms only. Cf. the concept of 'resolving a question' of Ginzburg (1995), where also an interlocutor's internal knowledge state and his reasoning capabilities are parameterised. Such a relation should apply e.g. to (34)A and B.

Then restrictions have to be derived from some source of non-linguistic knowledge, providing contrary 'expectations' for the propositions given.

(ii.) Scope of Explanation. Having discussed the more general case (D)—which comes without accentuated corresponding foci—, we have seen the correlation between EA and $[\![C_2]\!]$ that is required by the theory's denial condition: $\neg\text{EA} = [\![C_2]\!]$; the second conjunct contains a description of the expectation. Does this identity hold for any "general case" without corresponding foci? To go into this, let us take (38) and (39) as the two standard prototypical usage conditions of the contrast relation that is to hold—relative to some hypothesis H—between any two sentential entities A, B ($[\![A]\!] \neq [\![B]\!]$).[42] The implication is compatible with vague paraphrases like "normally implicates" or "lets expect" and is non-monotonic. It follows that for usage pattern in (38), the second conjunct is identically equal to the complement of expected H. For (39), it is not necessarily so. Thus, (39) subsumes (38). This precludes a contrast relation of usage pattern (39) from being explicated along the lines of the denial condition: The mechanism does not provide for hypothesising a different EA than $\neg[\![C_2]\!]$. Expressed in the parameters below, this means that $[\![H]\!] = \neg[\![B]\!]$.

(38) $A \wedge B \wedge (A \rightarrow \neg B)$

(39) $A \wedge B \wedge (A \rightarrow H) \wedge (B \rightarrow \neg H)$

(iii.) Exhaustivity. In the discussion of (33) and (C), we came across an alternative explanation for the denial condition. We said the denial condition coincides with an exhaustive interpretation of the first conjunct C_1: Given the relevant alternative set induced by its sentence focus, there is no other element of this set that can be substituted for the focus constituent in C_1 salva veritate. In other words, when uttering the first conjunct as the only (exhaustive) answer to the quaestio, it must be assumed to be a *complete* answer.[43] The completeness of an answer is relative to a domain of quantification. It can be given explicitly by the question[44] or can be subject to some implicit restriction, i.e., the restriction can be determined otherwise by context. The contribution of a (reconstructed) quaestio in this respect seems to be that of making restrictions overt—or even of extending the question domain, cf. the way the problem of an additional

[42] (38) renders the usage pattern that is involved in a denial of expectation use. (39) renders the pattern of a concessive use of but—see the characterisations of both uses in (A) and (B), p 11.

[43] This assumption about answers is inherent in the question concept of Groenendijk & Stokhof (1984): A question is formally characterised as an *overall and complete* partition (relative to the actual world of evaluation) of the set of currently possible worlds; answers in this sense are complete and the answers' propositions are distinct sets of worlds, which do not overlap. Bearing this formalisation of questions in mind, there is a theoretic preference for viewing also overtly partial answers in a way s.t. they may appear as complete answers. (The answer characteristics described above fit a so-called mention-all reading of wh-questions. Questions are regarded as ambiguous between this mention-all and a mention-some reading, according to Groenendijk & Stokhof (1984). Cf. van Rooy (1999), who tries to unify both readings on the grounds of additional context determination of a question by way of a decision problem and a measure of a corresponding relevance/utility of answers.)

[44] E.g., as a further descriptive restriction of the question's domain in the wh-phrase: Who *of those children* did play in the garden?

topic in C_2 has been explained away.[45] As was shown by van Rooy (2002, 2003a), the exhaustive interpretation with questions which were meant to be answered in a mention-all fashion boils down to a kind of information maximisation of the assertion on the part of the hearer: That one interpretation is chosen that reduces maximally the entropy, which the question's partition and a corresponding probability space imposes on a context set. In cases of (C), on the other hand, C_2 not only semantically entails the exhaustive interpretation of C_1 (with respect to relevant alternatives), but also adds information that is independent of information maximisation of C_1 .

What about the respective role of C_2 in (A), (B), and (D)? How does C_2 relate to an exhaustive interpretation or information maximisation of C_1 here? With regard to a previously induced alternative set, e.g. C_2 in (A) makes the exhaustive interpretation explicit, see ex (31)B. C_2 is entailed by the exhaustive interpretation of C_2 . The same is true of (B). Then what is the point of uttering C_2 ? We must not suppose that the utterance of C_2 is superfluous in the given context.

It cannot be the intention of a speaker to enable an exhaustive reading and an information maximising interpretation of his utterance C_1 , if the alternative set is previously given by context. This means that the purpose behind uttering C_2 must differ from just providing a direct answer to the second part of the quaestio. This might be an argument against the quaestio account; at least a quaestio seems to be an insufficient description of the context that is at stake in utterance situations of "C_1 , but C_2 ." However, Umbach's explanation for an "answerer's" motive for introducing an additional topic in C_2 may also serve as a clue to the motive for those C_2s which are superfluous under an exhaustive interpretation paradigm. So, it seems that in any case the speaker takes for granted some "relevance" when uttering C_2 (see p 29).

In addition to a denial of an exhaustive interpretation of C_1 , which is perhaps expected to be valid, the use of contrast might be due to some further relevance considerations concerning C_1 .

Contrast, as we have seen in this account, is made up of two components: an 'expectation' and the denial of a question. I want to conclude with a summarising obervation concerning the second component and the term 'contradiction'. Umbach (2001) expresses 'contrast' in terms of the denial condition. Here, the contradiction implied by 'contrast' is made overt by the negation in $\neg[\![\, C_1[C_F/\mathrm{EA}]\,]\!]$ for cases (A), (B), and (C), and—on the other hand—by negation in $\neg$EA for case (D). A discussion of the latter case led me to suggest, however, that this negation is not to be understood as classical logical negation or semantic complementing. This seems to hold both for a further analysis involving 'contradiction' w.r.t. world knowledge and also for employing a more *linguistic* context, i.e., for pursuing a 'denial' explanation by means of question embeddings.

[45] Still, a quaestio, in the first place, is not a realised expression but an implicit entity assigned to the utterer of the 'answer'—whether this actually is a reply to a question or not. Cf. p 29.

2.3 Plan-based Approaches

The two approaches following now have been chosen on behalf of more recent analyses that introduce the notion 'goal' as a discourse parameter and regard the lexical item but as an instance of a discourse relation. It does not play any role, though, which justification is put forward for the concept 'goal'—if any theoretic motive is given at all. The important framework of Ginzburg (1995) was omitted for the current overview chapter despite its well-foundedness of this concept 'goal', because it does not treat the discourse relation contrast explicitly.[46] Furthermore, filing the following accounts as 'goal-based' does not imply that these accounts define 'goal' in a similar way.

2.3.1 Knott (2000)

(40) Mary looked all over the shop, but she didn't find any miso sauce.

Similar to Sæbø's discussion of example (1) on page 12, Knott (2000), too, argues there to be instances for the use of but where there is no denial of expectation interpretation available. In (40), the second clause does not deny an expectation that arises from the first one: From "Mary looked all over the shop" someone cannot reasonably conclude or expect that she actually succeeded in her endeavour, because there are other necessary conditions for succeeding. E.g., there has to be miso sauce available in the shop at all if it is to be found. This is why no denial of expectation analysis of but is feasible here. Note that this argument obviously deals with the speaker's expectations, not with Mary's expectations. With regard to Mary's epistemic background, however, it *could* be argued that (40) is an instance of denial of expectation.

Knott (2000) suggests another interpretation, which is to be applied to (40) instead, and which motivates and describes the contrastive item but here. There is no expectation that is denied but a *plan* that proves to be impracticable. The plan inherently depends on the action that asserted in the first clause. This has two consequences: (i) Now there is no need to explain the coming about of expectations that are founded on apparently non-sufficient conditions. (ii) Nevertheless, even if someone assumes the existence of such a plan, the plan needs to be specified further: for not just any arbitrary plan will do—in the context of contrast it has to be a plan that *turns out to be impracticable*. The issue then is what an appropriate aim or goal of the plan amounts to and who the pursuer is, i.e., whose plan it is. As I understand the presented account, this aim is part of some *deontic domain* that is to be assigned to a discourse participant, e.g. Mary.

But why, Knott asks, can the failed plan not be substituted by the expectation of its achievement? In this case plan-based instances would fit the standard denial of expectation account, it seems. But according to Knott, this (standard) expectation is not involved in plan-based instances. The aim of the plan is

[46] I will refer to Ginzburg (1995) later in a discussion of the contribution of questions in discourse, see pp 97ff.

not necessarily epistemically expected to become factual. It means that those expectations cannot be involved in a plan-based use of but. Knott gives the felicitous (41) as evidence; here, even the expectation expressed by the speaker is contrary to the success of Mary's plan to find miso sauce:

(41) Mary looked all over the shop, but as expected she didn't find any miso sauce.

Thus, contrast is viable in plan-based instances, independently of the (epistemic) expectation of the aim. But no matter whether the plan is *expected* to be successful or not: A plan can experience an *actual* interruption or may be *actually* unsuccessful. This observable discrepancy between the plan's aim and the actual state of affairs is what the contrast relation is said to interact with here.

Following Knott further, having a plan and pursuing it may be regarded as reasonable (from the speaker's point of view) also in case the agent has incomplete knowledge. E.g., the agent might not know whether there are other necessary conditions in order to achieve his aim, i.e., whether those conditions he takes into account are sufficient. Or the agent might be aware of necessary conditions but not able to verify whether these hold. Nevertheless, a possibly incomplete plan—as imperfect as it may be—can be the rationale of his actions. To conclude, the agent himself might not believe that his plan is sufficient. And so it might well be that the agent does not firmly expect to achieve his aim.[47] Plans have this property (of potentially being based on insufficient preconditions) in common with expectations, because expectations are modeled by means of defeasible inferences and non-monotonic reasoning; so are plans.

Crucial for contrast in plan-based instances is some failure of the contextual plan. I.e., a plan and its failure should be parameters in the description of contrast. To spell this out in detail, Knott decomposes an instance of a (frustrated) plan of some agent p into several events taking place at successive (discrete) points or intervals, T_n, on a time scale. Knott (2000, p 3) makes far-reaching conceptual proposals in doing so. No claims are made concerning the framework to express 'goal', 'state', mental representations and operations in the following description:

How does the planning scheme apply to (40)? The sentence is said to cover a description of steps T_4 to T_6. These steps include parameters—goal state s and action a—which refer to previous elements of the plan. This forces a plan-based interpretation to bear *presuppositions*; T_1 to T_3 have to be part of an appropriate context for (40), too. However, it is not clear how to include the mental states when construing linguistic presuppositions for a suitable discourse representation.

[47] As long as the agent believes in the possibility of the aim, it is still rational for him to pursue it. Assuming that the agent believes that he will succeed as well as assuming that he believes in the possibility of succeeding is both consistent with the principle of rational discourse participants in my opinion. Because believing in the possibility of success is a sufficient condition for rational discourse participants here, it is not necessary that involved in plans is an expectation of success, as Knott wants to demonstrate with ex (41).

T_1	p selects a goal state s to pursue;
T_2	p initiates planning to determine whether/how s can be achieved, backward-chaining on s to search for a rule whose right-hand side is s and whose left-hand side contains a situation which is known to be achievable through action a (possibly given certain other conditions which p is willing to assume);
T_3	p finds an action a which meets these requirements (possibly after recursion);
T_4	p executes a;
T_5	p checks whether s has been achieved;
T_6	p discovers that s has not been achieved.

Scheme 2.2: Plan-based but (Knott 2000).

As far as I can see, there is one major difference between Knott's plan-based analysis and a plain denial of expectation analysis: For the former, the explanation is based on *deontic contents*, and for the latter, it is based on *epistemic contents*. A plan to achieve something or to make something become true is inherently intentional.[48] So this aim—besides many other actually possible as well as impossible wishes—makes up the deontically accessible worlds of the agent's background: Irrespectively of what the agent actually thinks about his chance of succeeding, his deontic background only contains worlds from which the plan's aim is *accessible*. Similarly, holding an (epistemic) expectation amounts to an epistemic context such that in any case, e.g. world, a state entailing the expectation is accessible.[49]

Further details of the plan-based approach and issues that are not dealt with explicitly are:

1. Ascription of an expectation vs. the plan's origin: Knott (2000) tends to associate expectations with a discourse referent other then the agent of the plan. Following his argument in the discussion of ex (40), 'expectation' would be based on a point of view that is at least as comprehensive as Mary's plan: Because additional necessary conditions for a success have been be taken into account, an epistemic expectation of finding miso sauce does not have to arise here. But then, Knott cannot have an omniscient narrator's point of view in mind, either. There would not be any possibility of non-monotonic reasoning, then; expectations from an omniscient point of view should be all real and factual, because there would not be any need for belief revision. And this would disable a *denial* of expectation interpretation at all.

   The goal or aim in (40), on the other hand, is an intention that originates

[48] Note how a condition of Mary's aim is entailed by the first clause: To find a particular thing entails looking over something, i.e., spotting every single thing around. And it is another conclusion, though, whether the speaker identifies the object of intention correctly with miso sauce or mistakenly believes having found the desired object.

[49] This is but an outline. 'Context set' and 'accessibility' will have be determined separately in chapter 3). And let me remind that throughout 'expectation' is meant to be a strictly epistemic expectation, and not e.g. wishful thinking or demand.

from a different discourse referent; it is neither the speaker nor the hearer of the utterance. Rather, the speaker presupposes that there is a third party's intention. Mary's intention to find miso sauce is revealed to the hearer by way of the presuppositions of find , which are not cancelled by negation, because it is a prototypical presupposition hole.

2. Reversed direction of the reasoning involved: Assume that both an expected proposition and a goal/aim are represented as consequents in a defeasible inference rule. Then, in case of the former, one starts with the premises, i.e. the left-hand side of the rule, to infer the right-hand side; but in case of goals, the right-hand side is given, and missing necessary/sufficient links for a solution (left-hand side) are sought for. The latter is an instance of abductive reasoning.[50] In both scenarios, non-linguistic knowledge is essential for the defeasible rule.
This amounts to two schemes for reasoning,

   - the "planning paradigm" to infer a preliminary expectation via *deduction* (applying a general rule and concluding its right-hand side given the other premises) vs.
   - the "planning paradigm" to infer missing links and to compound them to a promising action strategy/plan towards a goal via *abductive reasoning* (instantiating a rule's left-hand side by a rationale for acting).

3. The context set of the first proposition that interacts with the contrast relation: With expectation-based instances, the proposition on the right-hand side of the rule can be assigned to an *empirical domain*, because expectations are part of what an interlocutor believes to be the case.
With goals, the proposition on the right-hand side is assigned to someone's *deontic domain*, because goals are subject to intentions, and thus determine what an agent wants to be the case.

2.3.1.1 Unifying the Plan-based and the Expectation-based Analysis

Now that we have learned about the essential ideas underlying plan-based but , we will turn to a comparison of these with the expectation-based instances and a unifying description of both, which Knott pursues. The way to do so is to describe the latter as a special case of the former. There are striking parallels between the two, if one is willing to regard expectation as serving a particular discourse aim: the aim to answer a question.

So, if an utterance gives rise to a denial of expectation interpretation, it should be likewise possible to map it on an utterance situation involving some question such that the utterance is a (partial) description of the situation. In other words, by a denial of expectation interpretation of contrast the existence of such a particular situation is presupposed for the current stage of discourse.

[50] The underlying rule itself can be assumed to originate from empirical inductive reasoning, i.e. experience or world knowledge.

The utterance coincides with a description of the subsequent actions T_5–T_9 (framed part) of an agent p (Knott 2000, p 4), viz. scheme 2.3 .

T_1	p selects the goal to answer a (polar) question ?P ;
T_2	p plans to answer this question by defeasible reasoning;
T_3	p backward-chains on the proposition P, searching for a rule whose right-hand side is P and whose left-hand side is a fact / facts which are known to be true;
T_4	p finds a rule (whose left-hand side is such that the claim in the first clause is a valid instantiation of it);
T_5	p ascertains that the rule's left-hand side can be verified by finding a true instance for it when consulting a knowledge base;
T_6	p concludes defeasibly that P / that non-P;
T_7	p decides to answer question ?P e.g. perceptually as well;
T_8	p discovers that non-P / that P respectively;
T_9	p deletes the defeasibly-reached conclusion.

Scheme 2.3: Expectation-based but (Knott 2000).

This means that an appropriate utterance situation of expectation-based instances is characterised by two elements,

- the goal of finding an answer to a question and
- a particular answer strategy towards the goal via non-monotonic reasoning.

Also note that in this model agent p in the scheme above is not necessarily identified with the speaker of the utterance: A speaker of (40) does not need to be committed to these reasoning processes. And as it turns out, it can be said that the contrast's justification can be traced back to a contradiction which arises between *two opposing direct answers* to the presupposed polar question-context.

The difference between this account and other denial of expectation explanations concerns the domains w.r.t. which the contradiction emerges. Here, a contradiction does not arise across the separate (epistemic) *domains of two discourse referents* but across two separated successive *belief states of one discourse referent*: In a previous belief state a relevant proposition was not known but only inferred defeasibly, while in the subsequent state the contrary fact—the proposition's negation—, was learned (e.g. perceptually) with a higher degree of confidence than the defeasible rule can provide.

The more fine-grained model of the mental processes proposed here suggests a decomposition of the two contrastiveley conjoined clauses: Similar to the transitions from one mental state to the next one, the clauses describing these mental processes can be described as changing a context state sequentially,

Knott (2000) suggests. This is to be done by way of an update semantics.[51] Two mental states and the transition between them is what is conveyed by a typical expectation-based instance like (42), matching the scheme on page 41 :

(42) Bob had been up all night with the baby, but he was looking fresh as a daisy.

Identifying the meaning of (42) with steps T_5 to T_9 above leaves T_1–T_4 as the utterance's presuppositions. Interestingly, the reference in T_1–T_4 to a question reminds in part of other descriptions of context, which formalise appropriateness conditions for an utterance relative to its current discourse. E.g., in the Information Structure framework (Roberts 1996) it is an inherent property of any assertion to be an answer to a question, which may or may not be realised explicitly. This means that—for the sake of discourse coherence in this framework—every assertion has to bear the presupposition of its corresponding question, namely the question it is a direct answer to. Also for defeasible rules, by which propositions are related to each other, similar concepts in some contemporary context description frameworks can be found: By way of '*pragmatic entailment*' (Roberts 1996, p 9) questions can be solved by giving non-direct answers, too; and the terminus technicus '*resolving a question*' (Ginzburg 1995, p 504) refers to a mental operation and a private belief state for the same aim. In the former as well as in the latter framework the actual reasoning mechanism is hidden from linguistic analysis by way of abstraction, whereas the motive for introducing these is drawn from linguistic considerations of language use and *not* from hypothesising a general model of reasoning. 'Resolving a question' will be related to the concept 'perspective' in ch. 4 .

The unification Knott (2000) offers, is a generalisation of the two schemes on p 39 and p 41 above. According to this, it is a common feature of expectation-based and plan-based interpretations of contrast to require a context that can deliver instantiations of the generalised steps (ibid., p 6), viz. scheme 2.4 .

(i)	The posting of an agent's goal (substantive vs. epistemic);
(ii)	a rule used in reasoning in service of this goal;
(iii)	a method of testing of this reasoning (executing an action vs. e.g. perception);
(iv)	the result of testing: reasoning *does not lead to goal*.

Scheme 2.4: Unifying expectation-based and plan-based but (Knott 2000).

As concerns the examples discussed so far, at least step (i.) , the goal, has to be part of the utterance's presuppositions. An issue would then be whether the goal must be given explicitly in (monological as well as dialogical) discourse

[51] In other words, it seems obvious to Knott that if the meaning of the conjoined clauses describe mental processes, it is necessary that the meanings of both clauses are not merely conjoined logically, but that the use in particular of the second clause imposes specific conditions on the context, which the contents of the clause operate on. The interpretation of each clause is best considered as a process of changing a context pre-state, resulting in a post-state. All this is an argument in favour of a treatment in a dynamic semantics framework.

at the time of utterance, corresponding to (ii.)–(iv.) , or not: Can 'goal' really be understood as a presupposition which can be tacitly accommodated, too? Knott does not present further empirical data for this purpose.

2.3.1.2 Discussion

Beginning with the latter, let me elaborate the issue of what a goal is, which is a fundamental concept in scheme 2.4 . As we have just seen, it is crucial in Knott's descriptions of contrast meaning that not all actions or propositions bring about the goal—failure and 'contrast' result. But does it mean that there is an overall failure of the goal if a given answer is just different than expected? True that the right answer was not found by way of reasoning or not expected from the first clause. Nevertheless, when continuing the utterance with but followed by the second clause, the answer *is* known by the speaker and the goal is achieved. Not so in the plan-based examples, after having applied the proposed analysis: After an update with (40), the achievement of the presupposed goal can *not* be entailed from the context set; rather, the contrary does hold.

So, the second clause in the expectation-based instances does exhibit two properties: On the one hand, it gives an answer; on the other hand, it contradicts the result of the presupposed reasoning. Knott's analysis accounts only for the second function. Without examining further examples, it is not clear, though, which function is primary and which one is a side-effect of the other. This difference between plan-based and expectation-based contrast comes about by the different kinds of goals the analyses are based on.

While the aim of a plan usually can be represented by one proposition or the logical union of several propositions, questions essentially are logical disjunctions of at least two propositions: Solving a question directly and comprehensively always involves a choice between at least two alternatives by exclusion of all propositions among these which do not hold according to the current state of affairs (or, the other way around, by choosing the one alternative that holds) and is dependent on the current state of affairs. A question can be defined via the set of still possible choices, modulo the currenct state of affairs. I.e., without an epistemic bias or preference, a question is by definition not aimed at a single proposition, but is rather determined by a function with the alternatives as the function's domain.[52] The background assumptions of this sketch consist of a model of questions following Groenendijk & Stokhof (1984), with answers being mutually excluding alternatives.

Substantive goals can be adequately represented by a single proposition or a logical union of several propositions. It is the bouletic background of the agent that has to be updated with this goal when the agent is adopting it. In this case the role of the current state of affairs and the agent's epistemic context can be seen to determine whether the agent acts in a rational manner.

[52] In other words: When someone wants a question to be answered and has neither any epistemic bias nor preferences, he wants to acquire a belief state that entails any of the alternatives. This is different from saying that he wants to be in a belief state in which *a particular alternative* holds.

Thus, we can identify two kinds of solution relations for 'goals' in general, for the goal of a question as well as for the goal of a plan:

1. The solution relation for neutral questions[53] relative to a current state of affairs can be defined by a function from a partition of the epistemic context set to exactly one of the partition's alternatives.[54]

2. Plans define a solution relation between propositions of an agent's bouletic/deontic context set and a sequence of epistemic context sets at which end all of these propositions are known to hold.

For the latter case we might say that the agent has a *preference* for those worlds in which the propositions in question holds; with questions, however, no preference for particular worlds to be true is observed by Knott (2000).[55] Of course, one could say that a questioner has a preference for those epistemic states which entail the answer to his question. But instead, I want to make the preliminary proposal to treat preference inherent in a question as a compound of two elements, namely

- the partition of the epistemic context set (Groenendijk & Stokhof 1984);

- the demand for a continuation of discourse that provides information for restricting the partition to a single partition cell.

From this point of view it follows that, if possible at all, a question's preference could refer to an epistemic context set only, see p 45.

When we adopt the description of plan-based vs. expectation-based instances of Knott (2000) then it seems that a coincidence with having vs. lacking a preference can be stated. An overview of combinations which I could observe is outlined in table 2.1 below, marked with "√". But can a distinction 'plan-based' vs. 'expectation-based' be identified with a distinction having vs. lacking preference?

Having a (deontic) preference:	yes	no
Type of goal:		
information gain	?	√
"substantive"	√	?

Table 2.1: Co-occurrence of goal type and (deontic) preference.

[53] These are questions w/o epistemic preference for any of the alternatives in particular.

[54] According to the model of Groenendijk & Stokhof (1984), the mapping to the alternative that actually holds given the current state of affairs is the 'extension of a question'.

[55] The concept of deontic (bouletic) 'preference' can be regarded as being directly correlated with the content of the deontic context set. It states that any subset of the deontic context set is preferred over anything not element of it. This explanation of deontic preference sounds cyclic. But when applying the concept of preference to the epistemic domain, it would have to be refined and generalised.

In what comes next, I will focus on whether the question-marked case question-answering + preference co-occurrence exists and in fact will give an example for this kind of use. Further, examples will be mentioned where it can be argued that both goal types are effective in parallel. A last argument against a dichotomy 'plan-based' vs. 'expectation-based' can be drawn from a borderline example that cannot be identified either fully as a plan-based or expectation-based instance.

According to table 2.1 and in order to confirm the given dichotomy, we may expect that exploiting a contrast in answers does not involve any preference. However, situations can be made up in which there *is* a deontic preference for a particular answer. Consider ex (43) :

(43) Will you close the door?

If the questioner of (43) knows that his discourse partner is able to cause a particular answer to become factual/true, then the preference is in accordance with the requirement of a rational speaker (as was explained in footnote 47). This is true for interrogatives which are utilised as indirect speech acts, turning out to be actually requests. Of course, an addressee of (43) can refuse the request e.g. by denying and giving a negative answer. This way the discourse participant acts on grounds of "Will you close the door?" as being a direct speech act. The answer "no" would serve two purposes. It is clearly a direct answer to the question (leaving aside the matter of completeness of an answer). Secondly, this reply is relevant to a substantive goal of the speaker. This answer conveys that the goal fails, whereas some other answer might enable the goal.

To rebut the counter-argument, we can specify another, though slightly different, preference co-occurring with questions: By virtue of intonation or form, questions can bear appropriateness conditions affecting the *epistemic* context set of the speaker.[56] Tag questions and so-called 'bias markers'—e.g. surely , of course , or no doubt—can express what the questioner believes about the issue of the question.[57] Compared to deontic preferences which we can find with interrogatives, the main difference is in the domain the preference affects: it specifies the epistemic, not the deontic context of the speaker.[58] Thus, when uttering a biased polar question like "You're surely not going to agree?" (ibid.) , the speaker's belief is not neutral with respect to which alternative does or will hold. This kind of preference concerns the question's total bi-partition of the current context set and maps to one of its propositions. 'Bias' does not concern e.g. existential presuppositions of wh-questions.

A plus we see in Knott's approach is that it situates utterances in action settings which are definable with a few parameters and which correlate with the utterances. The utterances describe and *represent actions*. Is the mapping from action types to linguistic types adequate; i.e. in particular, does the considered

[56] Cf. Ladd (1981).

[57] See Huddleston (1994, p 429).

[58] The current concept of 'bias' would imply the possibility of belief revision here. Spelling out precisely what deontic and epistemic preference amounts to is not at stake here; for now, it is sufficient that 'bias' is in effect a restriction of a discourse participant's deontic or epistemic context set.

domain of action types consist of distinct types? In order to give a more empirical description it seems necessary to further investigate this correlation and consult an extended domain of linguistic and situational types. For this purpose let us have a look at the following examples.

(44) A: Where is there a petrol station?
B: Round the corner, but it is closed right now.

(45) A: I'm out of petrol.
B: There is a garage round the corner.[59]

As ex (44) suggests, there are utterance situations for but-conjuncts in which they include a direct answer *and* at the same time an additional, implicit goal has to be assumed. I.e., by (44)B an answer is given and, moreover, the speaker acts as if a non-epistemic goal is pursued that calls for a plan, namely a plan of how the questioner will get hold of petrol again.[60] Similar to the *plan-based* example (40), in (44) the information conveyed by the second clause forces a plan to fail, which involves (knowledge or events conveyed by) the first clause. Nevertheless, another purpose or goal underlying (44)B is to give an answer. There can be no doubt about this, because the corresponding question (44)A is explicit and (44)A + B together results in an acceptable discourse. Examples like these question a dichotomy plan-based vs. expectation-based by exhibiting both goal-types at once; the goal-types do not exclude each other.

All these observations do not confirm Knott's distinction between uses of contrast implying deontic preference—i.e. plan-based instances—and uses not implying preference—i.e. expectation-based instances—, as was suggested in table 2.1 .

(46) Mary is looking all over the shop, but I don't believe she will find miso sauce.

At last, example (46) provides a third argument against the dichotomy. It was mentioned above that according to Knott the class 'plan-based but' is immune to speaker or hearer beliefs regarding the success of the plan—i.e., it is independent of expectations. An essential feature of plan-based instances is the deontic preference for a plan's goal (in addition to the interruption or failure of the plan). Remember that also Knott's plan-based example (41) is in accordance with this criterion, since 'failure' herein does not refer to the explicit expectation, but the failure can only be derived from what is claimed to be factual. This means that the expressed expectation plays no essential role for contrast there. In (46), however, the failure of the plan is not yet factual or known to the speaker. The speaker does only *expect* the presupposed plan of Mary to be impracticable. The utterance seems not to supply any other

[59] Grice (1975, p 51).

[60] In a situation where A's fuel shortage is apparent, the answer "round the corner" is going to trigger conversational implicatures, to speak with Grice: The answer is regarded as being *relevant* to questioner A's "immediate needs". Cf. this situation with the one Grice (1975, p 51) introduced with (45) to demonstrate the function of the maxim of relation: A can assume that petrol stations which B describes are relevant to his own (obvious) problem; e.g., those petrol stations can be assumed to be open and to have fuel, etc.

information that contradicts the content of the plan's inherent intention in any way. There is just the speaker's *epistemic* preference for Mary's failure. Here the borderline between expectation-based and plan-based contrast disappears. From (46) we can learn that

a) the failure of a plan does not have to be factual: also a discrepancy between a plan's inherent intention and an epistemic preference (expectation) is compatible with use of but;

b) the 'perspectives' or (deontic/epistemic) context sets involved in the derivation of contrast can belong to different discourse participants.

To explain item (b): While in the expectation-based analysis an interlocutor's epistemic context contradicts the actual state of affairs and in the plan-based analysis an interlocutor's deontic context contradicts the actual state of affairs, the last example strongly suggests that also e.g. one interlocutor's deontic context and the epistemic context of the other one might constitute an opposition that justifies the use of but.

Let us conclude with two more observations and a summary. Items (a) and (b) above were due to a limitation in the number of perspectives involved in Knott's account; only one discourse participant's background—the one to which the goal's intention has been attributed—played a role for contrast in the examples so far. But this is so also in the scheme for a unified account of plan-based and expectation-based but in figure 2.4 . A counter-example we already had a look at, (46), and further ones show us that scheme 2.4 probably is because of this limitation not an appropriate approach for a comprehensive account of but and contrast. Look at (47) :

(47) A: It's going to rain.
B: It's going to rain, but they will go out for a walk.

This time we have a dialogical context for two contrastively conjoined declaratives in (47)B. As the preceding discourse reveals, the first declarative is a concession of the discourse participant's claim in A. The act of concession in a dialogical context is a hint that two perspectives are involved here.[61] If the current issue or question in a context for (47) is whether some already introduced discourse referents will go out for a walk, utterance B apparently is not off the topic; nor is (47)A: Both utterances can be seen to seek for a common solution to such an issue. But the opinions about that issue seem to contradict each other: "It's going to rain" is interpreted as arguing for an answer like "they will *not* go out for a walk". What these considerations about (47) amount to is:

[61] Speaker B adopts the concession's content for his own belief; he may, however, deviate from A's other beliefs—including A's implications or conclusions from his belief that it is going to rain. Thus it is inherent in the concept of acting in a concessive way (concession as an elematary social act) to disinguish between two independent (belief) backgrounds or preferences w.r.t. an issue (Merin 1994, p 236ff); example (47) fulfils the concession's conditions herein.

(I) Example (47) in its dialogical context is compatible with the idea of a goal to be pursued, i.e. a current issue (modelled as a polar question). The conjuncts of (47)B suggest contradicting answers. There are two discourse participants involved in the reasoning process. However, a scheme like 2.4 does not support this. Only those reasoning processes are covered where one agent—generally it is the speaker—arrives at different conclusions with respect to the issue due to information states which expose different entailment characteristics.

(II) If we abstract from the dialogical context of (47)B, it is again possible to apply a denial of expectation interpretation along the steps of 2.4 . It may mirror the reasoning process of one person, the speaker, who first tends to apply his knowledge about a (prototypical though defeasible) correlation between the weather and the tendency to go outside for a walk, but then gets to know a conflicting fact about the current issue he is wondering about. Form and content of sentence (47)B is the same. But the dialogical vs. monological use of the sentence does matter for the analysis of contrast. If the meaning of the contrastive item but is to be correlated with conditions of its use, then scheme 2.4 is *not general* enough in that respect.

Another objection, which concerns the analysis of plan-based but , has to do with step (iv) in scheme 2.4; the scheme perhaps is not general enough either as far as the *polarity* of the conjoined clauses w.r.t. the goal is concerned: According to this scheme, the second clause always plays the part of expressing the impracticability of a plan. However, but works well the other way around, too:

(48) Mary didn't find any miso sauce, but she had been looking all over the shop.

Albeit the clauses' contents in (48) being the same like those of (40), they do not give rise to this explanation pattern described on p 39: There is the intention of Mary to find miso sauce, and the failure of her attempt to achieve this goal. As opposed to what we expect, however, (48) does not fit this explanation. Only the order of the clauses as given on page 39 is reversed. It is not clear whether the first clause in (48) gives rise to a different goal state than the first clause in (40), "Mary looked all over the shop." In order to comply with the plan-based scheme, it is necessary that the fact "she had been looking all over the shop" *prevents* the goal state from becoming factual. Because of the same meaning of the conjoined clauses, this seems implausible to me. A plan-based scheme 2.2 does not account for this.

(49) Bob was looking fresh as a daisy, but he had been up all night with the baby.

At least with the exx (49) and (42), the expectation-based analysis shows contrasting behaviour: It is likewise plausible to have a default rule expressing the expectation "having had lots of sleep" from the premise "looking fresh". This

observation might be due to contingency of the choice of instances. But any assertion has a corresponding polar question, which, then, directly instantiates the current goal in the expectation-based scheme; the issue is different. Whether there is still an appropriate expectation relation depends on the symmetry of the relation between the two propositions. This question is beyond the scope of linguistic considerations—it is dependent on the knowledge base that is assumed for the corresponding belief context.

The plan-based and the expectation-based analysis are both based on a presupposition of particular utterance contexts and do not mirror a *linguistic* paradigm. The classes of utterance contexts cannot be regarded as complementary.

Yet, the generalisation of an appropriate utterance context for both analyses seems to provide two elements for an adequate interpretation of the contrastive item but:

1. Presupposition of an action goal;
2. Deriving contradicting evaluations w.r.t. its enablement by means of a suggested solution.

Knott (2000) proposes a general action setting that assertions describe and refer to. This kind of goal-centered context of utterances is not peculiar to contrastive expressions. But it is utilised by Knott for describing the appropriateness conditions of the contrastive item but. The utilised action settings are very specific in detail, as the schemes on pages 39 and 41 show. It is questionable whether these can cover a broader range of contrastive utterances. We also have seen instances where the borderline between the two proposed context types cannot be drawn accurately.

Item 2 above seems crucial for a description of contrast. According to my assessment, this item has two aspects. For one thing, there is the task of deriving two propositions which contradict each other. But then, the obligatory contradiction may not lead to inconsistency. E.g., the contradicting propositions may not be attributed to one discourse participant's belief. There are several ways in which this condition can be met. Knott's examples can be taken as a starting point to reflect on the possibilities.

In Knott's model, the reasoning/acting agent who pursues the presupposed goal is independent from the speaker. In case the speaker himself is the agent and his goal is to find the answer to a question, an inconsistency due to contradicting beliefs is avoided by interpreting the first and the second clause relative to successive cognitive states of the speaker, i.e., relative to different points in time (Knott 2000, p 8): The second clause entails a piece of knowledge that is not yet part of the information state which the first clause is assigned to.[62] Otherwise a speaker e.g. of (40), who has the expectation of Mary finding miso sauce, cannot *at the same time* deny his expectation by stating "she didn't find any miso sauce".

[62] What a speaker would commit himself to and convey (with the whole utterance), then, is that he was applying a reasoning process that failed when he was trying to find an answer to a presupposed question.

I think that a generalisation of contrast should take into account the various further possibilities there are to prevent contradistinctions from turning into inconsistencies. For the analyes at stake this would imply the need to carefully distinguish which discourse referent an expectation or plan has to be assigned to.[63]

I think that in general a promising method of preventing inconsistency would be to evaluate conjuncts of but as enclosed in opaque or intensional contexts. As we have seen so far, these contexts can exhibit shifts

1. across the epistemic–deontic boundary or
2. across different discourse participants (including discourse referents) or
3. across a participant's time-anchored, successive information states.

These can be considered the relevant parameters needed for determining a notion of 'perspective', a change of which is involved in the interpretation of contrast, as I have tried to suggest in the description of Knott (2000). The considerations have led us a bit off the track, but will be important and continued later.

2.3.2 Thomas (2003b)

In a series of recent papers (Thomas 2003a; Thomas 2003b; Thomas & Matheson 2003a; Thomas & Matheson 2003b) Thomas proposes a treatment of but that is based on ideas of Knott (2000). Common to both approaches is the proposed starting point of the analysis, meeting the following criteria (i) and (ii): (i) The contribution of but in discourse is to be described in an *algorithmic way*, i.e., it is assumed that there is some partial reasoning mechanism operating on available concepts of present world knowledge. (ii) Furthermore, there is a *situation scheme*, which many utterance situations of but share, providing concepts like 'task'. Thus, a particular class of utterance situations is in the focus. (iii) Finally, two parties are involved in the situation scheme. As Thomas considers *dialogues*, the conjuncts of but are assigned to different discourse participants; this allows for a sharp distinction of the conjuncts' backgrounds. The third assumption is not shared by Knott (2000).

The aim at the far end is to make theoretic insights exploitable for the implementation of a dialogue system. One principal characteristics of the approach is its focus on but in dialogue, where the relation induced by this lexical item applies to two adjacent utterances of different speakers; but in this general use is a 'cross-speaker but'. Also, the considered linguistic data is a particular one. It is the domain of task-oriented spoken dialogues with but occurring at the immediate beginning of a turn (turn-initial position), making up the conditions of use of a 'plan-based but'. 'Task-oriented' means that "speakers

[63] Knott (2000) tends to associate 'expectation' with a comprehensive epistemic background—although he does not clarify whose *participant's role in a discourse model* this perspective corresponds to.

are planning and performing tasks cooperatively."[64] Thomas' examples were taken from the TRAINS corpus (Heeman & Allen 1995). The focus on task-oriented contexts is crucial, because Thomas claims that in those the use of but deviates from known contrast patterns.

While the idea of regarding task-oriented utterance situations and also the integration of an algorithmic component into the explanation rests on Knott (2000)[65], the linguistic analysis of the meaning component of but is based mainly on the model of Lagerwerf (1998). Thus, Thomas' linguistic analysis hinges on the distinction between two functions this lexical item can fulfil: *Denial of expectation* and *concession*. From the linguistic point of view it seems interesting to pursue a method to distinguish between these two interpretations in a procedural way. Thomas' analysis then addresses the following issues:

- A transfer of monologue analyses of but to instances of dialogue.
- How should a default rule be assigned to speaker/hearer beliefs?
- Denial of expectation:
  - How to apply default rules to actual utterances, i.e., how to justify this interpretation (in terms of an algorithm/a cognitive process) with task-oriented dialogues?
- Concession:
  - How to transfer a concession analysis to task-oriented instances?
  - How do induced expectations correlate with an underlying plan?

I will not go into the formal implementation details of the proposed algorithmic interpretation (Thomas 2003a; Thomas & Matheson 2003a; Thomas & Matheson 2003b), which is worked out by utilising an 'Information State' framework (see Hulstijn & Nijholt (1998)). Instead, the following overview emphasises only the essential ideas (Thomas 2003b).

2.3.2.1 Denial of Expectation

Let us start with Thomas' description of example (50), where two adjacent assertions are said to be related to each other via an expectation.[66] The expectation is induced by the interpretation of but .

[64] Thomas (2003b, p 1).

[65] There are also other suggestions of assigning but a *procedural meaning*, among others Blakemore (1989, 2000). Blakemore's general idea is to treat the 'meaning' in terms of the *cognitive processes* involved in interpretation. Instead of a semantic (truth-conditional) content proper and implicatures, conceptual content and procedural operations take over. Then the meaning of but is analysed by way of operations on the conceptual content that is conveyed by an utterance. Yet, in a broader sense, all accounts which operationally describe the contribution of but relative to the utterance context (cf. Umbach (2001) and Sæbø (2002)) are procedural—although these accounts may not have adopted the leading role of relevance (according to Wilson & Sperber (1995)) as Blakemore does, but rather describe the non-semantic content as conventional implicatures. In either case, the procedural character of a meaning analysis is due to the explanation in terms of a necessarily non-semantic contradistinction (contrast) and its reconstruction; i.e., contrast is not reflected by content proper.

[66] Here Thomas modifies a monologue example from Lagerwerf (1998), repeated below as (51). Now, two participants, A and B, are involved.

(50) A: Greta Garbo was called the yardstick of beauty.
B: But she never married.

What is the interpretation of (50)B in general? In particular, (i) there is an expectation that (ii) the actual situation is contrary to what is asserted in (50)B. As the utterance situation involves two participants, both (i) and (ii) are assigned to the intention of speaker B.[67] It is further assumed that participant B in every utterance situation of (50) concedes A's assertion: Because B does not reject A's preceding claim *explicitly* and immediately, he is going to accept the claim itself; he concedes it. Therefore, in the context of (50)A, (50)B can be paraphrased by explicitly resuming A's claim: [68]

(51) She is the yardstick of beauty, but she never married.

This way Thomas is able to avoid a conflict, which seems to be inherent in the traditional account of denial of expectation: If the first and the second conjunct are interpreted relative to the same background or information state or belief state, i.e. in an essentially non-dynamic style, then the same belief state that makes viable the expectation would also entail its negation.[69] It would result in a single inconsistent belief state. The dilemma is solved by assuming that what the speaker actually conveys is this: The facts do not comply with expectations which somebody else might have in general. Whether it is speaker B himself or someone else who has the defeasible expectation is not at stake in Thomas' model. Just the existence of an appropriate expectation rule has to be assumed to resolve the conventional implicature of but. So, at least the existence and salience of the rule, entailed by *anybody's* belief state, has to be noticed by B beforehand. In other words, the origin of the expectation is not determined (Thomas & Matheson 2003b, p 3); it is sufficient that the expectation rule is *available* to the speaker in an utterance situation of (50)B. That means, their algorithm assigns the expectation to the speaker's background in general: "... [T]he algorithm predicts a defeasible expectation that it attributes to the speaker of the but[.]"

Hearer A, who interprets (50)B, adds to his beliefs some expectation rule that was intended by B's utterance. Participant A's own attitude towards the

[67] At this point, it is not at issue whether the expectation—the existence of which is implicated but which is denied by speaker B for the context of (50)A—has to be shared by participant A or by the common ground at utterance (50)B in order for (50)B to be uttered felicitously.

[68] Transforming "cross-speaker but" into a monologue like this suggests a close relationship between the monological use and "cross-speaker but" *in general*. If these are used equivalently, i.e., if they are commutable, then both alternative but-expressions share a particular property in those contexts: There are two backgrounds or perspectives which are involved in the use of but. For the last example, the background of the but-sentence is assigned to the speaker's beliefs, while the background that is *originally* associated whith the preceding utterance is a different one—although its content might explicitly be conceded by the speaker of the but-sentence. This possibility of deviating backgrounds does not become apparent when but-conjunctions like (51) are analysed out of context, in isolation from their potential utterance situation. Only the utterance situation can prove whether the first conjunct concedes somebody else's assertion.

[69] Cf. the similar dilemma with example (1), p 12 . Because Sæbø seeks to associate the expectation arising from an expression in the first conjunct of but with the utterer, an embedding of the expectation-triggering expression under negation or a counterfactual prevents the expectation. This is puzzling especially when the second conjunct acts as a denial of the expectation. This dilemma is similar due to its source: It is the association of both an expectation as well as its denial with one and the same belief state.

rule and B's assertion, on the other hand, can become apparent only in a continuation of (50). Then it can be determined whether A accepts the expectation rule or not. Thomas & Matheson (2003b, p 2) list the four possibilities of a response of A, continuing (50) :[70]

1. "A disagrees with both the rule and B's assertion" :
   ... A: She did marry, and anyway, beautiful people don't have to marry.

2. "A agrees with B's assertion only" :
   ... A: Yeah, but beautiful people don't have to marry.

3. "A agrees with the rule only" :
   ... A: I'm not sure if she actually did marry though.

4. "A agrees with the instantiated DofE [denial of expectation] relation holding" :[71]
   ... A: Yes, that's odd.

Especially for the last case it seems crucial that the speaker intends and that the hearer takes into account exactly the same expectation rule. But there can be misunderstandings between A and B concerning the underlying expectation rule. I want to emphasise that mismatches can arise despite such explicit consent to content and supposed underlying expectation rule. The same is true when B disagrees about the supposed underlying expectation rule, as in cases 1. and 3. above (see examples (52) and (53) below).

The underlying rule is modelled by an algorithm which is to mirror the cognitive interpretation process. To mirror cognitive processes, the algorithm would have to reflect possible misunderstandings, too. The algorithm derives an expectation rule by generalising from the assertions, "replacing any instantiated variables with variable reference" with free variables. To arrive at a rule, these formulas are then inserted as the antecedent and the negated consequent of a 'defeasible implication'.[72] Because the algorithm starts from a representation of semantic content, this process cannot derive all acceptable, though empirically possible rules. With (52)—as a continuation of (50)—, Thomas & Matheson (2003b, p 3) show that rules can be based on "bridging inferences", which the sketched expectation derivation does not capture. Consider the following misalignment; it seems to be covered by 2. above, but by (52)B the mismatch between the underlying rules for (50)B and (52)A is made obvious:

(52) A: Yeah, but beautiful people don't have to marry.
B: I'm not saying that they do, I'm just surprised that she didn't marry, since so many men were obsessed by her.

[70] Considering the range of acceptable contexts of a but-utterance like this helps to empirically reveal the possible intentions conveyed by but-utterances. Cf. the related idea of investigating the (salience of) conveyed information of an utterance by considering the range of possible immediate comments or objections to it (Posner 1980).

[71] I.e., A agrees with both the rule and B's assertion. As a result, it seems that A also agrees with the denial of the expectation.

[72] The process is not explicated in detail, but it seems to amount to an abstraction from definite discourse referents. It remains unclear, though, how e.g. generalised quantifiers are to be treated formally and how sets of individuals would be dealt with.

There is bridging between "Greta Garbo was called the yardstick of beauty" and "many men were obsessed by Greta Garbo", so the first stands for the latter. Obviously, the speaker of (50)B had a related bridging inference in mind in order to address an expectation rule. We can think of many other bridging inferences as well.

Whereas the proposed algorithm is *too specific* with regard to bridging, other expectation rules pertaining to (50)B can be found which give evidence that the algorithm might also be *too general*. In the following example, B notifies that the expectation he intended to address in (50)B is about beautiful women only, not about all beautiful people.

(53) A: Yeah, but beautiful people don't have to marry.
B: I'm not saying that beautiful people in general do, I was thinking of beautiful women only.

So, the intended expectation may be about beautiful people or about beautiful women only. Possible expectation rules differ in their degree of abstraction. What properties of the abstracted discourse individual should be part of the expectation rule? With Greta Garbo being a counter-example to the expectation rule, should the addressed expectation be based e.g. on beautiful women or on beautiful people in general?

Referring to (52), the authors do not claim that the algorithm for a denial of expectation explanation prohibits other interpretations. Their line of argument is to allow for other interpretations of but in that case. In general, however, the denial of expectation interpretation applies, "unless given further information" (ibid., p 3). Two issues remain: Which other interpretations are there? And how does the task-oriented domain change the picture?

Thomas & Matheson's argument that there are other uses of but besides expectation-related ones conforms to the fact that their method of deriving an expectation is too specific in the light of what a speaker might actually intend. And furthermore, as it just turned out, we can say that the algorithm does not result in a *unique* expectation rule, either. Both mean that there are expectations which the algorithm does not yield.

2.3.2.2 Task-oriented Discourse

To see how additional information may change the interpretation process Thomas (2003b) focuses on task-oriented dialogues. She argues that in dialogues with a salient goal that is shared by all participants, utterances immediately beginning with but still induce a defeasible rule which has to be instantiated by the assertive utterances; however, here the rule refers to the goal. A general rule in these contexts is rendered below (Thomas 2003b, p 2). Similar to expectation rules, left-hand side and right-hand side have to be derived via a 'generalisation' of adjacent utterances: [73]

[73] The mapping of utterance contents to this very general antecedent–consequent pair to yield a rule reminds us of the indirect bridging inferences above. This peculiar rule is said to be relevant due to the special class of utterance situations.

effect of plan so far > *preconditions for next* [i.e. current] *goal will hold*

The motive for setting up the separate usage 'task-oriented contrast' as opposed to 'expectation-oriented contrast' lies in a plausibility judgement: Do all rules that can be derived as described above mirror rule-like expectations? Look at (54) (Thomas 2003b, p 3, ex 3) :

(54) A: Add the vinegar to the sauce.
B1: (Yeah) But it's not tangy enough.
B2: (Yeah) But we still need to add the salt.

The crucial point for situations like (54) is that both participants share a common goal. This applies also to their partial goals. Both participants want the sauce to be tangy enough, to be sufficiently salted, etc. It does not matter how B1 / B2 actually comes to realise that the common endeavour might fail. The motive for B1's / B2's interruption is just due to the specific situation of (54)B1 / (54)B2. Now, what about expectations here?

The expectation based on the propositions in (54) turns out to be situation-dependent to a high degree, Thomas (2003b) argues; and a respective *rule* would not be capable to match other situations. So, how to set up a denial of expectation interpretation for the sequences A–B1 and A–B2 ? While Thomas concedes that it be possible for the first sequence, for A–B2 this interpretation is rather odd for reasons of *specificity* of the rule, which the speaker of (54)B2 would refer to. The expectation itself would have to be paraphrased in this case as "the salt will not be added (any more)." [74]

So for Thomas (2003b), employing the denial of expectation approach seems not an appropriate explanation of the use of but here. Task-oriented discourse presents a problem for the denial of expectation analysis of but in two respects: (i) The expectation derived from the utterances adjacent to a turn-change often is too specific, so it cannot be based on any *rule* (which is prerequisite for a rule mismatch). (ii) And even if the discourse task suggests a general scheme—a rule delivering expectations which are there due to the task and its sub-tasks—, then the *derived* expectation may be not in accordance with this highly salient rule (as in (54)).

As a way out, a concessive interpretation is suggested for cases like A–B2.

2.3.2.3 Concession

Similar to the transformation of instances of denial of expectation into dialogue form (cf. ex (50)), the analysis of concession in task-oriented dialogue is focused on "cross-speaker concession". Also the concession analysis is based on

[74] However, a denial of expectation interpretation might still be viable, as I think: Even when the expectation "salt had been added already" does not comply with the recipe, but in (54)B2 can be interpreted as giving rise to an expectation, because (i) there is the possibility of a mismatch in the intended expectation rule (cf. 1. and 2. above) and (ii) a current overall goal and mutual co-operation can be assumed by both participants in this kind of contexts. So, despite A's expectation going wrong w.r.t. the recipe, A can assume that the utterance is meant to comply with its overall goal. That is why A could plausibly assume a mismatch w.r.t. details of the recipe scheme.

Lagerwerf (1998). But as opposed to Lagerwerf, the purpose of the involved utterances is not taken to be argumentative; the purpose with task-oriented dialogues it a different one.[75]

The interpretation of the conventional implicature indicated by but deals with expectations here, too. Contrary to the expectations in the former case 2.3.2.2, the sentence beginning with but does not immediately refer to an expectation. This is the reason why an algorithmic reconstruction of an expected proposition by abstraction from semantic form cannot succeed. On the other hand, expectations are necessary for providing coherence here, too. The utilisation of expectations just follows a different pattern. Analogously to Lagerwerf's analysis of the concessive use of but, utterances like (54)A and B2 refer to *another* proposition, the tertium comparationis ('TC'). With regard to that, the utterances are dissimilar. Whereas one utterance (e.g. A) acts as *argument in favour* of the TC and is apt to *enable* it, the adjacent utterance (e.g. B2) is an *argument against* (counter-argument to) the TC and so disables the TC.[76] Likewise, this relation between utterances and a TC can be expressed in terms of *expectation*: The performative effect of one utterance lets expect the TC—e.g. by reasoning via a causal chain—, and the performative act of the other utterance lets expect the negation of the TC. Note that no matter whether one renders the relation in terms of expectation, argument or enablement, in either case does the reference to a TC imply a reasoning process.

The TC itself has to be salient in the utterance situation. It corresponds to the reconstructed expectation of a denial of expectation interpretation; and since reconstruction from expressions is not possible with concession, its givenness has to be "contextual". Furthermore, it is essential for concessive interpretations that both A and B2 refer to the same TC, acting as argument and counter-argument. Talking about task-oriented dialogues, the TC is identified w.r.t. the task:

> We determine whether the assertions favour the TC or disfavour it based on matching the assertions to planning operators in the plan and evaluating them with respect to the desired outcome *at the current stage in the task* (i.e., the respective TC).[77]

A task and a plan to pursue it are considered salient for this particular kind of discourse; this salience is necessary for an explanation of but here. Task and plan jointly set up sub-tasks which are at stake at the subsequent stages in discourse. When looking for the most salient goal, more specific (current) goals

[75] With regard to a common task, the purpose is said to be *substantive*, i.e., the purpose of utterances (as descriptions of actions, as commands and the like) is to change—besides the participants' belief states—the current state of affairs. 'Argumentative', on the other hand, would mean to change the set of common beliefs that both participants will finally be committed to. This distinction between substantive goals and others hinges on whether belief states are distinguished from other states of affairs. In general, however, a corresponding distinction can be found in the kind of speech acts which are performed in order to attain one of these different goals: To cause a change of belief states, assertions (backed by some other assertive arguments) are uttered, whereas a command or questions are used when a change of the actual state of affairs is at stake.

[76] 'Argument' is used here in a sense that is adapted to a substantive TC—as compared to a propositional TC, a thesis—, see footnote 75.

[77] Thomas (2003b, p 5), italics added.

win over their more general super-ordinated goals. The intuition behind this is to consider sub-tasks, which are necessary to reach the main task, as more specific than the main task itself. Similarly, sub-tasks can be ordered as well.

So for (54)A–B1, an intuitively appropriate third claim could be "the sauce is ready". Note that also A–B1 can be interpreted concessively this way: A lets expect that "the sauce is ready", whereas B1 is an argument for the opposite, namely that the task is not finished yet (cf. footnote 74).

The TC "the sauce is ready" was suggested under the guidance of intuition. (Note that "the sauce is ready" just equals the main goal of the recipe, which is the salient task at hand in discourse (54).) But Thomas (2003b) prefers a systematic way to infer the TC, i.e., an algorithmic apparatus is needed. The task and the plan serve to anchor the utterance situation, since the TC was said to be given by context. It means that the algorithm should be capable of drawing inferences "matching the assertions to planning operators in the plan[.]" The module that provides this mirrors cognitive processes; it includes representations of task and scheme as well as reasoning capabilities. Its functions are (i) first to determine a proper TC by searching the current plan for a sub-task that is suitable for the current stage in discourse (taking into account actions, commands, and states as entailed by the current and previous utterance); and (ii) to evaluate whether the sub-task matches the plan and the overall goal: Does the sub-task serve the current super-ordinated goal or the overall goal? E.g., for the interpretation of (54)B1 the view adopted by speaker B1 and the expectations which the module yields are ascribed to him. Utterances A and B1 have to be matched against the same task; then both relate to that task as enabling vs. disabling it respectively.[78]

Summing up, in a task-oriented dialogue a concessive interpretation of turn-initial but is related to a current goal. In the discussion of (54), I just said B1 believes that A goes wrong somehow with regard to a plan or perhaps even disables the common goal. Further, because the goal is common ground, the purpose of the participants' contributions cannot be to argue about that. But how exactly can their contributions differ? How are sub-tasks, the plan or other factors of the common goal involved? Thomas distinguishes between three cases, showing what actually can go wrong. Since the misalignment does not refer to the task directly but to the underlying action scheme (plan), some terminology is necessary. The employed ontology for 'plan' supplies the self-explanatory concepts 'action', 'effect', 'goal', and 'precondition'. The three possible misalignments according to Thomas (2003b, p 12) are:

[78] In co-operative task-oriented dialogue, it is natural to assume that participants share the same overall goal. Nevertheless, with his utterance speaker B1 seems to indicate misalignment between his own *current* (sub-)task and that one of A. Moreover, in a situation like (54), speaker B1 believes A's currently proposed action—for whichever sub-task it might be suited—, to be of a particular quality: It compromises the overall common goal. But note that this overall goal is assumed to be shared by A as well.

1. "a potential planning mismatch" :
   A: Add the beans to the sauce.
   B: But we added the broccoli already, and the beans cook slower.

2. "a forgotten action" :
   A: Add the vinegar to the sauce.
   B: But we forgot to add the salt.

3. "an undesirable effect" :
   A: Add the vinegar to the sauce.
   B: But it's not tangy enough.

1.–3. all are slightly different plan-based explanations of the motive for B*'s use of* but in task-oriented situations, and in each case the expectation that B has due to the underlying plan he considers is violated. The module, which mirrors these cognitive processes given the common goal, has to take the variety of misalignments into account; by this procedure, the appropriate use of but is to be justified.

At that stage in discourse this is all that can be done: Identifying the goal TC by way of plan-recognition and adding appropriate expectations to the beliefs of B. This *interpretation* of B's reply would ideally also mirror A's respective cognitive processes. Precondition for A's interpretation being in alignment with the speaker's intention is the same goal TC. Otherwise, if A supposes a mismatch that comes about by divergent main goals both participants have—from which it follows that there is no co-operation w.r.t. a *unique shared* goal—, then, I think, it seems necessary that the supposed goal mismatch will be disclosed by A explicitly right away, according to a super-ordinated principle of co-operativeness, the maxim of quality (Grice 1975). This kind of mismatch is not taken into account by Thomas (2003b), because a unique goal entailed by common ground is a premise of the task-oriented account.

Reconsidering the misalignments mentioned by Thomas (2003b), I think that 1.–3. all have in common that the goal which B has in mind *is not accessible* any more from worlds which comply with the fulfilment of A's order. In 1., B's goal is not accessible from worlds which differ from the utterance situation in the fulfilment of the request to "add the beans to the sauce"; whereas it is part of the plan behind A's speech act, it cannot be part of B's plan at utterance time for reasons of inaccessibility of the goal due to B's background (perspective). In 2., a common goal is assumed; but this goal is not accessible from worlds which fulfil *only* A's command and do not comply also with B's proposed action.[79] This reminds us of an 'exhaustive' reading of A's utterance w.r.t. the remaining sub-tasks which are necessary in order to reach the goal. (Another interpretation would be to consider the goal not to be achievable any more once the order of adding the ingredients salt and vinegar is reversed.)

What is the impact of allowing for a concession interpretation on the overall picture of a unified meaning of but? For one, concession makes the interpre-

[79] In other words, following A's command per se would not make the goal inaccessible here.

tation of but possible when a denial of expectation cannot be reconstructed. But then, concession is said to be optional sometimes, in addition to a denial of expectation interpretation. However, no criteria to choose among them are given. Still, the denial of expectation interpretation is considered the basic one for cognitive reasons.

2.3.2.4 Discussion

I want to conclude the presentation of Thomas' approach with some observations and criticisms. In her analysis, the principal difference between denial of expectation and concession does not lie in the *kind* of relations involved; in both cases the explanation is based on violated 'expectations' which arise due to a plan.

The distinguished patterns of how conjuncts (or adjacent utterances) are connected to each other via an expectation relation follows a widely accepted linguistic distinction (e.g. Lagerwerf (1998)): The first conjunct lets expect the opposite of the second conjunct, which is the denial of expectation pattern. Or the first conjunct lets expect the opposite of what the second conjunct gives rise to, involving a third issue in addition to the conjuncts' propositions; this is the concession pattern. But in contrast to that treatment, both conjuncts are distributed over two speakers' adjacent turns. And the point here is rather the manner in which a salient third issue (TC) can be given contextually. With task-oriented discourse, it is a task that is mutually known and shared by all participants, and everyone is assumed to have a representation of some strategy or plan to achieve it. Under the premise of co-operativeness with regard to the common goal, but signals a perceived misalignment concerning merely details of the plan, which can be of type 'action', 'effect', 'sub-goal' or 'precondition'.

Further, in task-oriented discourse an *ordering on tasks* (generating subsequent sub-goals e.g. in terms of the precondition relation) seems to be relevant linguistically. The hierarchy or sequence of sub-goals mirror a measure of salience: In Thomas' account, the discourse is assumed to follow strictly the steps (sub-goals) of a plan; accordingly, the contrast implicature seems to operate on the current, most salient goal.

The aim of the present approach apparently is *not to unify* the traditional analysis patterns. Both patterns are maintained but serve as a basis for specific, task-oriented instances. For one, I think that both the denial of expectation and the concession interpretation can be based on—what can provisionally be called—an 'expectation' *which* A*'s assertion plus the utterance situation gives rise to*. In some task-oriented discourse examples however, these expectations seem to be too specific and of a discriminating quality compared to a more general 'expectation rule' underlying e.g. (50), as Thomas (2003b) observes. But I think that this difference rather hinges on the *degree of abstraction* that is applied. Consider various possible abstractions for (50), of which only the first one would be generated by the proposed abstraction algorithm: [80]

[80] With '>' standing for "defeasible implication".

$$\begin{aligned} \textit{beautiful}(X) &> \textit{married}(X) \\ \textit{beautiful\_woman}(X) &> \textit{married}(X) \\ \textit{beautiful\_famous\_actress}(X) &> \textit{married}(X) \end{aligned}$$

As I argued above, *all* three expectation-inducing connections can describe a 'rule' that a speaker of (50)B might have in mind. But the more general a rule, the less content of the respective utterances can be made use of and the more the derivation depends on the situation of utterance.

As for task-oriented dialogue, Thomas argues against the applicability of a situation-independent 'rule'—like it is assumed in the denial of expectation analysis (cf. (54)B1)—on the grounds of the involved expectations' specificity. But then, situation-induced 'rules' are again introduced, and these are mapped onto the utterances (which express stages in a plan); this process is facilitated by a plan-recognition module. So we can say that this mapping includes appropriate abstractions from the actual utterances. E.g., compare the first line, which describes rather the *transfer* from a 'rule' to the actual situation of utterance, with the second. This is the appropriate 'rule' that applies to the utterance situation of (54)A due to a respective plan:

$$\begin{aligned} \textit{adding\_vinegar\_to\_this\_sauce\_now} &> \textit{makes\_sauce\_tangy} \\ \textit{adding\_vinegar} &> \textit{makes\_things\_tangy} \end{aligned}$$

So we can state that an explanation of the use of but is based on a deviation from the expected order of events; the peculiarity here is that 'expectation' is tied to an assumed plan, and so is the abstraction that results in some rule.

Especially with cooking recipes, it seems more appropriate to think of the involved expectations to be in accordance with some more general scheme of recipe: It is a general recipe that is mapped to actions in the current situation. Although expectations are tied to the current step in a task-oriented process, it is still a more general scheme that evokes them.

A last remark on the linguistic entities which play a role: When figuring out the relevant expectations from utterances of adjacent turns, their propositional contents have been employed. Nevertheless, the examples include both assertions and commands (see (54)A). What is more, commands are utilised in a systematic way. As far as I can see, the precise role of the different speech acts is not clarified. It is not made clear what exactly the particular impact of a command as compared to an assertion is or whether there is no relevant difference.[81]

Summing up, the proposed analysis of plan-based but is not an additional interpretation but a *special case* of concession—transferred to dialogue—that occurs in task-oriented dialogue. By utilising task-oriented discourse Thomas (2003b) specifies context in a particular way: The utterance situation is such that some salient defeasible expectation rule is modelled according to the premise of a common overall task and a corresponding plan. In other words, the current

[81] But as was indicated above (see footnote 75), speech acts seem to be related to the distinction between substantive vs. argumentative goals.

discourse state is such that a rather specific question under discussion is known to be at stake. This kind of context is thus a special instantiation of the notion of expectation.

My reaction to this has been to suggest that a common view both on the special case of plan-based but and on concession can be obtained by abstracting away (i) from the kind of expectation and (ii) from the kind of the situation that gives rise to it. So, expectation relative to someone's information state in an utterance situation is at a minimum (epistemic) *accessibility* with particular consideration of those possible states which comply with the normal course of events.

What is more, a binding plan suggests criteria for an adequate discourse, too. Neglecting the peculiarity of substantive goals, a *prospective information structure*, i.e. a structure of subsequent sub-goals and their ordering, comes into existence: as a mapping of the underlying plan. Each sub-goal is a node in the information structure representing an issue, and the salience—or *expectation*—of a current issue would be established by the plan. In task-oriented dialogue, where the reference to context is bound by the overall goal, it would be this goal that makes up the node in the information structure. An explicit clarification on the overall goal would go beyond this root issue, which is an essential premise of the account. This kind of a goal mismatch does not fall under Thomas' analysis, and its treatment within the account is not possible. Instead, adding another issue on top of the overall goal seems possible in an information structure model: The issue would then be the polar question whether to adopt 'goal' as the currently common discourse subject or not.[82]

Concerning a generalisation and a transfer of some of these results to other contexts besides task-oriented dialogue, I want to bear in mind the following issues for further discussion:

1. In a discourse, what are the differences between a substantive goal and an argumentative goal, which seeks to add a proposition to the set of shared beliefs (see footnote 75) ?

2. Do the goal-related mismatches 1.–3. , p 58, which are deviations w.r.t. a *plan*, have correspondents in an information structure, the nodes of which represent questions and the aim of which is the accumulation of information?

2.4 Merin (1999a)

Due to its comprehensiveness and coverage of many different usages of but , the work of Arthur Merin is an important contribution to the linguistic literature in this area. So let us at least give a short sketch of the ideas of Merin's analysis (1999a). Starting point is the argumentative function of but as proposed in the works of J.-C. Anscombre and O. Ducrot (Ducrot 1973).

[82] In this case the previously assumed overall goal would be cancelled in a *common* information structure.

According to Ducrot (1973), but (resp. mais) expresses a non-truth conditional relation between two thoughts, i.e. propositions. Frege (1918) can be seen as a predecessor of this idea.[83] As to the conjuncts of but, say R and S, these are opposed to each other as far as the speaker's stated *expectation* is concerned: A speaker of "R but S" conveys that the conjuncts' co-occurrence is contrary to what the hearer would usually expect. Given the first conjunct, the second one is not expected any more. This is a relation between the two expressed thoughts. However, this is but a special case of an explanation that is based on an argument or *evidence* relation. That is, a conjunct is used as evidence or counter-argument w.r.t. some (unexpressed) hypothesis H. If the second conjunct expresses $\neg H$, then it immediately denies the expectation of H that emerges due to the first conjunct.

With this in mind, the aim of the analysis is twofold: Since the explanation in terms of a denial of expectations is not general enough (which is to be shown), a formalised version of it is to be merged with the evidence account of but within one and the same framework. The framework is the probability calculus: The probability of S, $p(S)$, can be conceived of as a measure of the strength of a subject's belief in S. And the probability of S, given another proposition R, can be expressed as the conditional probability $p(S|R)$. This enables to distinguish between the general (unconditional) expectation of a proposition and its expectation given further information (i.e. some evidence). Then $p(S|R) < p(S)$ is a rough representation of a denied expectation expressed with "R but S": Although R lets decrease the a priori probability of S, it nevertheless holds true. Note that here $p(\cdot)$ and $p(\cdot|R)$ represent epistemic backgrounds which only differ in R. For a more detailed description of this framework, see 6.1.1.2. Why is $p(S|R) < p(S)$ not a possible explanation of the use of but in any utterance "R but S"? This is due to three interrelated observations:

1. There are utterance contexts in which R and S cannot be contrary to each other due to expectation—however, at the same time there might be another, more obvious kind of contrast. Cf. the following example of German aber (italics) in an extended context:

   (55) Merkwürdig, die meisten Sportler, die ich kenne, sind nicht sehr gesundheitsbewusst. Sie trinken und rauchen und so. *Fred spielt Fußball, aber er bolzt nicht was das Zeug hält.* Er schont die Knochen seiner Gegner wie seine eigenen.

   That is, a more adequate explanation of the use of but should take a bigger context than just "R but S" into account. E.g., there may be a primary contextual topic that affects the understanding of the contrast expressed.

2. There are utterances of "R but S" which become acceptable only after supplementing them with an argumentation context that provides a hypothesis.

   (56) Kim walks but she talks.

[83] We have seen that e.g. Sæbø (2002) mentions Frege as the original source of the analysis that was to be known as 'Denial of Expectation', see p 11.

3. There are many utterances of "*R* but *S*" which would imply highly implausible expectations if the use of but requires that $p(S|R) < p(S)$:

   (57) Kim is a doctor, but she lives in the Czech Republic.

The detailed and formal discussions of many examples result in a general scheme that can be applied to a broad range of cases. Therefore *relevance* is the key concept. Furthermore, there must be some contextually available hypothesis H, which is a proposition. These components enable a formalisation of contrast in terms of the following conditions.

- The conjuncts R and S are contrary relevant to H; this relevance to H is what both conjuncts have in common, i.e., both conjuncts are not neutral but biased towards H or $\neg H$.
- The relevance of R and S together (to $\neg H$) exceeds the relevance of R alone: $r_H(R \wedge S) < r_H(R)$.[84]
- The speaker of "*R* but *S*" epistemically or deontically prefers $\neg H$.

The formalised conditions of the use of but hold in the special case of $H = \neg S$ too. A modified form of expectation is involved in the following example.

(58) Kim is a nightwatchman but he sleeps on the job.[85]

Being similar to what Posch & Rieser (1976) call "normatives Widerspruchsaber", this use cannot be based on epistemic expectations: The actual probability that a nighwatchman does not sleep on the job cannot provide a plausible explanation for (58). Rather, possibilities can be graded according to what *should* be the case. Some propositions A must not be the case, $p(A) = 0$, others should/must be the case under any circumstances whatsoever, $p(A) = 1$. Now the utterance of (58) is plausible, because—given that someone is a nightwatchman—he should not be allowed to sleep in particular situations. This example shows how but can be used in a wide variety of contexts and how these different uses can possibly be parameterised appropriately. It also shows that modality might play a prominent role herein.

To sum up, the plausible explanation of but depends on the assumption of a plausible contextual propositional hypothesis. This makes it difficult methodologically to verify or falsify the proposed analysis.[86] Except for the explanation of but corresponding to the use of German sondern, the presupposed hypothesis H must be still unsettled, i.e., the common ground which both participants agree on entails neiter H nor $\neg H$. Furthermore, this analysis requires there to be two participants. The second participant, who is the previous speaker before "*R* but *S*" is being uttered, is the initial proponent of R, since the speech act of R is a *concession*.[87] So R is just conceded by the speaker of "*R* but *S*".

[84] For the definition of relevance r, see 6.1.1.2 again.
[85] Merin (1999a, p 213, ex 26).
[86] However, this seems to be a difficulty that all serious analyses of but have to face.
[87] For other elementary social speech acts like claim and denial, see Merin (1994).

However, this clarifies that the contexts Merin considers are not as general as one might think. In these contexts both participants have contrary interests and biases. These biases may concern what is supposed to be the case (epistemic background) or what is morally/legitimately expected to be the case (and possibly other modal backgrounds as well). In these contexts limited cooperativeness applies. The participants prefer or disapprove of a hypothesis to become part of the common ground. That is, there is one shared resource, the common ground, and the participants have different expectations w.r.t. these shared possibilites.

2.5 Summary

At last, some collected observations and ideas are due, which the previous discussions gave rise to. This includes, for one, the properties of but which I consider essential (2.5.2). These can be recovered in each of the present accounts, I argue, although these common properties are rather abstract. Also the peculiarities of the analyses—the way they comply whith the essential meaning components—have to be mentioned. This will be our next topic in 2.5.1 . In 2.5.3 I propose aspects of a new approach of how to instantiate the two main components of a meaning description of but , following the criticisms in this chapter.

Assuming that 'contradiction' and its derivation is implied by the meaning concept of but (see p 71), next I briefly list various kinds of contradiction inherent in the several accounts, focusing on the process of their derivation.

2.5.1 Forms of Contradiction

This survey sticks to the distinction of the analyses into 'structural', 'topic-related', 'relevance-related', and 'plan-based' accounts. The interesting issues are the role of context as well as the question where 'contradiction' is situated in the descriptions. The accounts differ in the systematicity and paradigm that is employed to find the background with regard to which the clauses do 'contrast'. There is a considerable difference to what extent the *contingent utterance situation* contributes to this background, and to what degree the contingent utterance situation is abstracted from.

2.5.1.1 Structurally Derived Contradiction

The approach of Sæbø (2002) assumes that there is a topic function T that is available for each utterance situation of a sentence. T assigns the topic property to a constituent of the sentence. This implies a reference to context, since the topic—as a contrastive topic—is determined relative to a contextual correspondent. But on the other hand, the approach is structural in that the contrast condition operates on a semantic structure consisting of an overt topic constituent and the remainder of the sentence, the 'sentence frame'. The starting point is thus the semantic opposition analysis that is mainly a substitution

operation on the logical form of two adjacent sentences. The main idea of this approach is characterised by Sæbø (2002) with these words:

> There is no reason not to generalise Semantic Opposition to any logical type. The common denominator seems to be that mutually exclusive sentence frames are attributed to two different things.

Instead of just regarding the predicate as a sentence frame—as is the case with instances of semantic opposition—, valid sentence frames come into existence in a broad variety by detaching any sub-constituent.

Contradiction is an inherent component in the description of the meaning of contrast here. A rough formulation of a more general semantic opposition analysis that aims to be an overall explanation of contrast in the end is this (Sæbø 2002, p 4): "The first sentence contradicts the result of replacing something in the second sentence by something in the first sentence." Note that the only considered context for a but-containing sentence is its preceding sentence. Thus, it is the first sentence that is in direct semantic opposition to the result of the substitution. The substitute ("alternative") is an overt constituent of the first sentence. Contradiction refers to overt expressions. Substitute and substituted material share semantic type and have to obey possible selectional restrictions due to their argument positions.

As a next step in the process of generalisation, the direct contradiction between sentence meanings is weakened in two ways. (i) The context is extended (from the preceding sentence) to the whole preceding discourse that emerged by subsequent updates and is represented as *a single* information state. The substitute no longer has to be recovered from the preceding sentence directly, there is not even the need of its overt realisation in previous utterances. (ii) The extension of the considered context has another impact in that the contrast requirement can be met by contextual entailment (see the presupposition in (8)). Then the information state contextually entails the negation that an appropriate substitution operation yields. So the (negation of the) result of the substitution operation on the but-containing sentence does not have to have parallel structure or even be similar in meaning. Therefore it is difficult to apply this operation adequately without additional clues and criteria.[88]

Two important characteristics of the purely structural explanation 'semantic opposition' remain, though. For one, the transition to the second sentence, which contains but, is static despite utilising update semantics: The transition is an update of an information state. The resulting state is distinct from the previous 'context state' (representing the context w.r.t. which contrast is interpreted) merely in the amount of information. But it is still the information state of the same interlocutor. Thus, the involved transition cannot imply a change in terms of 'perspective'. Further, there still is a substitution operation on the logical form of the sentence that contains but. Possibly implicit covert

[88] This point is not meant to be a criticism. It merely shows the limits of a purely structurally motivated derivation of an adequate contrast condition.

perspectives are not taken into account.[89] Similarly, an explicit perspective (e.g. an attitude context) is treated in the same way as the sentence proposition.

2.5.1.2 Topic-related Contradiction

Here the utilisation of topic differs from the account of Sæbø (2002) in that topic is determined by the common *context of* the first and the second sentence. I.e., it is not only the preceding sentence that does determine the topic for a but-containing sentence. This context is given by an overt question or an implicit one (quaestio). It means that the role of context is taken into account more seriously—topic is not abstracted from at the outset, represented by a variable. In this way, a potential interaction between topic and contrast can be accounted for.

With the considered utterance situations, the conjuncts comprise a confirm + deny pair. Similar to the structural approach, but is characterised by a proposition that comes about by a substitution operation. The denial condition ensures that in these contexts the but-containing conjunct acts as a denial. The effect of but in these settings is to supply a negative (partial) answer, because the assertion in the second conjunct does neither necessarily contain a negation nor has to correspond with the explicit question directly: It can convey information beyond what is explicitly asked for in the question context. It turns out that in case the conjunct is a partial direct answer, the denial condition is immediately met by the conjunct (cf. exx (31), (32)). But if it is not, the relation between the additional information of the but-containing sentence and the explicit question is not clear. Further, it is assumed in Umbach's approach that the first conjunct is a direct answer to an explicit question. But if neither the first nor the second conjunct comprises a direct answer, a confirm + deny characteristics of a conjunction cannot be distinguished from a deny + confirm characteristics. Then neither the structural description of the denial condition nor the description of contrast as implying a denial is a guidance for how to meet the contradiction requirement of but : By way of the denial condition one cannot determine whether the but-containing sentence is a confirmation or whether it is a denial. This is true although the denial condition is constant across the confirm + deny vs. deny + confirm distinction, i.e., it remains unchanged. But where this distinction cannot be drawn, the denial condition merely states that both conjunct are polar to each other: The second conjunct may be a denial (and the first conjunct a confirmation) *or* a confirmation (and the first one a denial).

Similarly to Sæbø, a contradiction comes about. But Umbach's denial condition operates on the first sentence/conjunct, i.e. on the assumed context of a but-containing sentence. The *contradiction property* then boils down to there being opposite answers: There is a negative (partial) answer and a positive (partial) answer to a contextually given question. So the denial condition assumes there to be a contextually given issue (i.e. a question) and a previous statement on one of its sub-issues. Further, it ensures that the but-containing assertion

[89] Note that e.g. an assertion can always be conceived of as embedded in the attitude context "I, speaker, believe/know that . . . ."

relates to the complementary sub-issue in a different way—confirming or denying the polar sub-issue. Note that the denial condition does not lead to direct inconsistency: An actual contradiction would be present only if both conjuncts are *differing direct* answers and their respective corresponding *issues are the same*. The examples of Umbach (2001) mainly elaborate on the latter point; the explicit question itself is about two conjoined sub-issues. The conjuncts of the reply are a direct positive and a negative answer to these respectively. The other possibility to prevent an actual contradiction is to connect at least one of the answers with the explicit question like this: The but-introduced assertion may provide additional information not explicitly asked for, including an additional topic. With regard to this case, it is merely stated that a speaker "suggests that the additional topic is relevant" to the explicit question context (Umbach 2001, p 14). A combination of both strategies to circumvent actual contradiction while maintaining contrast is represented by case (C), p 27; there the second conjunct is an indirect answer to a given topic, cf. ex (33).

2.5.1.3 Plan-based Contradiction

The context—which determines a particular class of utterances—is more elaborate here: It provides a plan and an action goal. The proposed explanation is specific in that it is applicable only to contexts which include such a goal. Furthermore, this explanation is tied to the particular way the utterance relates to the goal.

In general, a parallelism between utterances and the entities of a plan is assumed. The correspondence is established between the content of an intention inherent in the reference plan and an actual or a prospective fact. In more detail, the first conjunct of the contrast marker but relates to a stage of the plan: E.g., it might be an order to execute some action that is necessary for the success of the plan. Matching the first sentence with (an integral premise of) a plan requires reference to a knowledge base; so the derivation of a contrast's contradiction is dependent on non-linguistic knowledge.[90] The presupposed plan supplies an agent as well as his *intention* of making the plan's goal factual.

The proposition that is subject to a command or a proposal can refer to any current stage in the plan. If it can be (algorithmically) determined which the current stage is, then the proposed action can be compared to the plan's requirements at that point. Continuing with an assertion that is introduced by but can implicate there to be a contradiction e.g. between the proposed actions and the actual requirements according to the plan. On the other hand, if the proposed action's outcome obeys the plan, a proper sub-goal is achieved. The reference to a plan's constituents can be simplified by abstracting from actions: The interpreter (algorithm) who matches the first sentence against the plan and who infers and expresses any discrepancy reasons that a sub-goal

[90] "Plan recognition" and other reasoning processes, e.g. verification of a particular impracticability-relation between the second sentence and the current plan, are "impossible to state without a framework in which the operation of a theorem-prover is explicitly represented, at a fairly fine level of granularity" (Knott 2000, p 7). The envisaged algorithm would operate on the content of the sentences and on data of the knowledge base.

or even the plan's overall goal is not *accessible* anymore from the state of affairs that complies with the first sentence's proposition. In this way, contradiction is reduced to failure or non-accessibility of a goal. In the exegesis of Knott (2000), I said, there is a discourse referent whose deontic context entails the plan's goal. This amounts to a presupposition of a modally enclosed proposition, required by any plan-related interpretation of the second sentence.

So the counterpart to this is the claim of the second sentence, which has the effect that the previously presupposed proposition is not accessible anymore from within its corresponding (modal) context. This can be the actual state of affairs (according to the speaker's view)—but also an explicit belief context, as I have shown with ex (46). Instead of referring to entities of a plan, the most direct way to evoke this kind of contradiction would be to simply deny the success of the goal, i.e. to state that the goal is actually counterfactual. A strict semantic contradiction would arise if the goal's content is interpreted within the modal context of the second but-conjunct. Common to this form of contradiction are 'shifts' between modal contexts which are assigned to backgrounds that yield different accessibility results w.r.t. a current (sub-)goal. Some such contexts we encountered already; I have added some others which are simple variations of them. These are classified provisionally as 'epistemic', 'deontic', and 'factual':

(59) I wanted to take that train, but the delay of the bus in the traffic jam made it impossible for me to catch it. (deontic$_p$–factual)[91]

(60) I want to take that train, but I don't think I will be able to catch it. (deontic$_p$–epistemic$_p$)

(61) I wanted to take that train, but Mary prevented me from doing so. (deontic$_p$–deontic$_q$)

(62) She believed it was raining, but it actually wasn't. (epistemic$_p$–factual)

(63) He looked tired the whole day, but he had slept for ten hours last night. (epistemic$_p$–epistemic$_p$)

(64) She said it had been raining, but I don't believe it. (epistemic$_p$–epistemic$_q$)

2.5.2 Two Meaning Components

The following does reflect the characteristics of the meaning of but that is met by most descriptions, in one way or the other. Rethinking this issue I consider a vital starting point. Despite the fact that most approaches focus on proposition-like entities, I consider something an essential feature of a description of contrast that is even more general. At the same time, I want to avoid familiar labels like

[91] Indices p and q stand for a participant which a deontic or epistemic context is assigned to, clarifying whether both contexts are to be assigned to the same participant (speaker) or not.

'expectation'. But then, what is to fill in these blanks in a meaning description? The tasks we need to address in order to answer this are:

1. Equating the notion 'contrast' with the peculiar meaning[92] of but, what is the explication of 'contrast'?
   (a) Correspondence: What are the considered entities? What does, intuitively, give rise to them?
   (b) Difference: What does a 'contrasting' relation between them amount to?
2. A method of deriving the elements involved.

Many analyses start with an intuition about what 'contrast' in definite instances of but amounts to. I.e., an intuitive explication of the notion 'contrast' is the first step. But such a use of this term is due to a pre-theoretical understanding. 'Contrast' is not the only notion utilised for a description of the sentential relation. Consider grammars of Latin. In Latin, there are a couple of 'adversative' conjunctions (e.g. sed, at, and autem), of which autem is the prototypical one that corresponds to the co-ordinating conjunction but or German aber (Kühner & Stegmann 1962, § 165).

Next, I will consider the aspect of correspondence, item 1a above, and second the aspect of difference, 1b.

The Term 'Adversative'. In grammars of Latin, the term for the relation is 'adversative', not 'contrastive' (Kühner & Stegmann 1962; Leumann, Hofmann, Szantyr 1965; Rubenbauer & Hofmann 1975). In Latin, the relation can be expressed not only by means of purely 'adversative' conjunctions, but also without any lexical indication and any conjunction at all (as an "asyndeton adversativum"), and also by way of subordinating conjunctions ("cum adversativum"). Because in either case the notion 'adversative' captures a particular *use*, the adversative interpretation of an asyndeton or a cum (as opposed to alternative interpretations) is dependent on the context, i.e., on the adjacent sentences. With an asyndeton adversativum, the juxtaposed sentences can be said to be opposed to each other, in the sense that they are related to or confronted with each other for the sake of comparison. Especially in these cases, opposition consists of *corresponding constituents* across sentences. E.g., the subjects may be opposed to each other with regard to their predicates, which are thus considered as contrasting with each other in some way. (Correspondences between constituents can be established via similar sentence structures, i.e. parallelism and chiasm. For a short survey of the treatment of the term 'adversative' in grammars of Latin, see Soffner (1999, ch 2).) As to asyndetic constructions, the adjective adversus (Engl. turned towards, fronting, facing, before, in front (Lewis (1890))) points to the comparison characteristics w.r.t. corresponding entities; adversativus/'adversative', then, is a *grammatical* term. Even more, to oppose corresponding entities to each other also means to state that they are

[92] That part of the meaning that distinguishes but from mere logical conjunction.

comparable but dissimilar. The term 'adversative' does not highlight the kind of this dissimilarity, however.

The term 'contrast', on the other hand, stresses this dissimilarity rather than the correspondence property. But where the 'adversative' use of conjunctions has to be distinguished from other uses, the choice of the term 'adversative' is determined by a certain way of spelling out the dissimilarity. 'Adversativity' boils down to 'contrast' then, with all the problems inherent in non-structural approaches. This is true especially in case the corresponding entities are entire sentences. E.g., the description of an adversative use of cum ("cum adversativum") hinges on the aspect of dissimilarity; the distinguishing criterion of "cum adversativum" set up by Kühner & Stegmann (1962, § 205, 5.) is: The adversative interpretation is available if the content of the main clause is *unexpected*. This, of course, defines "cum adversativum" in terms of a denial of expectation. It is more difficult to explicate the opposition, i.e. adversativity, between proposition-like entities in terms of dissimilarity than it is with corresponding constituents, e.g., between the subjects of adjacent sentences: They can be compared with each other and distinguished relative to their sentence predicates. But relative to which property do corresponding sentences differ?

This is to show that the concept of 'contrast' seems to be based on a *correspondence* between two entities (item 1a) as well as on a *difference* between them, 1b . This last item implies there to be a pivot of the comparison: Relative to which aspect do the entities diverge?

The explanation for "cum adversativum" of Kühner & Stegmann (1962) (in terms of 'expectation') has a prominent predecessor. Frege (1918, p 64) describes the meaning of the German conjunction aber as "Wink in der Rede" (see citation on page 3). This expression is meant to be a relation between two 'thoughts'.[93] As Merin (1999a, p 15) puts it, this is the prevalent opinion on this subject even nowadays. So, Frege and many contemporary analyses emphasise on item 1b .[94] As to step 2, the issue is how the use of but can be explained and justified for particular contexts. In most of the cases, this approach would point us to a knowledge state and a reasoning mechanism operating on its contents—these ingredients seem necessary in order to explain the adequate use of the lexical item but. The linguistic task in this explanation is to determine the role of the linguistic expressions. (Accordingly, the interface to non-linguistic knowledge would have to be defined.)

2.5.2.1 Contrast and Contradiction

Still, the process of derivation (step 2 above) may employ a variety of assumptions on the context, which are specific to the respective approach. The common

[93] Frege uses the term 'thoughts'. This would be equivalent to 'propositions'.

[94] Note that the term 'expectation', however, can be spelled out in different ways. It can mean common sense inferences, which are generally due to the expected order of events under usual circumstances, given the actual state of affairs. Further, the expectation can be rather specific if the utterance is embedded in a specific context. E.g., we have seen that a substantive goal accompanied by a plan can lead to quite specific expectations which are salient only under these circumstances—otherwise such expectations simply do not hold.

feature 'difference' or 'contrast' that is realised in the accounts is to refer to the known semantic concept of contradiction. For one, it is a well-known criterion, and for another it is a formal one. I will consider two main aspects:

- There is an absolute restriction concerning the *level* (or degree) of contradiction.
- Terms like 'difference', 'contrast', and 'contradiction' refer to a *binary* opposition.

E.g., when we talk of an accordingly characterised 'difference', 'contrast' or 'contradiction' between propositions, Aristotle's law of the excluded middle (cf. e.g. (Aristotle 1962, ch 4)) comes to mind: Relative to the evaluation within a single model, the difference between two propositions has to consist in their membership to disjoint sets—i.e. the set of true and the set of false propositions. For no proposition can both be true and false at the same time. Although it might be clear that the difference between propositions with regard to truth is not directly be at stake here, let us consider Aristotle's underlying concept of opposites as *contraries to one another* (Aristotle 1962, ch 10, § 3) carefully: 'Opposites' cannot both be true simultaneously, i.e. under the same circumstances.

So, any instance of a 'difference' between two entities can be spelled out as a difference in their distribution to one of two *disjoint* sets.[95] When we classify two entities and are to justify their difference, those classifying sets have to be such that the distribution of the two entities among them is unique.

(65) *Difference:*
Two entities of the same type are different relative to two disjoint sets iff

1. each entity is an element of one of those sets, and
2. given those sets, no other distribution of the two entities is possible.[96]

The concept of *contradiction* emerges from this difference simply as the *mutual exclusion*, which is actually equivalent to the relative distinctness of the sets involved: The set (context) of one entity excludes the other entity (from being an element of it)—and vice versa. E.g. with binary antonymous predicates, elements in the extension of one predicate cannot at the same time belong to the extension of the antonymous predicate. In this sense, situating opposite entities in the same set evokes a contradiction.

As indicated, this basic characterisation of 'difference' could be applied also to other entities besides propositions. Note that definition (65) avoids that sets s_1 and s_2 have to be complement sets, relative to the elements of the same type (universe U); it is sufficient that s_1 and s_2 are *disjoint*: $s_1 \cup s_2 \subseteq U$, with $s_1 \cap s_2 = \varnothing$. If the second condition of (65) has to be met for any

[95] Viz. 'properties' or 'qualities' in Aristotle's sense.
[96] Note that the entities cannot be element of the same set. But it is necessary for both entities to be element of one of those sets. The entity–set assignments cannot be permuted.

difference, the entities necessarily are assigned to one or the other set.[97] No other "intermediate" sets are taken into account. 'Difference' is binary here, so the distinction simply represents a *bipartition* of the spanned union $s_1 \cup s_2$.

I mentioned that a classification of the propositions involved with regard to their truth value is not at stake here. This is straightforward. All claims are assumed to obey Grice's maxim of quality; so the but-conjuncts cannot differ in truth, because this would imply one to be false.

Further, consider a general impact on all expectation approaches. As to the *relation* between the propositional conjuncts and whatever is taken as expectations arising from these, *semantic entailment* is excluded: A contrast in truth conditions at the level of semantically entailed "expectations" yields semantic contradiction.[98] Rethinking this issue then led to relations that are non-monotonic and non-semantic, i.e. 'pragmatic', implying non-linguistic knowledge and entailment capabilities.[99]

So, when explicating the term 'difference', only non-semantic contradiction can be involved: This must be a kind of contradiction that does not lead to an inconsistent sequence of utterances of one speaker.[100] Similar to consistency of a single speaker's claims, consistency with regard to his expectations should hold too: Can a contradiction between expectations—as all analyses employing expectation-like propositions assume—be consistent with a single speaker's belief state? Winter & Rimon (1994) deal with this issue by distinguishing between two subsequent information states with regard to claims and the potential expectations arising from these.

So far the assumptions about the basic notions 'correspondence' and 'difference'. Instances of differences involved in the explanation of the use of but had been collected in 2.5.1.1–2.5.1.3 . In the next section 2.5.3, hints for a more *general* explication of task 1 will be given while keeping the preceding discussion in mind. Step 2 will then be the subject in chapter 3 .

2.5.3 Where to Go from Here?

Whereas plan-based and expectation-based explanations of the use of but are deduced from non-linguistic concepts linked with particular utterance situations—like 'plan', 'precondition', 'action', 'effect', 'sub-goal', and 'expec-

[97] In ch 10, § 3, Aristotle distinguishes the possibility of *gradable* opposites. Besides the two sets, there are "intermediate" ones ("intermediate qualities"), which are ordered in total, e.g. the intermediate colours on the scale between 'white' and 'black'. Still, all of these properties represent disjoint sets, but they do not establish a bipartition.

[98] Witnesses for this observation are i.a. Lang (1988), Asher (1993), Winter & Rimon (1994), and Merin (1999a).

[99] An account in possible world semantics has been worked out by Winter & Rimon (1994), instead. Possible expectations (or whatever the propositional conjuncts give rise to) is relativised to sets of worlds or information states.

[100] An exception are sequences of utterances across several speakers, which usually do not at once constitute a consistent common ground. One can think e.g. of direct contradictions there.

tation' (see 2.3)—, a unifying linguistic description should seek to avoid the reference to contingent utterance tokens and even to utterance types.[101]

"Precondition for", "effect of", "sub-goal for", and "expectation from" all describe relations between propositions, the first of which is given by an assertion, a propositional conjunct of but. Either a relation holds between two propositions or it does not. Because contrast has been explained in such contextually anchored terms even in formal approaches, descriptions based on non-linguistic terms—employing e.g. a plan-recognition module (cf. Thomas (2003b))—have evolved. Another similar instance is Asher (1993), who presents an elaborate systematic and *structural* derivation for the discourse relation contrast in terms of the SDRS framework. The discourse units that are to be opposed are assigned measures of polarity; the difference in these measures makes up the definiens of contrast between these units. However, the assignments are based on some rather unspecific, "plausible" complementing (Asher 1993, p 305). Polarity is said to be determined by context. But at the same time, Asher seems to points to a covert property of some instances of but that should be made use of in a general meaning description: He shows how *attitude embeddings* of propositions can have an important effect on the interpretation of but.

Instead of using non-linguistic concepts, an alternative description of the connection between propositions is needed. In a general sense, one proposition can be *accessible* from another one or not. By 'accessibility' I mean the familiar concept of accessibility of worlds in the treatment of modality in possible worlds semantics. For one, accessibility is an accepted indispensible semantic concept; so we take it to be an inherently linguistic concept. Further, its application is not limited to specific cases like '(accessible) expectations', because this concept can make use of an unlimited variety of particular sets of worlds, which can be characterised otherwise.[102]

Maybe this allows us to model the description's interface between linguistic and non-linguistic notions in a clear-cut way. Moreover, the concept of accessible worlds is a way to account for what came across in exx (59)–(64) (in 2.5.1.3) as well as in the relevance of attitude embeddings (Asher 1993) : Because there is a *base* or *perspective* involved in utterances of but , it justifies another descriptive parameter. This often neglected parameter (but see Spooren (1989)) allows us to detach the actual influence of context: In a linguistic description, the actual base or perspective can be abstracted from and represented by a variable, without abandoning the impact of utterance context.

The intention of the following discussion is to show how 'base' or 'perspective' set an appropriate parameter in a meaning description of but : Does it help us in expressing an *invariant property*, general enough to cover most instances of but ?

[101] An exception in this listing of concepts seems to be the term 'goal', like it is introduced and justified for *semantic* reasons w.r.t. questions by Ginzburg (1995); related to this concept are 'questions under discussion' in a discourse (Roberts 1996).

[102] See e.g. the discussion of the relativisation of modal necessity or possibility to various sets of worlds by Lewis (1973, ch 1.2). Lewis distinguishes i.a. between "logical necessity", "physical necessity", "necessity in respect of facts of so-and-so kind", "necessity in respect of all facts" ("fatalistic necessity"), "deontic necessity", and "vacuous necessity".

Chapter 3

Domain Restrictions

This chapter is a brief informal introduction to domain restrictions. Being a part of an expression's meaning representation, a domain can serve as an interface between the expression and its context: for the specification or restriction of this domain might not be completely accomplished through the expression whose meaning postulates a domain. Domains are required for at least three reasons.

(i) The restrictor of a *quantifying phrase* (e.g. a quantifying nominal phrase) ranges over a domain of entities. Therefore a non-empty domain of entities is required, i.e., its existence is *presupposed* by the quantifying operator. There are basically two sources which can *determine* the actual domain: the quantifying phrase itself and its context of utterance. So, (a) the domain might be restricted to a certain type due to the quantifying lexeme (e.g. everybody as in (1)) or it may be assigned descriptive content through the restrictor of the quantifying phrase.[1] (b) There can be a contextually available set that is compatible with the domain determined through (a.): (a.) and (b.) can jointly determine the actual domain of quantification. To give an example:

(1) Everbody ate a piece of Susan's cake.

(2) $(\forall x \mid x \in [\![\text{“human being”}]\!])$
$((\exists y)(y \in [\![\text{“piece of Susan's cake”}]\!] \wedge [\![\text{“}x\text{ ate }y\text{”}]\!]))$

As to the quantifier precedence, (2) roughly sketches the logical form of (1) in the way it is usually understood in a normal situation. And we see that there is a type restriction on the domain the universal operator quantifies over ($x \in [\![\text{“human being”}]\!]$); this is due to everybody. However, there is an aspect that is going to make (2) inconsistent with any normal understanding of (1): Not yet included in (2) is a contextual restriction on this domain of human beings due to some contextually available set of individuals. But in an actual situation an additional restriction is due, because not every human can have

[1] Besides, the domain must also meet the selectional restrictions which are due to the predicate in the scope of the quantifying phrase.

access to Susan's cake, which is a limited source, too. It is therefore reasonable to assume that an utterer of (1) takes a much smaller group of humans for granted contextually. That is, a normal utterance situation of (1) makes the availability of a limited group of humans and thus a contextual restriction of the quantifier domain even necessary.

(ii) *Modally subordinate* expressions are evaluated relative to a domain of particular possible worlds, which constitute a context of their own ("hypothetical common ground" (Roberts 1995)). The significance of a hypothetical common ground is apparent in examples like (3) (see Roberts (1989)):

(3) A thief might break into the house.
He would take the silver.

The only way to resolve the reference of he in the second sentence is to take the content of the possibility—that there is a thief who breaks into the house—for granted hypothetically. This seems necessary, for the existence of an appropriate individual is presupposed by he. Like he is evaluated relative to a context in which an appropriate antecedent (e.g. a thief who breaks into the house) exists, also the modal would is evaluated relative to a context in which there is a thief who breaks into the house: In each of these worlds he also takes the silver. What is actually only a possibility in the utterance situation of (3) must be taken for granted and is elaborated further by the second sentence. So the semantic contributions of expressions which involve quantifiers or modal subordination cannot be exhaustively specified without reference to a given domain. Insofar, domain restriction is a form of context-dependence. Instead of considering all individuals of a certain type or the whole factual context (in terms of those worlds that are still considered possible), only a restricted domain thereof is considered. Thus it is crucial that only this intended domain is the basis for the interpretation of a modally subordinate expression. If the expression is construed relative to a domain that is not in accordance with the actually intended context, then the interpretation will result in a denotation that has not been intended by the speaker and which is probably wrong too. In this sense, the restriction of a domain provides a particular contextual 'perspective' from which the utterance is seen.

(iii) We can conceive of propositional premises which are relevant to *conditionals* as a domain relative to which the asserted implication holds: In addition to the antecedent, there might be implicit premises involved in the utterance both of plain indicative conditionals and of subjunctive counterfactual conditionals. That is, their consequents might not be asserted to hold for all still possible worlds compatible with the conditional's antecedent.[2] However, it might not be possible to specify all premises which a speaker—perhaps tacitly—takes for granted; it might also not be possible to determine whether there are additional, implicit premises at all. Furthermore, it is not always apparent with this kind of restriction how a (restricted) domain can be assumed to take part in the semantic representation. Nevertheless, the resolution of other presuppositions (cf. (21)) or the natural understanding of utterances out of

[2] The antecedent of a counterfactual conditional is taken to be the modally embedded proposition.

the blue (cf. (22)) can justify a contextually restricted domain which possibly consists of unmentioned, implicit auxiliary premises for conditionals.

The following sections mainly give examples of restricted domains. We move from examples where the requirement of a domain is clearly justified for semantic reasons to those examples which address the related issue of the origin of such domains in the discourse.

3.1 Quantifiers

The semantic representation of a quantifying phrase with a two-place quantifying determiner spans a structure that is composed of a *restrictor* ("who was at the party"), a *scope* ("ate a piece of Susan's cake"), and a quantifying determiner, everbody:

(4) Everybody who was at the party ate a piece of Susan's cake.

(5) $(\forall x \mid x \in [\![\text{"human being"}]\!] \ \wedge \ x \in [\![\text{"was at the party"}]\!])$
$((\exists y)(y \in [\![\text{"piece of Susan's cake"}]\!] \ \wedge \ [\![\text{"}x \text{ ate } y\text{"}]\!]))$

(6) $(\forall x \mid x \in D \ \wedge \ x \in [\![\text{"human being"}]\!] \ \wedge \ x \in [\![\text{"was at the party"}]\!])$
$((\exists y)(y \in [\![\text{"piece of Susan's cake"}]\!] \ \wedge \ [\![\text{"}x \text{ ate } y\text{"}]\!]))$

The domain presupposed by the universal quantifier is restricted at the outset by the quantifying determiner to the type of human beings; then there is a further restriction due to the predicate "was at the party". It is indicated that other predicates can be added here, which might be due to a *contextually* given group of people D. E.g., the context of utterance of (4) may suggest that the speaker's assertion is only about all those party-goers who also belong to a group of people mentioned before: "Everybody [of this group] who was at the party ate a piece of Susan's cake." Composing this set D into the picture of (5) results in a representation like (6); D must have been bound beforehand, i.e. contextually.

Denoting a domain of entities, the restrictor must be positioned in the logical structure in a way that the restrictor's entities are accessible from within the scope. However, the position where the domain is presupposed to be available for the scope of the quantifying operator is not necessarily the place of the domain's actual introduction in the discourse. As Geurts & van der Sandt (1999, p 269) point out, "presupposition and scope are distinct phenomena." E.g., both readings (8) and (9) of (7) "may still (and typically will) be interpreted as presupposing that there is a *given* set of children."[3] That is, a hearer of (7) will take there to be a set of children that has been available in the discourse already—irrespective of the placement of the presupposing universal quantifier. With both readings the existence of a contextual group of children has scope over the entire logical form (8) or (9):

[3] Ibid. (emphasis added).

(7) All children weren't asleep.[4]

(8) ¬[all x: child x] (asleep x)

(9) [all x: child x] ¬(asleep x)

It might be necessary to refer later on to single elements of the presupposed domain, although they would not be accessible according to a syntactically delimited scope boundary of the quantifying phrase, see ex (10) (Geurts & van der Sandt 1999, p 271).

(10) The mayor awarded all firemen a silver medal. Some (of the) men sold it right away.

When representing the first sentence of (10) like

$$(\forall x \mid x \in [\![\text{“fireman”}]\!]) \\ ((\exists y \mid y \in [\![\text{“silver medal”}]\!]) ([\![\text{“The mayor awarded } x\, y\text{”}]\!]))\,,$$

then it is not possible to refer to any single fireman's (x) silver medal (y) from outside the scope of the existential quantifier that binds y. However, this must be possible, since in the semantic representation of the second sentence the singular anaphor it identifies one such medal (a medal which is sold by the fireman who possesses it). That is, binding one discourse referent to another one must be feasible across the syntactically delimited scopes of the quantifier phrases in which they are presupposed. As a consequence of this "*telescoping effect*" (Geurts & van der Sandt 1999, p 272), in a discourse a sentence boundary does not necessarily indicate the limits of the accessibility of elements of the quantifier domain.[5]

Other examples of the telescoping effect are (11) and (12), which are due to Karttunen (1976).[6] As Geurts & van der Sandt (1999, p 272) note, with the latter example two levels of quantification are involved: a quantifying attitude verb and a quantifying modal. "[T]he hypothetical state of affairs introduced by the attitude verb wish is picked up by the modal would."

(11) Harvey courts *a girl* at every convention
She always comes to the banquet with him.
The girl is usually also very pretty.

(12) I wish Mary had *a car*.
She would take me to work in *it*.

In (12), there is a car s.t. it is owned by Mary only in those worlds which are compatible with what the speaker wishes to be the case. With Mary's having

[4] Geurts & van der Sandt (1999, p 269).

[5] By introducing *propositional reference markers* into a discourse representation, Geurts & van der Sandt build the content of the second sentence by means of a propositional representation of the first one. That is, the fireman–medal pairs do not get lost and can be referred to from within the scope of some.

[6] Expressions which must be construed in a way s.t. there is a common discourse referent they denote are printed in italics.

a car being non-factual according to the current state of affairs, those worlds are incompatible with the actual common ground. We see that individuals may be presupposed in particular worlds only. These consist of the bouletic modal base established through wish . Moreover, we see that this domain is picked up by the modal would and so constitutes the context of the following sentence. Let us call the set of worlds specified in this way the *bouletic background of the speaker*[7] or the speaker's bouletically accessible worlds in the utterance situation of (12); this set can be elaborated on further. A last example shows how every bouletically accessible world (out of a hypothetical bouletic background) may provide a contextual domain of *fictional* individuals. The speaker's wish does not concern a particular set of dogs but rather the existence of such a set D; nevertheless, the universal quantifier requires an instance of such a set as its domain: [8]

(13) I wish Mary had some dogs.
I would walk all of them.

(14) $\bigcirc\,(\,(\exists D \mid D \subset [\![\text{“dog”}]\!] \;\wedge\; |D| \geq 2\,)$
$(\,[\![\text{“Mary owns } D\text{”}]\!] \;\wedge\; \Box\,((\forall x \mid x \in D)([\![\text{“I walk } x\text{”}]\!]))\,)$
$)$

3.2 Modal Bases

3.2.1 Modal Subordination

Example (12) is an instance of modal subordination. Roberts (1995, p 675) calls such a (possibly counterfactual) propositional domain a *hypothetical common ground* (cf. also Roberts (1987, 1989)): "A *hypothetical common ground* is a set of propositions, familiar to both speaker and hearer, which they hold to be compatible (i.e. simultaneously true in some possible world) but not necessarily true in the actual world." In her article, Roberts argues for a presuppositional account of domain restriction. Therefore the treatment of domain restriction depends on the notion of 'context' employed. But in order to determine the intended domain, also the contextual "assumptions about the common ground of the interlocutors" have to be considered in addition to the expression which contains a trigger of a domain presupposition (e.g. a quantifying phrase). Accordingly, as discourse proceeds, new information may be accumulated to specify the hypothetical common ground further. Not any predication can be used to do so, though. The last sentence of the sequence in (15) cannot be used to make further attributions to the tree that is introduced and only exists in the hypothetical common ground in which "I own a garden" and "I plant an apple tree" is true: for the anaphor it in the third sentence cannot be understood as having the same referent as the pronoun it in the second sentence:

[7] If we generalise about the sort of preference that may be at stake, then we can call this the *deontic* background; as the case may be, this could cover the worlds which comply with what the law provides, with what the speaker's desires provide, etc.

[8] '$\bigcirc$' denotes the speaker's bouletic modality. Let us suppose for the sake of simplicity that the predicate "owns" can be read distributively over the elements of a set of individuals.

(15) If I had a garden, I'd plant an apple tree.
It would bear fruit in a few years.
#It will be damaged in the late frost.[9]

The reason is that the attribution of being damaged in the late frost is not modally embedded. Thus, there is no modal operator which presupposes a domain of particular worlds in the semantic structure of the third sentence.[10] The hypothetical common ground established in (15) so far can be accommodated only if a compatible domain of worlds is presupposed by the last sentence, which would then restrict the hypothetical common ground further:[11] "... It would be damaged in the late frost."

With modal subordination being a kind of contextual domain restriction, we saw that restricted domains can *consist of propositions* as well. Besides, there are also other types of domains, e.g. individuals, times, places, events, etc. (cf. everyone, always, everywhere, sometimes).

3.2.2 Conditionals

Hypothetical assumptions play a role in the interpretation of *conditionals* as well. In fact, conditionals can be taken as a means of introducing a propositional domain. In the following example, the hypothetical assumptions for the consequent of the conditional are provided through reference of the propositional anaphor so, which means: "If I earn enough money next summer to purchase some plants for the garden, then ...":

(16) I hope to earn enough money next summer to purchase some plants for the garden. If so, I will definitely order some dwarf apple trees. I might buy a Reine des Violettes rose from that place in California, too, though I'm not sure yet how it would look with the other roses.[12]

Antecedents of conditionals necessarily establish a hypothetical common ground: The antecedent is the background of the consequent. But like other contextual domains, the hypothetical background associated with the antecedent might provide the contextual propositional domain presupposed by quantifying operators in subsequent sentences, too. Then the conditional's antecedent provides not just a 'local' domain for the consequent (see (15)).

Besides establishing a contextual domain for subsequent utterances, an antecedent can also resume and further restrict an already given contextual

[9] Roberts (1995, p 677, ex (31) slightly modified).
[10] And if there is one—e.g. when analysing the future tense by means of a modal operator—, then the contextually given non-factual domain cannot be picked up due to its incompatibility with those worlds accessible on the grounds of will.
[11] According to the terminology of 3.1, we would say in this case that the presupposed domain is *bound* to the previously established, contextual one.
[12] Roberts (1995, p 666, ex (4)b'). The example additionally exhibits the telescoping effect across syntactic scopes of quantification: The entity presupposed by it in the last sentence is bound to the Reine des Violettes rose introduced in the preceding sentence. If the discourse referent of "a Reine des Violettes rose" were not made available for the entire hypothetical common ground (by accommodating it at a superordinate level representing the entire hypothetical common ground "I earn enough money ..."), then it would not be accessible to the anaphor it.

propositional domain: if a propositional domain is presupposed in the antecedent and a given domain can be bound. For an antecedent to do so, however, it seems that a given domain has to be picked up by means of an (anaphoric or other) expression that presupposes the existence of a contextual domain of an appropriate type. Ex (16) is an instance of so anaphorically referring to a given domain of propositions; ex (17) is an instance of a counterfactual picking up a given (counterfactual) domain, meaning: "If he had played tennis and had been lucky, . . . " :

(17) He could have played tennis. If he had been lucky, he would have felt a sense of achievement.

The general problem when determining the meaning of a subjunctive counterfactual conditional, however, is this: Are there additional, implicit auxiliary premises, which are not expressed in the antecedent? In what other respect may the worlds considered for the consequent and (in part) described in the antecedent deviate from the factual common ground? Another example and its discussion in Lewis (1973) is (18) :

(18) If kangaroos had no tails, they would topple over.

> '*If kangaroos had no tails, they would topple over*' is true (or false, as the case may be) at our world, quite without regard to those possible worlds where kangaroos walk around on crutches, and stay upright that way. Those worlds are too far away from ours. What is meant by the counterfactual is that, things being pretty much as they are—the scarcity of crutches for kangaroos being pretty much as it actually is, the kangaroos' inability to use crutches being pretty much as it actually is, and so on—if kangaroos had no tails they would topple over.[13]

Lewis suggests that, besides the difference in kangaroos having tails or not, the worlds considered for the consequent should be *similar* to the actual world in all other respects, according to what the normal course of events would determine to be similar.[14] Note that Lewis analyses the conditional (18) in isolation and that presupposition satisfaction through a contextually given propositional domain is not taken into account. In (17), on the other hand, there is a *restricted*, non-factual domain available in the discourse. Thereby the considered domain of worlds which are ordered according to their similarity with the actual world might be restricted at the outset.[15]

[13] Lewis (1973, pp 8f).

[14] The basis for 'similarity' between worlds is an ordering relation which arranges worlds on a scale according to their agreement with the normal course of events. In the terms of Kratzer (1981a), this scale is the "totally realistic ordering source". 'Similar to' means being closest to the actual world on this scale.

[15] To show the relationship between (17) and (18) w.r.t. a restricting domain, let us refer to Lewis' (1973) analysis of counterfactuals as strict implication (cf. footnote 44, p 186) : With a modalised, strict implication ($\Box$(*antecedent* $\rightarrow$ *consequent*)) being the semantic representation of a subjunctive counterfactual conditional, the modal operator '$\Box$' quantifies over a domain of worlds, the *modal base* of the quantifier (see e.g. Kratzer (1981b)). By binding to the modal base a contextual hypothetical background as given in (17), the implication can be restricted at the outset. — Whereas with (18), there is no such a priori restriction.

Until now, we have seen instances of how a contextually established hypothetical common ground can be bound by the presuppositions associated with a propositional anaphor or a modal. That is, there is an expression that triggers the presupposition of a propositional domain in these cases. But even an antecedent of an *indicative conditional* can convey *implicit auxiliary premises* by picking up a previously introduced hypothetical background. However, how can a contextual domain be bound without any expression presupposing it? Let us first have a look at two examples:

(19) I might get my money back next week. I will buy myself a new pair of shoes.

(20) If he did come to town by car, then she will be pleased. If he is nearby, then she can go with him.

In the second contitional's antecedent of (20), no expression presupposes a propositional domain. Yet, the assumption that "he came to town by car" is understood to be an implicit auxiliary assumption; viz. the paraphrase: "If he did come to town by car and is nearby, then she can go with him." The second conditional does not even bear a presupposition that can be satisfied by a referent introduced in the preceding sentence. Also for (19) it is at least plausible to understand the second statement as being subject to the hypothetical premise that the speaker gets his money back next week. But this case differs from previous examples where modally subordinated statements are necessarily tied to a contextual modal context due to an anaphor's presupposition, which must be satisfied. Whereas in (19) and (20), it seems that there is no semantic justification for construing the meaning of the second sentence as being modally subordinated.

Kratzer (1978) proposes to represent also indicative conditionals as being implicitly modalised, although these conditionals contain no modal expression:

$$\Box(\textit{antecedent} \rightarrow \textit{consequent})$$

With this representation, there is an operator that quantifies over worlds. Because thereby a domain of worlds is presupposed, implicit auxiliary assumptions involved in the understanding of (20) can be represented by binding the domain presupposition to a particular contextual propositional domain. In this way, the domain of any kind of conditional can be restricted at the outset. However, an indicative conditional differs from a subjunctive counterfactual conditional in that its antecedent's further restriction of the domain is compatible with the factual background of the discourse: An indicative conditional's antecedent describes an actual possibility, whereas a counterfactual conditional's antecedent does not.

We have seen how propositional domains evolve in the discourse by being bound and restricted further from one utterance to the next, see (20). Does this mean that we can conceive of domain building as a conjunction of the antecedents of several consecutive conditionals? Roberts (1995, pp 674f) denies this; consider her counter-example in (21) :

(21) If Audrey met a sorcerer, she'd be delighted. Sorcerers often have leprechaun companions. Leprechauns sometimes have a pot of gold. If Audrey was really lucky, she might get the sorcerer to get the leprechaun to let her have some of it.

Whereas the first counterfactual's antecedent must be an auxiliary premise of the last sentence ("If Audrey met a sorcerer and was really lucky, ..."), the assertion of the second sentence is not subordinated modally to the previously established hypothetical background that Audrey meets a sorcerer. Rather, this sentence will usually be interpreted relative to the general background of the discourse. What are the conclusions from this observation? "Making sense of such a discourse, which involves satisfying the familiarity presuppositions of any definite NPs such as definite descriptions or pronouns, *requires keeping track of all the nonfactual propositions* entertained in discourse, storing discourse markers for the hypothetical or fictional 'referents', and drawing in this information as required to build what Roberts (1987, 1989) called a hypothetical common ground." [16]

Accordingly, there are arguments for conceiving and representing propositional domains as being independent from the utterances which quantify over them (i.e., which presuppose and further restrict them). Binding the domain presupposition to a contextually given background—a propositional domain / auxiliary premises—means to restrict the domain parameter in the semantic representation of an utterance to the given background of the discourse. But moreover, sometimes there are no clues as to which contextual domain is presupposed, because satisfaction conditions of other presuppositions might be missing.[17]

It remains to note that *implicitly restricted domains* seem to be a frequent rather than an uncommon phenomenon in natural language use. See the indicative conditional (22), uttered out of the blue:

(22) If I get my money back next week, I will buy myself a new pair of shoes.

(23) If I get my money back next week (and I won't have my legs broken and also everything else follows the normal course of events until then), I will buy myself a new pair of shoes.

The antecedent of (22) establishes a hypothetical background that is an actual possibility. Do we understand (22) in such a way that the consequent is meant to hold for any such possibility? Although there is no explicitly given contextual domain, a hearer nevertheless takes for granted a restriction through several auxiliary premises, which are implicit. To account for additional premises involved in the interpretation of this conditional under normal circumstances, the hearer must assume an *intended domain* for the utterance of (22) out of the

[16] Roberts (1995, p 675), emphasis added.

[17] See the familiarity presupposition triggered by the definite NP "the sorcerer" in the last counterfactual of (21); it can only be satisfied if the antecedent of the first counterfactual is still taken as the temporary background. So this NP is a strong clue to the intended presupposed background of the counterfactual, i.e., it is a clue as to which auxiliary premises must be met.

blue. So, the intended domain of the speaker will include e.g. the auxiliary premise according to which he does not consider the possibility to have an accident. The auxiliary premises are a restriction of the overall possibilities to the domain in which the consequent is meant to hold. Some such 'standard assumptions' are made explicit in (23).[18]

From the discussed examples we may draw the following general conclusions: To attain a deeper understanding of presupposed domains, it is not enough to focus on the scope of domain-presupposing quantifiers. Rather, we should look at the following questions:

- Which expressions can select which contextual domain?
- What does govern these selections?
- What role does a (bound) domain play in the meaning representation of the expression presupposing it?

[18] Cf. Lewis' auxiliary assumptions for (18).

Chapter 4

Exhaustivity and Perspective

In this chapter we will approach a 'perspective'-related explanation of but. Being the subject of the next chapter 5, this explanation will focus on utterances where but is used as a conjunction in *answers to direct questions*. The answering reply will thus consist of two parts, i.e., of two sentences conjoined with but. But to lay some foundations for the discussion of such a use of but related to perspective and exhaustivity, it is necessary to define the utterance situations which give rise to exhaustivity.

So first, 4.1 gives a description of a semantics of questions. For our purposes, a semantics seems adequate that defines questions in terms of their correct and complete answers (Groenendijk & Stokhof 1984). Together with the notions 'question' and 'complete answer' Groenendijk & Stokhof's concept of exhaustivity is introduced. 'Question' and 'exhaustivity' will undergo modifications; the characterisation of questions—restricted here to one-place wh-interrogatives—will be a simplified sketch as compared to the formal elaboration of Groenendijk & Stokhof (1997). In fact, the semantics will remain incomplete and rather informal; I will focus on those representations which are relevant for the current purposes.

Because we deal with cross-speaker discourse now, a crucial assumption must be made to apply the theoretical definition of an answer to replies containing but: The replying participant is assumed to be always *co-operative* and thus as aiming to comply with the requirements of his counterpart. Depending on the accidental circumstances, however, it might be the case that there is no answer to the question—e.g. because the participant who has been asked does not have sufficient information to (completely) answer the question, or because there are presuppositions of the question which are not met under the current circumstances.[1] Taking both possibilities into account, an *appropriate reply* can either deal with the question's subject-matter directly, or it can be a comment

[1] I will take for granted that presuppositions of a question are satisfied by its context, though; neither does the context have to be modified by accommodating presuppositions, nor do presuppositions contradict the context. The assumption of not having to accommodate presuppositions is for simplicity only; a relation between a but-containing reply and the context of utterance can then be observed directly. On the other hand, due to this limitation we might fail to observe possible connexions between a presupposition (failure) and but.

on the conditions or the actual possibility of giving an adequate answer to the question—or an appropriate reply covers even both. Here, 'answer' is assumed to be a direct reply to the question; it is defined only in case the utterance context is in accordance with the question's presuppositions.

4.1 Questions

To describe utterances of but in question contexts we need to get a grasp of what these contexts are made up of. Only when the question contexts and their interrelation with the subsequent answering turn are defined, can we ask what the specific felicity conditions of answers containing but in these well-defined contexts are. Supposing that appropriate utterances obey particular requirements of answers, it has to be first clarified how the contextual question determines what counts as an answer. This is accomplished by the definition of 'question'. The issue with regard to but then is whether utterances with this discourse particle are proper answers in given question contexts—or do such replies not fall under the definition of a proper answer at all?

4.1.1 Question–Answer Pairs

Before we elaborate on questions, it is crucial to determine the class of interrogatives and replying expressions which this chapter is concerned with. The question definition will cover one-place wh-questions only, which are the denotations of interrogatives containing only one quantifier, which consists of the wh-phrase. How- and why-interrogatives are not subject to the following discussion. (For another important, content-level limitation on the questions considered see the remarks on the aims of questions, p 92.) Further, the interrogatives considered are not embedded, that is they denote direct questions. In addition to the interrogative pronoun itself, the wh-phrase can contain a restriction, which semantically is a property; in (1) it is the one-place predicate "stool". The wh-phrase can occupy also a different position than in (1), e.g. it can hold the subject position.

(1) Under which stools might the hidden sweets be?

What are '*answers*' composed of? First, the replies considered here are declaratives. Replies like clarification utterances (see Ginzburg & Cooper (2004)) will be ignored. In natural language use, there are many possible replies to questions. There are replies which contribute to the subject-matter of the question, as well as replies which do not: e.g. those replies which make a claim on the actual (im)possibility of giving an answer due to the lack of knowledge on the part of the replying participant. — Note that the willingness to give an answer is taken for granted: I will assume throughout that discourse participants conform to principles of co-operativeness.

A replying participant is also regarded as competent concerning the question's subject-matter; the participant has knowledge of "all" individuals

whether they satisfy the question or not: Individuals fulfil the question iff they are covered by the list or description of individuals constituting the truthful constituent answer, which corresponds to the wh-phrase. Krifka (2001, p 2) defines the notion 'congruent answer' in a structural way. This term is a way to define legitimate direct answers:

> The notion of a congruent answer can be characterised for simple constituent questions: It is an answer that fills in a constituent for the wh-word in the question, and does nothing more than that. In other cases, this notion cannot be defined as easily.

Such elliptic constituent answers (2)–(5) as well as their non-elliptic sentential counterparts like (6) are the *direct answers* which will play a role here. Modifications like propositional attitudes will not be taken into account, see (7) and (8); the proposition that answers the question directly is known by the speaker.

(2) (Under) the green ones.

(3) (Under) the small stools.

(4) (Under) those in the back row.

(5) (Under) stool number 3, number 4, and number 7.

(6) The hidden sweets might be under the green stools.

(7) Carl believes (the hidden sweets might be under) the green stools.

(8) As far as I was told, (the hidden sweets might be under) the green stools.

For ease and clarity of representation, the constituent answer considered here will *not* consist of an adverbial (a prepositional phrase) as indicated in (2) to (5) above.[2] Rather, those constituent answers which are taken into account are noun phrases, which are fillers for the wh-phrase in the question: "The green ones." / "The small stools." / "Those in the black row." / "Stool number 3, number 4, and number 7."

4.1.2 Question Semantics

As the starting point for a characterisation of questions I take Hamblin (1958). The semantic representation I will assume is based on the treatment in Groenendijk & Stokhof (1997) essentially. My formulations are simplified and will appear naive in many respects. Moreover, my definitions of questions are incomplete, omitting e.g. a definition of entailment between questions as semantic objects. However, the main concern is a particular aspect of the questions' interactions with their context. Therefore two additional contextual parameters are considered for the representation of questions.

[2] Note that a prepositional phrase might be preferred as an elliptic reply. These do not only mention the fillers for the wh-phrase, but embed them into the prepositional constituent that governs the wh-phrase in the question.

Following the mentioned approaches, questions are determined by means of their possible answers. That is, "[k]nowing what counts as an answer is equivalent to knowing the question." [3] The appropriate way of replying to a question is regarded as an integral part of its *semantics*; by referring to those assertions which correlate with the question's unsaturated propositional content, Hamblin is able to provide a unique, non-circular description of a question.[4] Therefore the prototypical pragmatic property of questions is adopted: In any utterance situation a question usually brings about a particular statement—its answer. So the semantics of questions is inseparable from the semantics of their answers:

> If pressed to define a question, I should do so by saying that it is a sentence which requires an answer; or (I should hastily add) a refusal to answer, or the raising of a point of order. This means that if I am asked a question and if I neither give a proper answer to it nor in some explicit way refuse to answer nor take the question itself to task in some way, I commit a piece of bad logic. And of course it is also bad logic to say nothing at all.[5]

Previous definitions of questions focused on their prototypical contextual properties instead, "confusing content with context." [6] But how can Hamblin's focus on answers provide us with a valid description? What, then, is the answer to a question in any given utterance situation? So Hamblin's definition also has to take the contingent utterance situation into account: The context determines the possibilities there are to answer the question. The definition of Hamblin is laid down in three postulates (ibid., pp 162f), of which we heard the second one already. Being postulates, these are not meant to deal with an extensive range of empirical data, though. E.g., so-called 'relative questions' are not dealt with: "Have you good vision? If not, do you wear spectacles?" [7] For answers to the second question to be exhaustive and to consider the whole space of possibilities, this question has to be interpreted *relative to* a context in which it is the case that the recipient of the question has not good vision. Otherwise the set of possible answers would have to be supplemented with an answer like "I do have good vision", "i.e., the answer which if added would make the set of possible answers into an exhaustive set." [8] We can say that an answer like

[3] Hamblin (1958, p 162, postulate 2).

[4] As for the basis of a description, Hamblin criticises other accounts, citing e.g. Jeffreys (1948), which define questions by means of their common requirements on the utterance situation. The conditions are: The questioner does not know whether..., the questioner wants to know whether..., and the questioner believes that the asked participant knows whether.... The problem is that a definition like this refers to properties which all questions have in common; defining a specific question in this way does not distinguish it from other questions. A distinguishing determinant, the content of a question, is not considered. So the dotted gaps of the definiens above refer to something that, too, should be subject of the definition: "It is simply as if we were told that the question Q means 'I do not know the answer to Q'; where the definiendum appears as part of the definiens." (Hamblin 1958, p 161)

[5] Ibid.

[6] Ibid.

[7] Hamblin (1958, pp 163f).

[8] Ibid.

this denies a presupposition of the question that might not be satisfiable in the context of utterance any more.[9]

Postulate 1. An answer to a question is a statement.

Postulate 2. Knowing what counts as an answer is equivalent to knowing the question.

Postulate 3. The possible answers to a question are an exhaustive set of mutually exclusive possibilities.

Postulate three says that the truth of an answer excludes any other possible answer to hold at the same time, because answers are considered to be always complete. A complete answer does not leave open other possibilities to answer the question truthfully. Therefore questions are semantically characterised as the set of their *possible complete propositional answers*. *Partial* answers are not answers in the sense of Hamblin's postulates. The issue of partial answers will be dealt with later.[10] — A question is characterised neither by its single *actual* answer nor by its possible *partial* answers.

What is more, Hamblin's possibilities ("possible universes") include those which do not satisfy presuppositions of the question. This actually is due to empirical observations, for questions in fact *are* uttered in contexts which do not satisfy their presuppositions; this may be for the reason of factually wrong assumptions about the utterance context on the part of a questioner. For an analysis of questions to cope with realistic settings, one would have to treat those replies as answers which *reject* a question, too. But we may omit these, neglecting several realistic settings of conceivable utterance contexts, as formulations of a semantics of questions in line with Groenendijk & Stokhof (1997) usually do. There are other context-dependencies of questions which are not regarded by such strictly semantic characterisations either, it seems: mention-some readings of questions (see e.g. van Rooy & Schulz (n.a.)) and *agent-relative* factors which determine whether a reply is a valid answer according to the *needs* of the questioner (see Ginzburg (1995)). Among these factors affecting the property of being an answer may be the utilisation of an appropriate conceptual cover s.t. the questioner knows the denotations of the individuals specified. More generally, it may be an important condition on answers that the questioner is capable of interpreting the answering reply s.t. it meets his information needs (see the resolvedness condition of answers of Ginzburg (1995)); we will encounter the relevance of the questioner's information needs below. As for the presuppositions introduced by a question, these are all treated in the same way: They are fulfilled in every possible context. Consequently, the notion of wh-question employed implies that there is always a positive answer. This means that—diverging from the question semantics of Groenendijk & Stokhof—questions

[9] Later on I will restrict the contexts of questions to those in which all presuppositions triggered by a question—like the existential presupposition—are satisfied throughout.

[10] Stipulating that possible answers must be mutually exclusive, thus complete, does not entail that there actually are no such partial answers. However, Hamblin's theory aims not at explaining every aspect of empirical data.

are defined s.t. their *existential presupposition* is satisfied.[11] Also all other presuppositions of a question are taken to be satisfied in a given utterance context. Details about the satisfiability of the question abstract in a context will follow below.

The view of questions as answer sets makes their definition invariant across—and even insensitive to—possible actual states of affairs: The *intension* of a given question is the same for every still possible world ("possible universes").[12] As Hamblin (1958, p 166) puts it with regard to polar questions: "A yes–no question divides the possible universes in two. So, of course, does a statement. But a statement also says which subset contains the actual universe: it polarises the division. A yes–no question merely draws the dividing line, it does not polarise." By defining a question as a 'division' like this, a question is determined as a *semantic entity*—invariant across possible worlds. The meaning of a question is then determined by its unsaturated propositional content.

But there is an aspect of the propositional content that does not seem to be assignable straightforwardly either to the question's content or to its context: Is the set of *possible fillers* of a wh-question determined by the question itself or is this set imported from its context of utterance somehow? In other words, how is the *question domain*, which the wh-word quantifies over, to be determined? Before we go into this, let us first put together the determining factors of a question which have been collected so far.

Characterising a constituent question Q includes the following steps: (i) Forming the *question abstract*, which semantically is a functor, by abstracting from the wh-word in case of a wh-interrogative (but resuming the descriptive content of the wh-phrase); (ii) determining the actual set of possible appropriate fillers (the question domain), which the wh-word can be said to quantify over and which can be restricted overtly by descriptive content and sortal restrictions of the wh-phrase and the question abstract; (iii) given both the question abstract and a set of its possible fillers, forming the respective set of all singular propositions by means of function applications/β-reductions (this set can be conceived of as the set of possible *atomic answers*); and finally, (iv) setting up the set of all complete possible propositional answers. Step (ii.) will become obvious when for each complete answer one has to consider also all the other (actually false) possibilities there are to fill in the question domain. (This domain of possible constituent arguments is not yet represented in (13) below; it will be introduced in 4.1.3.1 .)

[11] E.g., in the simplest case, I will not consider the reply "nobody came" as an answer to the question "Who came?", because this reply cannot be in accordance with the existential presupposition that somebody came, which is assumed to be satisfied by the context of the question. However, other presuppositions—triggered by some expression in the question abstract—could be more complex. Thus it might not be as easy to integrate the possibility of their violation as is the case with this example; supplementing the set of possible answers with an answer like "nobody came" would not be sufficient. This is one reason for leaving those replies out of consideration and for defining the set of possible complete propositional answers even more restrictive than Groenendijk & Stokhof (1997) do—considering the existential presupposition and all other question presuppositions to be satisfied by the question context.

[12] A parameterisation of the definition relative to a question's context set of possibilities will be introduced below.

Possible answers are conveyed through assertions. The intensional meaning of an assertion (uttered in a specific utterance context) is conceived of as a proposition. Thus, the basis for the representation of questions are propositions. How are propositions represented? In terms of possible worlds semantics, a proposition is the set of those worlds in which the proposition holds true. Correspondingly, entailment is traditionally represented as set inclusion. In (9), a proposition p_A represents the denotation of a declarative A. Note that a declarative is an expression of the object language. In the notation applied here, the declarative's meaning (a proposition) is represented as a function of the declarative's expression. This way the structure of the logical form as well as the denotation of the constituent expression are hidden, mapping a syntactic entity 'declarative' on a semantic entity of the type 'proposition'. For A, we can insert a declarative like "Simon heard Garfunkel singing". Then $[\![A]\!]$ or $[\![$"Simon heard Garfunkel singing"$]\!]$ is a proposition which this declarative can be assigned to. (I neglect eventual ambiguities of the expression and assume there to be a unique semantic value for any given expression in the examples.)

(9) $[\![A]\!] = p_A \equiv \{w : [\![A]\!] \text{ is true in } w\}$.

(10) *Proposition p_A is true in w_0 iff*
$w_0 \in p_A$.

(11) *Proposition p_A is entailed by $p_{B_1}, \ldots, p_{B_n}$ iff*
$\bigcap_{i=1}^{n} \{w : [\![B_n]\!] \text{ is true in } w\} \subseteq \{w : [\![A]\!] \text{ is true in } w\}$.

A Word on Satisfiers. An answer is a (complex) proposition that *identifies* all those entities which fill in a constituent for the wh-phrase in the question truthfully. A single entity that is a truthful filler is called a *satisfier*.[13] (Those entities which are not will sometimes be called *non-satisfiers*.) In those cases we will inspect, the entities in general are *not* the denotations of determiner quantifiers; e.g., we will not consider "many stools" or "a few stools" as a complete and sufficient (elliptic) answer to (1).[14] But those entities asked about in a 'question' can generally be denoted by properties: Plural indefinite descriptions seem legitimate, provided that the DP reads as a *specific* set of individuals s.t. the questioner would know the specified set by extension; then he knows of any single individual whether it belongs to the extension of the specified satisfier or not. Further, singular and plural definite descriptions like (3) are legitimate satisfiers; and so are (lists of) individuals (individual-type properties), realised in the answer e.g. as proper names. Another possibility are anaphoric or deictic realisations. Furthermore, combinations are possible, as shown by (2) and (4).

As noted before, plural indefinite descriptions can be employed as answers; let us look at a realisation with a common noun: "What animals do you

[13] Satisfaction comes about by a semantic evaluation, yielding the truth of a proposition in w_0: A satisfying entity combines with the 'question abstract' to yield a true proposition in w_0.

[14] There is one exception to this: We will consider the DP all as a possible answer in our argumentation below—and it will be, under particular circumstances, considered as the preferred answer, indeed. Other determiners/DPs—viz. some, most, and no (none/nobody)—are not apt to serve as a legitimate answer: These do not *identify* a specific set, although they may have a specific reading.

like?" "Birds."—What does an answer like this mean? And what does completeness mean here? Is it true that the answerer likes every individual of the extension of the kind denoting term, for the answer to be truthful? Or does the answer mean that if something is a bird the answerer *usually* likes it? Although knowing the extension of the kind denoting term "birds", the answer might not inform the questioner about every animal (not even about every individual bird) whether the answerer likes it or not.

In order to determine whether a reply satisfies the aim of a question or not, in the examples only distributive predicates will be employed s.t. the extension of the question predicate is clear e.g. w.r.t plural noun answers.[15] Moreover, kind denoting answers are not considered due to the generic interpretation implied with these.

As a consequence, satisfier specifications which have the same extension in the actual world will be regarded indistinguishable and identical in this framework. So e.g., group-properties of any sum of those individuals which are covered by the specification's extension are hidden from the current account.

The Aim of a Question. The underlying principle for the characterisation of 'answer' is supposed to be related to the *aim of a question*: For the current purpose, the aim of a question is reached only if every (individual-type) entity that fills "in a constituent for the wh-word in the question" is *identifiable* to the questioner (by way of the 'answer').[16] But as Groenendijk & Stokhof (1997, pp 1109f) note, there are equivalences like these:

a) Knowing the satisfiers of a question abstract is to know the non-satisfiers.

b) Knowing which individuals satisfy the question abstract is to know of any individual whether it satisfies the question abstract.

These equivalences are due to the stipulated exhaustivity condition that there is always a "unique true and complete answer" in any utterance situation. So the aim of a question is an inherent component of the underlying theory of questions. It follows that there might be types of questions, differing in their aim, to which a Hamblin-style treatment cannot be applied as is. One such sort of questions are *identification questions* like "Who is ... ?". '*Open questions*' (Groenendijk & Stokhof 1997, p 1108), which ask about something for which a fixed set of possible alternatives might not yet be known, constitute

[15] Note that collective question predicates are excluded just for ease of representation. An entity consisting e.g. of a group of persons can be an (elliptic) answer: "Who did meet there?" "Lisa and Paula met (each other) there."

[16] According to pragmatic views on answers (see e.g. Åqvist (1975)) there is the empirical criterion for the appropriateness of an answer that it makes the question satisfiers *identifiable* to the questioner—i.e. that the questioner *knows* which individuals fulfil the question predicate; it is just as important as the truth condition for answers.

another sort; according to Groenendijk & Stokhof (1997), questions to pursue a yet unsettled definition are of this sort: "What are questions?" [17]

The exhaustivity supposition w.r.t. an answer requires that there is a domain assigned to the question: A legitimate (complete) answer must identify a *specific* set of (individual) satisfiers.[18] The way of specifying this set may differ from case to case. It remains to clarify what other conditions a complete answer must meet s.t. the hearer learns all single individuals of the satisfiers specified.[19] That is, the specification must be appropriate for dialogues and its extension may not differ from one interlocutor to another: Due to the specification, all participants identify the same extension.

In mentioning the aim of a question we already looked ahead in order to shed some light on the (semantic) composition of what 'answer' amounts to. Let us now turn to the issue of how to represent an answer again.

If in a direct answer it is stated of every specified individual that it is a satisfier, a complete direct answer can semantically be conceived of as a conjunction of singular propositions. A singular proposition states truthfully of a single individual that it is—in the current state of affairs—a filler "in a constituent for the wh-word in the question". To conclude the answer relative to a question domain, it has to convey that all other individuals out of the question domain (besides the specified ones) are non-satisfiers. Apparently, such an interpretation of an actual answer, which is related to the whole question domain (and does not just consider those individuals specified in the answer), is beyond the literal content of an answer in most of the cases. Apart from "all" or "none", which are replies ranging over all individuals (out of a specific domain or of a particular sort), an answer usually does not overtly specify both the satisfying and the non-satisfying individuals. Nevertheless, answers more often than not are taken as if they would express exactly this. The reading underlying this kind of interpretation of answers is called "strong exhaustiveness" (Groenendijk & Stokhof 1997, p 1110) :

> [A] weakly exhaustive answer provides a complete list [of all single truthfully satisfying individuals], a strongly exhaustive answer contains in addition the closure condition stating 'and that's all, folks'. Strong exhaustiveness, thus, should not be confused with the requirement that an answer specify both the positive and the

[17] Even all instances of questions which involve a specific question domain can be used as 'open questions' actually. When a stranger from a distant town asks about party-goers, he is not able to think of any actually possible party-goers, because as a stranger he does not know any person around. So there can be contexts s.t. the questioner does not know any possible satisfiers (and cannot identify them e.g. by name). Nevertheless, it is assumed that the examples throughout are uttered in situations for which an intended question domain does always exist.

[18] This does explain the different treatment of all vs. some here: Whereas all is apt to identify all satisfiers (relative to the restrictor of the quantifier)—by simply specifying the restrictor class as the set of satisfiers—, some makes none of the satisfiers identifiable to the questioner; the questioner merely learns that there are "some". That is, although the determiner some can be used by the speaker to refer to a specific set of individuals he has in mind, such an answer does not put the questioner in a position to identify the set of satisfying individuals. Therefore satisfiers have to be expressed in a "transparent way" s.t. the questioner learns the extension of this set.

[19] See 4.1.3.1, "Interlude".

> negative extension of a relation. Partition theories as such are committed to strong exhaustiveness in the proper sense, but not to the latter requirement.[20]

Under the assumption of a specific question domain, the equivalence (a), p 92, follows from a strongly exhaustive answer. That is, by virtue of a strongly exhaustive answer also the "negative extension" is known.

According to these specifications, a set *Answers*(*Q*) of possible propositional answers to (12) can look like (14); the sequel to the given possible answers of this set depends on those individuals the question is about.[21] The parentheses are implicit additions, which are necessary to read the expressions as strongly exhaustive answers. (Fixing a (specific) question domain will amount to instantiating a restrictor for nobody in these parentheses, spelled out: "and nobody else out of the very question domain was invited".) (14) is a sketch of a *partition* of possibilities, i.e., a partition of the set of possible worlds. This set itself is not yet represented, though. Being propositions, the possible propositional answers are subsets of the still possible worlds, called *cells*. Since possible answers are exhaustive, the cells do not overlap—that is, no possible world is element of more than one cell. So each cell of a question's partition is semantically equivalent to a single possible answer to this question.

(12) Whom did they invite?

(13) "Whom did they invite?" = $Q \equiv (?x)\,(\,[\![\text{"They invited } x\text{"}]\!]\,)$.

(14) *Answers*(*Q*) =

{ [[“They invited Mary (and nobody else)”]];
[[“They invited Hamblin (and nobody else)”]];
[[“They invited Mary and Hamblin (and nobody else)”]]; . . . }.

The form of question *Q* is given in (13); it makes explicit the distinction between the *question abstract* [[“They invited *x*”]] and the wh-word *?x*, cf. step (i.), p 90.

4.1.3 The Context of Questions

4.1.3.1 The Question Domain

As we have seen, the supposition of a specific question domain is strongly backed by the stipulated exhaustive character of answers. Knowing the satisfiers is equivalent to knowing the non-satisfiers. But a specific domain was not yet represented in (13) and (14). (E.g., nobody in (14) did not range over a *specific* set of individuals—apart from its inherent sortal restriction.) Taking the equivalences on page 92 seriously, there must be some domain of individuals that supplies us with the non-satisfiers, which—besides the actually specified truthful satisfiers—must also be identifiable by virtue of an answer.[22]

[20] Ibid.
[21] Note that [[“They invited nobody”]] $\notin$ *Answers*(*Q*).
[22] See Groenendijk & Stokhof (1997, p 1110).

Independently of this theoretic supposition, there are observations of explicit restrictions and further specifications of a question domain, which justify the assumption of a specific question domain empirically.

It will also be shown that the choice of a specific question domain hinges on the aim of the question, i.e., on the intention of the questioner. This will justify the assumption of a ubiquitous, intended (implicit) question domain, independent of its explicit specification in the question itself. Finally, there is another aspect concerning the givenness of the domain: The specification of a domain must be mutually understood. Dealing with dialogue, it has to be ensured that there is no misconception between the interlocutors with regard to the specification of satisfiers out of the domain. Thus, a common representation of these individuals that is shared by the discourse participants must be assumed.

Exx (15)–(22) show how the domain, which is the subject-matter of a question, can be overtly restricted in the question itself. Generally, a restriction can be introduced in the wh-phrase or in the question abstract. As for the wh-phrase, the question domain can be restricted by the descriptive content of the wh-phrase, via sortal restrictions due to the wh-word, or restrictions can be imported by anaphoric reference in the wh-phrase. As for the question abstract, the domain can be determined in part via selectional restrictions. I will focus on those restrictions induced by the wh-phrase. An overt restriction usually is partial—it does not determine the intended question domain precisely—, but there is also the possibility of a complete explicit specification of a domain, as you can see in (16); a list like in (16) precludes any other option.

(15) Who is coming to the party?

(16) Who of Fritz, Carl, and Bob are coming to the party?

(17) Which of your friends are coming to the party?

(18) Which girls are coming to the party?

(19) When did Carl steal a car?

(20) Where did Carl steal a car?

(21) Where did Carl steal cars?

(22) A: I invited your friends and told Fritz, Carl, and Bob about the party.
B: Which of them do you think will come?
B′: Who do you think will come?

Let us start with the *wh-word*. Who in (15) restricts the possible party-goers to people.[23] When and where are restricted to times or occasions and to locations respectively. (19) differs from (20) just in the wh-word, being equal in every other constituent; yet, both questions are totally distinct in

[23] But note that the question abstract imposes a selectional restriction to the same end, too.

their question domain.[24] But paradoxically enough, a closer look reveals that the sortal restrictions introduced by when and by where are not as clear as the restriction to the set of people in (15). For instance, does (21) suggest a different kind of domain than (20)? I think that it does; domains restricted to (entities of) locations can differ from each other in a very general sense: Whereas a habitual interpretation of (21), induced by the bare plural noun phrase "cars" and the imperfective aspect, suggests a location large enough to include possibly many car theft events (which might not have taken place at precisely the same location), with (20) the alternatives of the question domain can be locations of a finer granularity: e.g. a particular car park, a street, a car dealer. This is so because (20) asks about the location of *one* car theft event (at least under the specific reading of the indefinite "a car"). Therefore, we find that—in contrast to the previous domain of people—there are no ontologically natural atomic entities ("individuals") for the sortal categories 'time', 'occasion', and 'location'.[25] In terms of *granularity*, ex (20) fits a fine-grained domain much better as compared to the generically interpreted (21). To determine a domain, it might be necessary to first determine the degree of granularity of the entities of which the domain is constituted.

Granularity is but *one* determinant of the question domain. So far, given a sortal restriction introduced by the wh-word and granularity, the issue arises: What is the appropriate question domain? The sortal restriction is given overtly. And, in the examples (20) vs. (21), it has been a facet of the content (habitual aspect) that served as a guide to the appropriate degree of granularity. What has been missing for determining the question domain are two other sources: *context*, together with a further descriptive restriction. Before discussing the descriptive content of a wh-phrase, let me first characterise the role of the utterance context. There might be parameters in a question's representation which cannot be instantiated by material of the question's denotation itself. E.g., context can import—by way of anaphoric reference or without—a complete specification of the domain, cf. (22)B′ and B. Before going into these cases, we will encounter the role of context when determining the degree of granularity of the entities which constitute the domain: It has been shown by Ginzburg (1996) that even identical interrogatives sometimes must be assigned domains which

[24] Note that a question like this might be considered an 'open question'—this is definitely so in case the questioner has no idea at all e.g. where the car theft took place; see p 92. For now I assume there to be a domain that can be subject to some restriction: Cf. the past tense in (19), whereby the time domain is known to be restricted to the past.

[25] This insinuated difference between the nature of a domain of people and of a domain of (entities of) time, occasions, and locations holds only insofar as all domains are determined extensionally, not intensionally: Only under this simplifying assumption is a domain that is compatible with (the sortal restriction due to) who always identified as a subset of the set of all people. Otherwise, there would be countless other, *intensional ways of identifying distinct domains*, no matter whether intensionally distinct domains are extensionally denoting distinct sums (i.e. sets) of people or not. (See the discussion on satisfiers above.) Nevertheless, given the extensional view of domains of satisfiers, a domain compatible with who will be identified extensionally and, given further information, will then consist of a specific set of individual people.
Moreover, the fact that every domain introduced by who comprise natural atomic entities seem to be a motive for who-interrogatives frequently serving as examples in the literature of exhaustivity: There is no such contextual import like 'granularity' here. (For 'granularity' see the exx (23)–(25) from Ginzburg (1996) below.)

differ in granularity. This is necessary because of the fact that question domains must be appropriate. Accordingly, 'appropriateness' is defined contextually via the *appropriateness of an answer*. This way we can learn more about the dependence of the (appropriate) question domain on the aim or goal of a question. This is the very point at which the *intention of a questioner* comes into play in an essential way.

Interlude: Appropriate Answers. Whereas for any w_0 there is just one semantically defined possible answer that is exhaustive in the context of a unique, specific question domain, there are apparently many ways of actually replying to a question truthfully and *appropriately*. According to the judgement of native speakers, a reply is "appropriate" if it is about the subject-matter of the question; an element of the answer set can then be entailed—although the reply might not be a direct answer to the question in the technical sense of our definitions.[26]

So, contrary to a semantics of questions like the one developed by Groenendijk & Stokhof (1984, 1997), which is based essentially on Hamblin's postulates, there are other accounts which hold a more empirical view of the function of answers. E.g., Ginzburg (1995, 1996) employs other inferences beyond semantic entailment to describe the question–answer relation between a question and a following assertion.[27] Whereas the semantic view supports a question–answer relation that depends on the question's partition of a contingent context, a more empirical approach imposes additional, complementary criteria on answers which involve "agent-relativity", i.e., the mental state of a questioner. An answer is not just a proposition that semantically entails a cell of the partitioned context—although the answer concept of Ginzburg (1996) also considers semantically definable answer criteria, based on the content of the question: E.g., *potential resolvedness* means that some given piece of information (semantically) entails whether the current context is s.t. there is a satisfier of the question abstract or not.

One starting-point for a description of those other answer criteria are the linguistic embeddings of interrogatives in attitude contexts, e.g. as a direct object of know, resulting in indirect interrogatives. Which assertions *resolve* the question s.t. their answer-property is preserved under the knowledge of the questioner? In other words, under which circumstances is it correct to claim,

[26] E.g., Ginzburg (1996, p 395) states an 'Aboutness-Set' to be a crucial determinant—in addition to the semantically derivable determinants—for any given question. This is a very comprehensive set, containing even false replies or those which are due to an unsatisfiable question presupposition (and which I do not consider here):

> [E]ach question is associated with a class of propositions, those characterisable as providing information $About(q_0)$—those a competent speaker of English recognises as "intimately related" to any given question, call it q_0, quite independently of their truth or specificity relative to current purposes.

[27] The semantics behind this account is not a possible worlds semantics. Instead, a *situation semantics* is utilised. A proposition corresponds to a (complex or atomic) state of affairs ("*SOA*"), which is an entity that describes *partial* information states (situations). Furthermore, there are abstractions of *SOA*s. So in this semantic framework there are other types of semantic entities besides *totally* determined information states (possible worlds), relative to which the contribution of utterances is described (Ginzburg 1996, pp 404ff).

for instance, "The questioner knows when/where . . . "?[28] E.g., even truthful direct answers to when- and where-interrogatives may differ in granularity s.t., according to the knowledge of the questioner, the question is not yet solved. But besides this, even non-direct answers—not directly addressing the question in a semantic sense—might have the potential for solving the questioner-relative issue. These considerations both extend and restrict the possibilities of giving "appropriate", resolving answers, as compared to simply giving one of the answers that make up a Hamblin-style set: Whereas (23)B strictly is not a direct answer, mentioning no proper point of time, it does nevertheless *solve the issue*. A direct answer like (23)B′, on the other hand, might not resolve the question: Imagine that A does not know the current time; then the absolute time of departure, accurate as it may be, might prove not to be useful. Moreover, one and the same reply might differ in its potential to resolve the issue. This depends on two aspects of the context of utterance which bring agent-relativity into play (cf. (24) vs. (25), taken that both have a question domain and are not 'open questions'): There are the *goal* and the *reasoning capabilities* of an agent. Therefore, it might not be sufficient to just somehow (truthfully) specify the satisfiers of the question abstract. The utilised concepts have to be useful w.r.t. the questioner's current goal and his knowledge as well.

(23) A: At what time is the train leaving?[29]
B: Very soon. Run before you miss it!
B′: At 13:10.

(24) *[Context: Jill about to step off plane in Helsinki.]*
Flight attendant: Do you know where you are?
Jill: Helsinki.
Flight attendant: Ah ok. Jill knows where she is.

(25) *[Context: (Based on a scene from Jim Jarmusch's "Night on Earth") Jill about to step out of taxi in Helsinki.]*
Driver: Do you know where you are?
Jill: Helsinki.
Driver: Oh dear. Jill doesn't (really) know where she is.

Depending on the reasoning capabilities, also a reply to (23)A like "Run!" could be appropriate. It is appropriate if the hearer can infer the time of departure he asked about, e.g. by reasoning that the departure of the train is within a few minutes roughly. If the accuracy of such an inference is sufficient for the questioner's purpose, the reply is helpful. This is so because by way of (23)B *the hearer knows* the time of departure accurate enough—according to the goal pursued. Note that this may be the case even if the hearer's goal does not comply with the goal that the answerer apparently has in mind: to catch the train. (It follows that the fact that the intended performative speech act of (23)B might not succeed has no effect on the reply to be helpful to the hearer.)

[28] See e.g. Ginzburg (1996, p 401).
[29] (23)–(25), slightly modified, are due to Ginzburg (1996, pp 401f).

Finally, to close the interlude, let me quote Ginzburg's definition of 'resolvedness'. It comprises a semantic and a pragmatic component.[30] (I will come back to the correspondence of semantic and pragmatic answerhood in 4.2 .)

> I have emphasised above that the notion of *resolvedness* relevant for natural language semantics is in part agent-relative. Where the agent-relativity comes in is in determining the degree of the specificity of the information ("the goal") and the informational means relative to which this specificity must be attained. Hence, we have the following definition which is stated relative to an agent's mental situation that supplies a *goal g* and a *notion of consequence*: [. . .]
> A fact τ RESOLVES $(s?\mu)$ relative to a mental situation *ms* iff
>
> 1. Semantic condition: τ is a fact of s that potentially resolves μ
> 2. Agent relativisation: $\tau \Rightarrow_{ms}$ Goal-content(*ms*)
> (Intuitively: τ entails the goal represented in the mental situation *ms* relative to the inferential capabilities encoded in *ms* .)[31]

To conclude, there can be an essential contextual influence even on a merely sortally restricted domain. In particular, the intended goal of the question can directly determine the question domain in an utterance situations, viz. (24) and (25).

Let us take a look at the *wh-phrase* and its descriptive content. Being a quantifier, the wh-phrase is composed of a determiner, the wh-word, and its restrictor. It is the function of the restrictor to determine the domain of quantification. This restriction can be realised explicitly, it can be implicit, or there are both implicit and explicit factors sharing in the restriction. Implicit restriction means that information relevant to the restrictor has to be provided by and drawn from the context, not from the question content.[32] Ex (16) exhibits an entirely explicit restriction, ex (18) shows an explicit restrictor (the common noun girls), which may be understood as being narrowed down further implicitly / contextually.

[30] 'Potential resolvedness' is considered a semantic component; so the time of the train's departure should be derivable via semantic entailment from "Very soon. Run before you miss the train.", (23)B.

[31] Ibid., p 407. A question is represented as $(s?\mu)$, with s being the actual utterance situation; μ is the question abstract. Furthermore, $\Rightarrow_{ms}$ "is taken to be a sound notion of consequence available to the mental state *ms* of an agent *a*" (Ginzburg 1996, p 406). There is no other elaboration of this relation, but Ginzburg (1996, footnote 27) notes that "nothing hinges on the particular notion $\Rightarrow$ chosen."

[32] Nothing is said about how this can be accomplished. The underlying assumption is the existence of context sets (of individuals) which serve as possible restrictors for determiner quantification (Westerståhl 1984). Even (overtly) empty restrictors are assumed to refer to contextually available material. The necessity to fill in material for the restrictor s.t. it results in a specific domain of quantification can be taken as a presupposition. An explanation of the presuppositional reference of the empty restrictor to descriptive material accessible in a discourse, as well as a method of presupposition satisfaction by means of anaphora resolution is given by van der Sandt (1992). I will remain implicit on this; on the possibilities of doing so and an integrating overview see Sæbø (1999).

In (22)B the explicit restrictor is an anaphoric pronoun that imports contextual information of its discourse referent. (22)B′ might have the same restriction implicitly, i.e., without any overt restrictor the question can still receive the same interpretation(s) as B.

But what other arguments are there to underpin the existence of a question domain, what else can be said about it? When pairing the questions with the elliptic constituent answer "all", we see: The question domain and the domain which serves as the restrictor domain of an answer have to be equivalent; the implicitly or explicitly accomplished domain of the wh-restrictor transfers to the domain that has to be suppposed for the restrictor inherent in an answer like "all". For (16), (17), (18), and (22)B respectively, an appropriate elliptic answer "all" tacitly assumes a restrictor as indicated in the parentheses: "all (of Fritz, Carl, and Bob)."/"all (of your friends)"/"all (girls)"/"all (of them)"—We see that the descriptive (or anaphorically imported) content of the wh-phrase plays the same role as the restrictor of the universal quantifier. When determining the question domain from an answerer's point of view, the explicit domain restriction and the sort-restricting wh-word may serve as an approximation to the actual question domain.

Whenever the specification of the restrictor is not accomplished explicitly in extenso, which is the case of a (partly) contextual specification of the restrictor—be it implicit as in (22)B′ or anaphorically imported as in (22)B—, *ambiguities* may arise. For this latter example, clear-cut alternatives as regards which party-goers A asks about are provided by the possible antecedents: Either the question is about Fritz, Carl, and Bob; or it is about Fritz, Carl, and Bob as well as the friends of the questioner.[33] A hearer of question (22)B then faces this problem: There is more than one possible question domain. The possibilities arise due to an ambiguity of the anaphoric reference of them. The need for a unique anaphora resolution is tantamount to the need for a unique question domain. A 'correct' resolution chooses the *intended antecedent* of them. Likewise, I will regard the *intended question domain* to be the correct restrictor. So finally, the choice of the question domain has to be based on the *intention* or the *goal* of the questioner.

But the focus on the questioner's intention is not only due to an ambiguity as in (22)B. It is assumed that there is always a specific question domain that has to be taken into account for the denotation of the interrogative. So the semantic representation of a question will include an inherent question domain, no matter whether a restriction is introduced overtly or not. This question domain is only dependent on the intention of the questioner (although the intended domain has to comply with an explicitly introduced restriction); the domain assigned to the question in this way will henceforth be written D.

Identifying Individuals. How should we represent the domain and how should we conceive of its identification? Remember the issue of how satisfiers are identified in the answer—the same issue arises w.r.t. the question domain,

[33] Still other alternatives could cover even those persons which are somehow related to Fritz, Carl, and Bob. So the alternatives are not as clear-cut as it seems prima facie.

concerning its overt restriction. The following observations on the *kind of givenness* thus apply both to the specification of satisfiers and to an explicit restriction of the question domain, covering an aspect of 'knowing the question' as well as 'knowing the answer'.

Consider the issue of the kind of givenness as being connected with the Fregean distinction between sense and reference: An explanation by Frege (1892) makes clear that expressions differing in their sense—but having the same reference—behave differently w.r.t. an agent's "Erkenntnis" : The equivalence of extensions is not preserved in an opaque or intensional context, e.g. in an attitude embedding expressed with know .[34] (Cf. ex (26), the alternative answer (27), and the possible outcomes (29) and (30), depending on whether Priscilla knows "Morgenstern" or "Venus" by extension.)

With regard to our question–answer pairs, it matters what expression e.g. the reply consists of, since 'knowing the answer' might depend on particular *identifying concepts*. Alternative concepts might not be alike in this respect, although they happen to denote *exactly* the same extension. In particular, it is not necessarily sufficient for the questioner to know the satisfiers of the question abstract even *by extension* if it is his intention to get an answer in terms of particular concepts. Based on an account of determiners in assertions by Westerståhl (1984), Aloni (2001) shows that there is also a "specific method of identification" (p 11) intended by a questioner in the utterance situation. (Westerståhl considers specific restricted domains of quantification to be provided by the context.) Different methods of 'identification' can come about e.g. by either utilising a demonstrative or by means of a proper name. Aloni (2001, p 16) introduces the notion of a *conceptual cover CC* (relative to a set W of possible worlds and a set D of individuals), which is a set of functions, assigning to each world w in W for any individual a *unique* concept. A conceptual cover CC is defined by two conditions:[35]

(i) $\forall w \in W : \forall d \in D : \exists c \in CC : c(w) = d$;

(ii) $\forall w \in W : \forall c, c' \in CC : \; c(w) = c'(w) \;\Rightarrow\; c = c'$.

(A concept c is a world-relative assignment of an individual d out of the universe U of all individuals to a description, a name, or the like. A single concept can also be thought of as a possible way of accessing an individual.) An intended 'method of identification' can be associated with a conceptual cover.

[34] Ibid., p 41:

> Wenn sich das Zeichen „a" von dem Zeichen „b" nur als Gegenstand (hier durch die Gestalt) unterscheidet, nicht als Zeichen; das soll heißen: nicht in der Weise, wie es etwas bezeichnet: so würde der Erkenntniswert von $a = a$ wesentlich gleich dem von $a = b$ sein, falls $a = b$ wahr ist. Eine Verschiedenheit kann nur dadurch zustande kommen, daß der Unterschied des Zeichens einem Unterschiede in der Art des Gegebenseins des Bezeichneten entspricht. Es seien a, b, c die Geraden, welche die Ecken eines Dreiecks mit den Mitten der Gegenseiten verbinden. Der Schnittpunkt von a und b ist dann derselbe wie der Schnittpunkt von b und c . Wir haben also verschiedene Bezeichnungen für denselben Punkt, und diese Namen („Schnittpunkt von a und b", „Schnittpunkt von b und c") deuten zugleich auf die Art des Gegebenseins, und daher ist in dem Satze [i.e., in $a = b$] eine wirkliche Erkenntnis enthalten.

[35] Aloni (2001, p 125).

In ex (26), which is a modified example from Aloni (ibid., pp 9ff), the two ways of identifying "Abendstern"—either as "Morgenstern" or as the planet "Venus"—correspond to distinct conceptual covers; the context suggests that Priscilla wants to know the description (concept) of "Abendstern" in terms of the common nomenclature of our solar system's planets. The proper names "Morgenstern" and "Venus" are not interchangeable with one another *for this purpose*. Depending on the appropriateness of either conceptual cover, (29) holds after the father's reply in (26) and (30) does hold after the reply of (27). — Finally, examples (28) and (31) show that *not* changing the way of description in a reply at all, resuming the very identification that is employed in the question, always leads to an unacceptable utterance per se. This is so due to the maxim of informativity, which is violated. The same holds for descriptions by restrictive relative clauses too, see (31)B.

(26) *[Context: Priscilla is doing her homework.]*
Priscilla: Welcher ist der Abendstern?
Vater: Der Abendstern ist mit dem Morgenstern identisch.

(27) Vater: Die Venus ist der Abendstern.

(28) Vater: *Der Abendstern ist der Abendstern.

(29) Priscilla weiß nicht, welcher der Abendstern ist.

(30) Priscilla weiß, welcher der Abendstern ist.

(31) A: Wer kommt?
B: *Es kommen diejenigen, die kommen.

We would run into a number of complications when we consider misunderstandings which are due to different kinds of identification. So, what is the condition under which it is legitimate to abstract from a conceptual cover? I assume that participants always have access to each other's concepts: Then they know the denotation of the concepts employed in the other's utterances; in other words, they understand each other's concepts. Although it was mentioned above that it might not be sufficient to know the extension of an expression in order to 'know the answer', it is possible to translate the extension back into an appropriate concept: The functional mapping of a conceptual cover is bijective (Aloni 2001, p 126). E.g., the answer in (26) would be sufficient, because Priscilla then knows the individual identified by "Morgenstern". I.e., she is cognitively able to map "Morgenstern" to the anchor id_{venus} (a unique representation of an individual), which can subsequently be mapped to the concept of the conceptual cover that she is after: c_i("Morgenstern") = id_{venus}, $c_j^{-1}(id_{venus})$ = "Venus". ("Abendstern", on the other hand, belongs to a conceptual cover that is not (fully) understood by Priscilla.) As for the answerer, he is competent in the question's concepts. Again, a successful identification of the satisfiers and of the question domain by virtue of their specification in the answer and in the question respectively amounts to this: Knowing the satisfiers/the question domain is to be able to decide for any given individual whether it is covered by the extension of the given specification or not. In this

respect, both the specifications in an answer and those in the question are fully understood.

Similarly, when it comes to specifing the satisfiers in the possible exhaustive answers—which are *semantic* entities (cf. (14))—, the specifications must constantly refer to the same entities across all those worlds which are mutually considered to be still possible: In case the satisfiers are identified in a fully semantic way—and are not identified via situation dependent reasoning based on world knowledge and discourse (e.g. if the satisfier expression is a definite or indefinite description)—, the satisfier expression must be a *rigid designator*, viz. the satisfiers Hamblin and Mary in (14). Also the individuals of the question domain (as a semantic entity) must be given by rigid designators to comply with this definition of questions.

'Specificity'. Until now we have seen several examples which might help to rephrase the concept of specificity of a 'specific question domain'; it is in particular due to instances which provide a question domain in an implicit way. In what respect can a covert intended question domain be 'specific'? There is no overt specification nor any kind of descriptive content available to which D or a representation of it can refer to. Nevertheless, a specific, implicit D should be stipulated s.t. at least the satisfiers mentioned in a proper answer must belong to this set.

What do I mean with 'specificity' of an implicit question domain D? With his question the questioner intends to get to know about each individual out of a specific set whether it satisfies the question predicate or not. We can call this set the subject-matter of the question. So far this is a plausible assumption. But what about the mental representation of this set? The possibility of 'open questions' seems to the contradict the assumption that there is always a specific subject-matter. However, in any case a questioner should be able to decide whether the satisfiers/non-satisfiers specified in the answer are of interest w.r.t. his current purposes. So instead of claiming that a specific question domain must be represented extensionally, a stipulated question domain must comply with these conditions: For any individual given in the answer (and understood by the questioner)—be it a satisfier or a non-satisfier—the questioner is able to decide whether it is covered by the question domain D or not. And, moreover, there may be additional individuals of interest not mentioned in the question and in the answer, which belong to D. These must be specific in the sense that there is a unique designator, i.e., the questioner must be able to identify these by means of a concept (conceptual cover).

Nevertheless, the question domain will be thought of and represented in the framework as a definite set, since (i) the question domain is fixed at utterance time and (ii) definiteness of the domain is tantamount to decidability of the domain membership.

4.1.3.2 Question Presuppositions

There is another aspect that is related both with an overt restriction of a question domain and with a question's presuppositions. There can be selectional restriction violations and violations of meaning postulates within a question abstract. These violations will not play a role in the question–answer discourses and their contexts here. Also, the restrictions which the question abstract imposes on possible satisfiers cannot clash with restrictions induced by the wh-phrase itself. Since in the contexts considered here selectional restrictions and meaning postulates are valid, those questions which would violate these cannot be satisfied. And the existential presupposition, which subsumes satisfiability throughout the context and which is supposed to hold, prevents these questions from being considered in the current framework at all. An example that exhibits both a violation within the question abstract and across question abstract and wh-phrase is (32); there can be no answer to this question in any of the contexts considered.

(32) Which mountain eats sincerity?

What does it further take for a question to be felicitously uttered? The conditions are given in terms of the context of utterance, C, and the question domain D. Two main requirements have to be met: In the context of utterance the question has to be both undecided and satisfiable.

The context of utterance, C, is a Stalnaker *context set* of worlds (Stalnaker 1978, p 321). A context C of an utterance entails all those "propositions whose truth he [i.e. the speaker] takes for granted as part of the background of the conversation."[36] These propositions are taken to be believed by the other participants to hold true as well. They constitute the worlds which are commonly taken to be open possibilities in the actual world w_0. In Stalnaker's words, the context set is determined by those propositions which are presupposed at the current stage of the discourse.

The presuppositions mentioned here are represented in a rough notation based on C, D, and the possible answers of $Answers(Q)$.

Being Unsettled. An important presupposition of a question that is to be felicitously uttered in C is the fact that it is not yet decided in C. For assuming a question context C that *does* entail a complete propositional answer to it violates the general principle of a rational speaker: According to C, the questioner would not act rationally or straightforwardly anymore, because he is taken to believe the propositions of C and its entailments. In other words, asking a question justifies the assumption that the questioner still does not know the complete answer. Consequently, the common context set C cannot entail a proper answer either. (33) formulates this condition; p_A ranges over the possible answers of a question Q. Treating C in set-theoretic terms (cf. (11)), entailment amounts to set inclusion, so we can equivalently say that there is no

[36] Ibid.

answer p_A s.t. $C \subseteq p_A$. To put it in a different way: For every answer there is a second possible answer s.t. C overlaps with both of them.[37]

(33) $\neg(\exists p_A \mid p_A \in \mathit{Answers}(Q))\,(C \models p_A)$

Instead of restricting the set of still possible worlds by some presupposition—as it is the case with propositional presuppositions—, this condition rather extends the context set C to make sure that it does not yet entail an answer out of $\mathit{Answers}(Q)$.

Being Satisfiable. Whereas the previous condition guarantees that the question is not yet decided, it must be also ensured that the question is satisfiable relative to a domain D and an utterance context C.

For one, D must fulfil the sortal restrictions of the wh-word and the descriptions of the wh-phrase in general. In short, the overtly introduced determinants of the restrictor of the quantifier must be met by the intended D. Since we abstract from the logical structure of the question, the logical restrictor of the quantifier is not listed separately in the representation of a question. Thus, in order to formulate the condition at stake, in (36) both determinants are to be subsumed under a predicate σ_Q. The extension of the descriptive component of sigma, i.e. the descriptive content of the wh-phrase, is evaluated relative to w_0.[38] In that respect sigma is transparent. But note that it might also subsume covert content, which has to be thought of as depending on the intention of the speaker, as demonstrated in the discussion on granularity above. E.g., the extension of σ_Q (according to the intention of the questioner of Q) may comprise location alternatives either of a 'fine' degree of granularity (see (25)) or of a not-so-fine degree of granularity (as in (24)). Since the case study in 5.2 will introduce the speaker intention by way of an implicit restrictor, details of the representation of (the overt determinants of) sigma are not crucial here. On the other side, if D is already given in the question in extenso, also this is covered by (36); then $D = [\![\sigma_Q]\!]$.

Selectional restrictions due to the question abstract, which is the logical scope of the quantifier, become operative when composing a (potential) individual satisfier with the question abstract. Satisfying the abstract also means for an individual to comply with these restrictions. So this aspect is covered by the existential presupposition. It requires that D and C fit Q s.t. in D there is at least one truthful individual satisfier of the abstract of Q, see (34).[39] (In later representations we will abstract from the specific question content.)

[37] This condition (including its formulation in (33)) still allows for answers which are thoroughly distinct from C.

[38] As mentioned before, the extensions of these meaning components of a question can be identified by all participants correctly, i.e., relative to w_0. At this point, no defective context set due to deviating extensions across participants' interpretations can arise.

[39] In other words: For every world $w \in C$ there is at least one individual $x \in D$ s.t. $w \in [\![$"They invited x"$]\!]$; that is, in every world w of C there is a satisfier of the question abstract. Note that it is in principle possible for elements of D to satisfy the question abstract, because D complies with (36); it follows that there are possible worlds in which there is a satisfier of the abstract. Explication (34) merely says that C is made up of worlds like these.

(34) *Satisfiability in C:*

$$C \subseteq \bigcup \{W : (\exists i \mid i \in D)\,(\,W = (\lambda x\,.\,[\![\text{“They invited } x\text{”}]\!])(i) \wedge W \neq \varnothing\,)\}\,.$$

This condition is important in another aspect: By considering only those worlds in which there is a satisfier, any presupposition that is relevant for the adequacy of Q must be satisfiable in C. So we do not need to list all kinds of presuppositions which might potentially prevent possible answers at all. I will consider (34) a precondition for the definition of questions; then the answer set *Answers*(Q) cannot be the empty set $\{\}$ anymore. This way a definition of *Answers*(Q) will properly represent the class of direct answers, which do not deal with the overall possibility of positive answers. Condition (34) restricts the question context to those worlds in which the question can be uttered felicitously.

In contrast to (33), both (36) and (34) impose a restriction on C. The requirement of satisfiability is formulated more generally in (35); it is not explicit about D.[40]

(35) *General satisfiability of a question:*
$(\exists p_A \mid p_A \in \mathit{Answers}(Q))\,(C \supset p_A)\,.$

(36) *(Sortal) Restrictions on D:*
$C \models D \subseteq [\![\sigma_Q]\!]\,.$

Before we proceed, let us subsume the assumptions about the felicity of question utterances, involving a question's determinants and context C:

1. There is an intended question domain D associated with the utterance of a question.
2. The context C allows for more than one possible answer to a felicitously uttered question.
3. The utterance context is such that it is *not* possible that the question cannot be answered positively (by mentioning truthful satisfiers).

Let us now turn to a more general representation of (14) that takes the exhaustivity of all possible answers into account. Afterwards we will focus on answers to see which assertions can be *used* as an answer.

4.1.3.3 Exhaustivity

In (37) the answer set of a one-place wh-question Q is determined more generally, taking a question domain D into account. Thus, when we talk about a question Q that is assigned a domain D, we will also write Q_D. The utterance context C is not considered to be an explicit argument of the answer set, though. It is a precondition that a question's presuppositions are satisfied in

[40] Since C is partitioned by *Answers*(Q) totally, every world out of C entails some answer from *Answers*(Q). And so (35) is an appropriate formulation of the intended satisfiability condition.

its utterance context throughout, see above. A set $Answers(Q_D)$ is defined only relative to contexts like these.

(37) *Answer set "$Answers(Q_D)$" of a question Q, relative to C and D:*

$$\begin{aligned}
&[\![Q_D]\!] \;=\; Answers(\,(?x \mid x \in D)(Que(x))\,) \;:= \\
&\{p_A \subseteq C : (\exists I \mid I \subseteq D)\,(\,(\forall w \mid w \in p_A) \\
&\qquad\qquad (\,(\forall i \mid i \in D\,)(w \in (\lambda x\,.\,Que(x))(i)) \;\longleftrightarrow\; i \in I\,)\,) \;\wedge \\
&\qquad\qquad I \neq \varnothing \\
&\qquad\qquad)\;\wedge \\
&\qquad p_A \neq \varnothing \\
&\}\,.
\end{aligned}$$

A question Q is now represented relative to a D, $Q_D \equiv (?x \mid x \in D)(Que(x))$. Accordingly, the singular proposition of an atomic direct answer bearing the individual satisfier i is written $(\lambda x\,.\,Que(x))(i)$. The question abstract, $Que(x)$, corresponds to [["They invited x"]] of (14) and is an open formula, x being a free variable.

Let us turn to some properties of the answer set. Since C is such that there is always a satisfier, the answer set cannot be empty: $Answers(Q_D) \neq \{\}$. But moreover, there are at least two possible answers, otherwise the question would be decided in C already, cf. (33). For any two possible answers it holds that they are either disjoint or equal. And because $C = \bigcup Answers(Q)$, the question context is totally partitioned by the possible answers. And due to the existential presupposition, to every world $w \in C$ exactly one possible answer is assigned.

What can be said about the non-empty subsets I of D? A set I is composed of an answer's satisfiers of the question abstract. Does the answer set always consider all $I \in \mathcal{P}(D)\backslash\{\varnothing\}$? Or are there (non-empty) subsets of D for which there is no corresponding answer in $Answers(Q_D)$? This issue depends on the context: Is it reasonable to assume that there might be a set of individuals about which the questioner knows that these altogether are no possible satisfiers—and yet he intends the very individuals to be part of his question domain? To see how this is indeed possible let me give an example:[41]

(38) *[Context:* A *wants to know about Jill and about Bill whether they are coming.* A *(as well as* B*) knows that either Jill or Bill is coming, but not both together.]*
A: Who is coming?
B: Jill.

What does the question domain consist of? Is one individual enough? Note that although the combination of Jill and Bill coming is excluded in C, the information about only one of them is not sufficient to gain knowledge about both of them: Knowing that [["Jill is coming"]] $\rightarrow \neg$[["Bill is coming"]] and that [["Bill is coming"]] $\rightarrow \neg$[["Jill is coming"]] does neither license the *equivalence*

[41] Hans Kamp pointed out to me this possibility, which lets (39) be injective, not bijective, from an empirical point of view.

⟦"Jill is coming"⟧ ⟷ ¬⟦"Bill is coming"⟧ nor ⟦"Bill is coming"⟧ ⟷ ¬⟦"Jill is coming"⟧.

E.g., it might not be sufficient to let $D = \{\text{Jill}\}$: in case Jill is actually *not* coming. From the corresponding answer to Q_D, "Jill is not coming", A does not learn whether Bill is coming or not.[42] Thus, A's knowledge about the excluded possibility that ⟦"Jill is coming"⟧ ∧ ⟦"Bill is coming"⟧ still leaves open both possibilities concerning Bill. The same holds mutatis mutandis for $D = \{\text{Bill}\}$.[43]

Since we do not want there to be more than one question domain, we cannot assign Jill and Bill to different question domains, considering the choice of a specific domain to be relative to w_0. And because the questioner does not know which one of these domain alternatives would be sufficient—for this hinges on knowledge that he does not have and that he wants to attain with the question—it is not an option to construe a unique question domain in this way. The only possibility for the questioner to hold a unique representation of D is to set $D = \{\text{Jill}; \text{Bill}\}$: That is, D can contain "superfluous" individuals the answer about which can be entailed from the answer about other individuals in D. However, this does not mean that the question domain contains those individuals of which the questioner knows the answer already. Rather, the questioner knows that there are some kinds of combinations of satisfiers which are excluded as possible answers, although these combinations are subsets of D.

To sum up: There may be subsets of D which do not represent exhaustive sets of satisfiers of the question abstract according to C, i.e., some logically possible answers to Q_D might not be possible answers in C. As definition (37) states, these logically possible answers are not in the answer set $\mathit{Answers}(Q_D)$ either, which is determined relative to C. For this reason, the cardinality of $\mathit{Answers}(Q_D)$ may be less than $2^{|D|} - 1$, which is the cardinality of the power set of D minus the empty set, $|\mathcal{P}(D)| - 1$. And the mapping from $\mathit{Answers}(Q_D)$ to the answers' satisfier sets out of $\mathcal{P}(D)\backslash\{\varnothing\}$, (39), is thus only injective but *not* bijective.

(39) $f_{injective} :: \mathit{Answers}(Q) \longmapsto \{I : I \subseteq D\}\backslash\{\varnothing\}$.

4.1.3.4 Mention-some Questions

The question domain we encountered in the discussion of 4.1.3.3 turned out to be particular in a sense. We could arrive at a unique representation of the domain only by including "superfluous" individuals: In a world where Jill is actually coming, Bill is a superfluous element of the question domain, whereas in a world where it holds that Bill is actually coming, it is superfluous to take also Jill into account for D. By adding either fact to C the question goal is achieved. But due to the nescience of the questioner, his question domain cannot be both unique *and* minimal, containing no "superfluous" individuals.

[42] It is not crucial that there is no satisfier in D in this case: In this example D is that small just for the sake of clarity. Consider a D that does contain other known individuals as well: Then it is at stake whether—in addition to these—D contains both Jill and Bill.

[43] However, if C entails the equivalence ⟦"Jill is coming"⟧ ⟷ ⟦"Bill is coming"⟧, then it would be no problem to reduce D to Jill or Bill only.

(For if he had sufficient knowledge to hold a unique and minimal question domain, he would necessarily know the answer to his question.) So there may be a C and a set $Answers(Q_D)$ s.t. a questioner's unique representation of the question domain contains more elements than might actually be necessary to get to know the complete answer: for it is not necessary that the answer conveys of *all* domain elements whether they satisfy the question abstract or not.

This case can be shifted to a more general level: It is a particular instance of a restriction of an extensionally represented, intended question domain. In this subsection we have a look at mention-some questions and the kind of question domain that might fit them.

Mention-some questions impose a severe restriction on the empirical adequacy of a question analysis as given in (37). E.g., van Rooy & Schulz (n.a.) collect several readings of questions where a replacement for the exhaustive interpretation of an answer is called for:[44] Both *mention-some questions* and *questions with a restricted domain* cannot be replied to appropriately with an unrestricted exhaustive(-ly interpreted) answer. To account for the latter class, a question domain has already been introduced.[45] But how can we think of mention-some questions in terms of a question domain they bear?

First, since the question readings are not determined by the form of the interrogative, also wh-questions which expose a restriction can generally be assigned a mention-some reading. They are alike in that they seem to be compatible with an implicit restriction, too. Consider (40):

(40) A: Where can we get some coffee?
B: #I know a good coffee bar in South Africa. There we can get some.

(41) Where near by can we get some coffee now?

Under usual circumstances (40)A will be intended to bear an implicit restriction that is equivalent to the deictic adverbial modifier near by in (41). What is usually wrong with an answer like (40)B is this: Even if the situation locates the utterance in South Africa, the answer does not specify a location according to the usually intended restriction; both the granularity and (being situated in a different country) the location itself does not belong to a set that complies with the restriction.[46] So the satisfier is not apt to identify a location to the questioner extensionally that lies within his intended domain.

Although there seems to be a restriction to a particular class of locations that is not met by the answer (40)B, it nevertheless is appropriate to a mention-some reading of (40)A in another respect: It mentions *only one* satisfier.[47] (But for

[44] The various readings of a question depend on the utterance situation, not on the form of the interrogative. In particular, which reading applies depends on the intention of the questioner.

[45] A plain unrestricted exhaustive interpretation comes about when D—besides applying sortal restrictions—is not subject to further limitations.

[46] A location that is "near by" is—relative to the time and the location of the utterance—limited in (temporal/local) distance and in the degree of granularity. Of course, the character of near by can change with the situation of utterance: Pilots debating where to take a break on an international flight might have a conception of "near by" that is in fact in accordance with (40)B. But let us stay on the ground and take the perspective of pedestrians.

[47] I take this as an attribute of an appropriate answer to a mention-some question for now, although the questioner's intention might require of an answer to specify some more satisfiers (viz. mention-*some* question).

an answer to a mention-some question to be appropriate, its specified satisfier has to be element of the intended question domain D.)

Comparing (38) with a mention-some question, answer sets appropriate to both have in common that they certainly do not contain all logically possible answers (see injection (39)). Whereas the answer set of (38) omits possibilities because they were excluded from C beforehand (viz. $C, [\![\text{"Jill is coming"}]\!], [\![\text{"Bill is coming"}]\!] \models \bot$), this is not so with mention-some questions: The possibilities omitted from their answer sets are still possible in C; rather, those answers are omitted which, according to the goal of the questioner, are needless. E.g., any answer to (40)A that specifies more than one place to get coffee would usually convey superfluous information—but it would still be true in C if one can get coffee at the places mentioned. Since by definition $Answers(Q)$ is linked with C (viz. $C = \bigcup Answers(Q)$), it is not possible to reduce the answer set without restricting C at the same time. Thus, it is not possible to deal with mention-some questions in this question framework.

However, the fact that the question domain to mention-some questions often cannot be determined by the questioner at utterance time extensionally would be no principal objection to applying a question domain to them: The concept 'question domain' just requires that—given an individual—its set membership is decidable for the intended question domain *ex post*, s.t. the questioner needs to be able to decide of any mentioned satisfier whether it belongs to the set he is interested in or not.

4.1.4 Exhaustive Interpretation

It should have become apparent by now what an *exhaustive answer* is. An exhaustive answer to a question $Q_D \equiv (?x \mid x \in D)(Que(x))$ is functionally defined by way of the cells which a suitable context set C (according to (34)–(36)) is partitioned into. It is a proposition that reduces these possibilities of C to a single cell $C_I \in Answers(Q_D)$.[48] 'Exhaustive answer' is merely a function of a question Q_D (involving a D and relative to some C) applied to propositions: It states whether a proposition can reduce C to one of its cells C_I. 'Exhaustive answer' is a *semantic property of propositions* in semantically defined question contexts—it does not state anything about *actually uttered* replies to Q_D, whether they necessarily are proper exhaustive answers. An exhaustive answer always entails precisely the complete information on the question subject, and thus:[49]

(42) *A is a possible exhaustive answer to Q_D in C iff*
$(\exists C_I \mid C_I \in Answers(Q_D))([\![A]\!] = C_I)$.

Through an exhaustive answer the questioner knows the satisfaction relation between D and $\lambda x\,.\,Que(x)$: As the respective injective map $f_{injective}$, (39), from $Answers(Q_D)$ onto the non-empty subsets of D makes plain, to every exhaus-

[48] The subscript I is to remind us to the (non-empty) subset I of D that comprises the satisfiers of the question abstract in the worlds of C_I.

[49] A stands for a replying expression, which is a declarative or an expression that is apt to fill in a constituent for the wh-word in the question.

tive answer A a distinct set I of individuals is assigned; and (if $I \neq D$) A entails that there are *no other elements of* D which satisfy the question abstract: $\neg(\exists i \mid i \in D \backslash I)((\lambda x \,.\, Que(x))(i) \subseteq [\![A]\!])$. So by learning the proposition that is the exhaustive answer in w_0, a questioner knows which elements of D do satisfy the question abstract *and* the questioner knows which elements of D do *not* satisfy the question abstract in w_0. An interpretation of an answer in this way takes it to be strongly exhaustive, as described by Groenendijk & Stokhof (1997, p 1110), see p 93, and is committed to the functions of an answer as laid down by the equivalences (a) and (b), p 92. We will label the answer that is true in the actual world as C_{w_0}:

(43) *The true exhaustive answer to* Q_D, C_{w_0}, *in* w_0:
$C_{w_0} := \{w : (\exists C_I \mid C_I \in Answers(Q_D))(w \in C_I \longleftrightarrow w_0 \in C_I)\}$.

As to the distinction between replies which are an 'exhaustive answer' and those which are 'used as an exhaustive answer', one might object: Since the semantic property 'exhaustive answer' hinges on the ability to reduce C to some C_I, why is an exhaustive answer defined as being identically equal to some cell C_I, instead of entailing C_I, $[\![A]\!] \subseteq C_I$? Such propositions do reduce C to one of its cells C_I as well, of course. But then there would be countless exhaustive answers like these, relative to the same w_0. However, the semantic definition of $Answers(Q_D)$ requires there to be only one answer for any $w \in C$. What about the empirical adequacy of the exhaustive answer account, then? At this point we see that we should distinguish between assertions which are apt to *identify* a complete answer and those assertions which are *semantically equivalent* to a complete answer. It can be pursued, however, to enrich the semantic definition of a question Q with more contextually bound variables to import more determinants of the utterance context—which at the far end would import the questioner's intention behind his question, too.[50] As our concern for now is the question domain, the domain is the only contextual parameter (conceived as one component of the questioner's intention) that has been integrated into a semantic representation of questions; this representation might then serve as a starting-point for concluding the complete answer from a given reply. — Nevertheless, a characterisation of "being appropriately *used as* an exhaustive answer" is an issue of pragmatics in that the relation between an 'appropriate reply' and the question points beyond the semantic answerhood property 'exhaustive answer'—generally it will point beyond the current semantic definition of 'question'.

To account for this in semantic terms, we might ask: How can an appropriate reply to a question Q_D be related to Q_D's partition of C? Thus, the *function* that an appropriate reply A has lies in the peculiar effect of the complete truthful answer in w_0, i.e., *to identify the cell* C_{w_0} of C. This clearly can be achieved by containment/entailment of C_{w_0}, instead of just identity with C_{w_0}. (Alternatives to arrive at the proposition C_{w_0} —e.g. by pragmatic extensions of the consequence relation in terms of agent-relativisation[51] —are not

[50] Cf. the subject of givenness and granularity in exx (23)–(25) and the discussion about "appropriate answers", pp 97ff.
[51] Cf. Ginzburg (1996, p 407).

considered now.) This function of identifying the cell C_{w_0} out of *Answers*(Q_D) is first defined for propositions. So (of a proposition) "being appropriately *used as* an exhaustive answer" differs from "being (identically equal to) an exhaustive answer": [52]

(44) *Proposition p can be used as exhaustive answer to Q_D (or: p solves Q_D in w_0) iff* $\varnothing \neq p \subseteq C_{w_0}$.

Concerning the reduction of C, the proposition p is functionally equivalent to the respective complete (i.e. exhaustive) answer in w_0. I will say that in this case *p solves* a question in w_0 ("*solution-relation*"). And, since a question-solving p is not required to be identical with C_{w_0}, it is a corollary of (44) that a proposition can be used as exhaustive answer to more than one question; the same proposition can solve many different questions. The solution-relation in (44) corresponds to a simplification of the 'answerhood'-relation of Groenendijk & Stokhof (1997, p 1087, def. 4.13). To conceive of 'answerhood' as the solution-relation, one has to consider 'answerhood' for the actual world w_0 merely: [53]

> (*Answerhood*). $\phi \models ?\psi$ iff $\forall M \exists w \in M$: $[\phi]_M \subseteq [?\psi]_{M,w}$.
>
> In terms of the partition $?\psi$ makes on M, this expresses that ϕ is an answer to $?\psi$ iff the proposition expressed by ϕ in M is always a [...] part of one of the blocks in the partition made by $?\psi$.

We now proceed with an explication of the extended notion 'answer' in two directions: (i) Construing a given reply—which is an expression rather than a proposition—, how do we arrive at a proposition that could be used as an exhaustive answer in the above sense? Therefore, a particular *interpretation* of replies is called for. (ii) The next issue is to determine the class of all those questions which are solved by one and the same proposition p—with p originating from an exhaustive interpretation of the reply, see 4.2.2. Through (ii.) and (i.) we will then be able to relate a replying expression to a class of questions.

Let us turn to (i.): The purport of those replies used as an answer is to specify which individuals satisfy the question abstract, and to assert that they do. Do other individuals than the mentioned ones satisfy *Que*(x) or not? Should an answer not be taken as what it is, regarding only the specified individuals? In other words, how do the satisfiers specified in an answer relate to the question domain D? Now, if the question is about these specified individuals only—that is, D comprises exactly the individuals mentioned—would it then not be adequate to respond with just "all" in case of a positive answer? After all, it is obvious that this is an exhaustive answer. So, when the answer is not just "all", and the satisfiers are identified in a different, more elaborate way (e.g.

[52] Like with any assertion uttered, also proposition p is assumed to be true; i.e., it holds that $w_0 \in p$.

[53] To account for the appropriate use of a proposition as exhaustive answer in w_0 like in (44), it is not necessary to introduce an entailment between questions, either; for an intensional definition of entailment see ibid. (p 1087, def. 4.12).

given as a list of individuals), it must be assumed that *not all* individuals (out of D) are satisfiers. By applying an *exhaustive interpretation* to a reply different from "all" , it is assumed accordingly that the answerer takes D to contain other elements besides the mentioned ones. It seems that the interpretation of a positive answer that specifies selected individuals should usually account for a D of which the individuals mentioned are but a subset.

The exhaustive interpretation of a replying declarative A that explicitly specifies satisfiers of a question abstract $Que(x)$ of a preceding question Q_D is given in (45) :

(45) *Exhaustive interpretation of reply A in C relative to D , Exh*(A, D)*:*

$$Exh(A, D) := \{w \in C : (\forall i \mid i \in D)\,(w \in (\lambda x\,.\,Que(x))(i) \longleftrightarrow \text{i belongs to the set of satisfiers specified by A for } Que(x))\}.$$ [54]

Definition (45) and (44) are linked as follows: Reply A is *appropriately used as exhaustive answer* to some Q_D if the exhaustive interpretation of A results in a proposition p s.t. $p \subseteq C_{w_0}$.[55] The key for this is in the 'alignment' of the domain δ that underlies the exhaustive interpretation of A , $Exh(A, \delta)$, with the question's actually intended domain D .

4.2 Domain Selection as Perspective

The solution-relation, (44), is oriented towards the purpose of a question to learn about which cell C_{w_0} is, the cell that contains the actual world: Any proposition entailing this cell does specify it and thus serves the purpose. But an answerer does so by way of a replying expression A . This is where the exhaustive interpretation of A comes into play: To learn the true answer C_{w_0} from A , it is necessary that the interpretation of A maps to the proposition C_{w_0} . In set-theoretic terms, the interpretation of A must result in a subset of C_{w_0} .

To actually serve a question's purpose, an 'alignment' of the domain that is relevant for the exhaustive interpretation of A with the intended question domain D is called for. But often it is unclear to the answerer what domain D is intended. That is, when trying to reply appropriately the answerer has to choose which domain to take into consideration. In this respect a question can be regarded as *ambiguous* between a large set of questions $\{(?x \mid x \in D)\ Que(x) : D \in \mathfrak{D}\}$.[56] $\mathfrak{D}$ is the range of domains that might have been intended: It is therefore the range of domains the answerer can reasonably choose from.

[54] For "specified by A", see pp 97ff . In short, in A only such concepts and descriptions are employed that the questioner can deduce. Therefore he *knows* the extension of all the mentioned individual satisfiers.

[55] In other words, A functionally corresponds to a semantically defined answer to Q_D , see (42), if the exhaustive interpretation of A solves the question.

[56] In short, $\{Q_D : D \in \mathfrak{D}\}$.

4.2.1 Possible Domains

If there is no contextual clue besides the interrogative itself, then—from the answerer's point of view—the intended domain can be any set of individuals there are in w_0, i.e., it can be any subset of the universe U_{w_0} of w_0.[57] That $\mathfrak{D}$ which mirrors the highest possible uncertainty therefore is $\mathcal{P}(U_{w_0})\backslash\{\varnothing\}$; also, this is the logical space for the domain to be chosen. Note that I take it that a specific domain *must* be chosen. So even if the domain that is being intended to be covered by a question—or, vice versa, by an assertion[58]—cannot be determined beyond overt sortal restrictions, it seems that the *maximal domain* of this $\mathfrak{D}$, U_{w_0}, might then be chosen.[59] But if we consider $\mathfrak{D}$ to contain—or to be supplemented with—its maximal domain $max(\mathfrak{D})$ (i.e., in the least restrictive case, U_{w_0}), then this would avoid the problem of an appropriate choice: for there would be no choice among proper alternatives at all.

As it seems, such a set $\mathfrak{D}$ of possible domains which has a maximal element cannot be regarded as the basis of a proper choice strategy any more, because—from the answerer's point of view—the questioner's informational needs would always be met by "choosing" the maximal domain in any case. In general, it means that an answerer who acts accordingly would a priori disregard all those possible domains D for which there is an alternative $D' \in \mathfrak{D}$ s.t. $D \subset D'$. Shall $\mathfrak{D}$ therefore be s.t. $(\forall D, D' \mid D, D' \in \mathfrak{D})(D \not\subset D')$? (Alternative domains would then be disjoint or at most overlapping.) As we will see in 5.2.1.2, the choice of the domain not only obeys the principle "Ensure maximal benefit from the answer!"—or, equivalently, "Consider all possible domains!"[60] Considering the ultimate maximal domain U_{w_0}—the answer about which meets any possible informational needs related to the question—makes clear that following this principle is not feasible actually. So there would also be another important principle, which is antagonistic: "Pursue minimal effort!"

To be able to take both principles into account when choosing from a set $\mathfrak{D}$ of possible domains, we construe $\mathfrak{D}$ s.t. it may generally contain also some extension D' of any element D: $D' \supset D$, with $D, D' \in \mathfrak{D}$.

Although $\mathfrak{D}$ serves as an auxiliary concept and is rather vague, it restricts the possibilities in a particular way: All possible domains have to comply

[57] Usually there will always be a clue, e.g. due to sortal restrictions introduced in the question, though.

[58] We will see soon that question–answer discourses require there to be a domain assigned to assertions (uttered as answers), too.

[59] A 'maximal domain of $\mathfrak{D}$', $max(\mathfrak{D})$, is meant to be the largest domain in $\mathfrak{D}$ s.t. it comprises the elements of all other domains of $\mathfrak{D}$: $max(\mathfrak{D}) = \{i : (\exists D \mid D \in \mathfrak{D})(i \in D)\}$.
At this point it can be argued whether it is reasonable to assume that a representation of possible domains, $\mathfrak{D}$, contains such a maximal domain. Does a maximal domain mirror a *strategy* to cope with uncertainty? Just to fall back on a comprehensive domain that is scarcely restricted (and not to choose from a set of proper alternatives instead) does not seem to adequately represent an actual choice strategy in general. If this "choice" strategy were to be followed *always*, a set $\mathfrak{D}$ of alternative domains could not be justified.
But apart from this, the assumption that $\mathfrak{D}$ may contain a maximal domain like U_{w_0} whenever the intended domain (of a question or an assertion) cannot be specified is *not* meant to be adequate *cognitively*. Instead, according to a more adequate mental model, $\mathfrak{D}$ might remain in an *underdetermined* state; cf. the discussion on the 'specificity' of D, pp 103f.

[60] If this were the only principle to be considered, then in fact the concept of alternative possible domains would seem superfluous; one maximal domain, which would be U_{w_0} in the worst case, would do.

with the condition imposed by the presupposition in (36), which states that the explicit restrictions introduced by the question must be met. $\mathfrak{D}$ can thus be thought of as a collection of specific (non-empty) domains. The possible domains may include one another; yet they are considered proper alternatives.

(46) *Conditions on a set $\mathfrak{D}$ of possible domains:*
$\mathfrak{D} :: (\forall D \mid D \in \mathfrak{D})\ (D \subseteq [\![\sigma_Q]\!] \wedge D \neq \varnothing)$.

The intended domain must be taken from such a set of possible domains. Once a question Q is uttered, it is shared knowledge among all participants that possible question domains have to comply with $[\![\sigma_Q]\!]$. In this respect there is always a $\mathfrak{D}$ that is provided by C. But since (46) licenses many alternatives, the *intended* question domain, as it is determined and can be learned through C, will usually not be unique. On the other hand, in case the question domain is fully specified in the question (see (16)), $\mathfrak{D}$ can be thought of as supplying only one domain, which is fully compatible with the question presuppositions affecting D, too. And so the choice would be determined by the question completely.

I will term a choice function that picks out exactly one domain out of some $\mathfrak{D}$ a *perspective*. When the ambiguity of the question is due to variability of its domain s.t. the ambiguous question is an element of $\{Q_D : D \in \mathfrak{D}\}$, the choice of a specific domain amounts to considering a unique question out of $\{Q_D : D \in \mathfrak{D}\}$. Thus, taking a specific perspective also *disambiguates* questions. The set of all alternatives as a whole, $\mathfrak{D}$, will not play an explicit role; for this reason, $\mathfrak{D}$ is not an argument of the choice function 'perspective' in (47):[61]

(47) *Perspective $\chi\delta$:*
A perspective $\chi\delta$ is the choice function that chooses the domain δ from a contextually given set $\mathfrak{D}$ of possible domains, $\delta \in \mathfrak{D}$.

We can conceive of a perspective also as an *index parameter* relative to which an interrogative must be interpreted.[62] Being intended by the questioner, the question domain is a relevant parameter of the utterance situation. Other index parameters involved in an utterance are e.g. speaker, addressee, time, location, etc. The question meaning cannot be determined unless the index, i.e. the question domain is known. Before the index parameter 'question domain' determines the question meaning—like D does in definition (37)—, only the *character* of the question can be determined, which is a term for the constant meaning of an expression that is independent of the utterance situation. Since

[61] *Choice functions* have been used for a different purpose and in a different way in the linguistic literature before. In particular, choice functions might not be understood as choosing from a restricted set of individuals. As for the semantic representation of questions, Reinhart (1997, pp 372ff) distinguishes those restrictions which are introduced in the wh-phrase of the question from the choice function. Another earlier example of a choice function in the analysis of questions is, as Reinhart remarks, due to Engdahl (1980). However, the reason for employing choice functions is a different one here: Whereas Reinhart presents choice functions as a way to properly deal with structural *scope ambiguities* within assertions and questions, the concern here is to deal with ambiguities which arise due to the context of utterance. Accordingly, the examples as they are construed here are s.t. they do not necessitate structural disambiguation.

[62] For the term index, see e.g. Lewis (1998a). There are different kinds of index parameters, e.g. utterance time/place or a question domain, which together anchor a character.

the character is an abstraction from the parameter D, we can write $\lambda D\,.\,[\![Q_D]\!]$ for the constant character that is independent of this situation parameter. I will not explain the effects of the question domain in terms of 'index'; but I want to point out that *a change in the question domain can be conceived of as an index change*.

Thus, perspective-taking is a key for understanding discourse. Until now, a perspective is assigned to a question to make it unique, i.e., to disambiguate it. But when turning to question–answer discourses the point is: Which participant actually holds which perspective?

4.2.2 Taking Perspectives in Discourse I

We will now see that the concept of perspective is crucial not only for the uniqueness of a question as a semantic object, but—in the course of a dialogue—also for the interpretation of a question on the part of the answerer and, subsequently, for the answer itself. (The general picture and the fact that, moreover, the answer has to be interpreted appropriately thereafter, according to the perspective intended by the answerer, will be dealt with in 5.1.) In the following I will focus on the relation between the perspective D actually intended for the question and the perspective δ that comes about by the interpretation and disambiguation of the question. Thus, it is the questioner who holds D and the answerer who holds δ. What will this relation be like for a declarative A (interpreted as $Exh(A, \delta)$) in order to solve the question Q_D in the sense of (44)?

At first, by choosing a domain from $\mathfrak{D}$, the answerer necessarily *takes a perspective*: δ is the domain chosen to be taken into consideration by the answerer, whereas D refers to the intended question domain. It is the aim of the answerer to reply with A s.t. $Exh(A, \delta)$ solves Q_D. Still, with $\mathfrak{D}$ leaving open several possibilities for D in C, δ might differ from D. So we must have distinct representations for the answerer's and for the questioner's domain. In what cases can we nevertheless say that—by accident or not—δ is chosen appropriately? Is δ appropriate only if $\delta = D$? Let us look at this more closely and determine this kind of appropriateness stepwise. (48) introduces an auxiliary concept. It says that for a perspective δ to be suited as a domain for a replying expression A in a question context $\{Q_D : D \in \mathfrak{D}\}$, δ has to include at least all those individuals which are specified in A as the satisfiers of the question abstract; this is a necessary condition for a δ to be *adequate*:

(48) *Adequate Perspective $\chi\delta$:*
If a *perspective* $\chi\delta$ taken for a reply A *is adequate* in a context $\{Q_D : D \in \mathfrak{D}\}$, then δ contains at least those satisfiers of $Que(x)$ which are specified by A.

In other words, an adequate domain δ taken for a reply A necessarily contains all those satisfiers which are specified in A. So by restricting the perspective considered for a given A to adequate perspectives only, we can further reduce the set of A's possible domains.

The rationale behind the choice of δ relative to the domain of Q_D becomes clear when reconsidering the role of the domain for $Exh(A, \delta)$. To illustrate the potential of a reply A to solve questions out of $\{Q_D : D \in \mathfrak{D}\}$ in w_0, let us have a look at fig. 4.1. (Note that a reply A is taken to be ambiguous with regard to the domain it considers; without further notice, its domain δ is taken to be adequate, see (48).) The key to the illustration is: (I.) Some perspective δ is taken for A; it is then exhaustively interpreted resulting in $p_\delta = Exh(A, \delta)$, see (45). (II.) Each of these interpretations p_δ relative to some domain δ solves a subclass $\mathfrak{Q}$ of questions from $\{Q_D : D \in \mathfrak{D}\}$ in w_0, see (44).

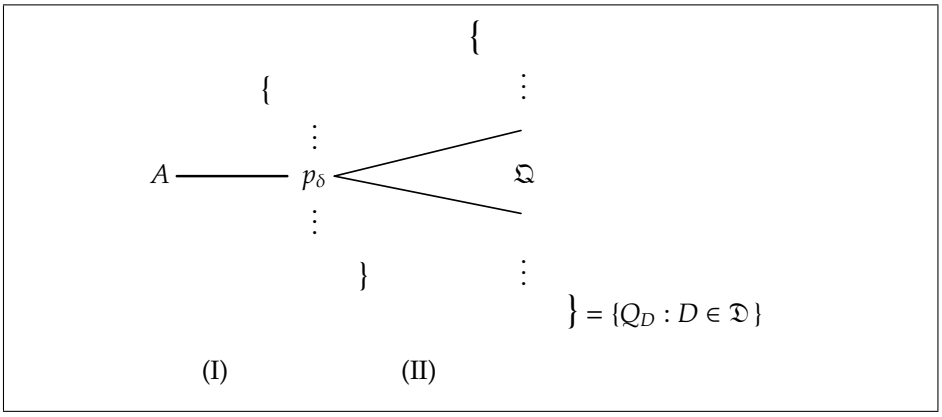

Figure 4.1: Solving questions with an exhaustively interpreted A.

Given $\mathfrak{D}$ and $\{Q_D : D \in \mathfrak{D}\}$, the set $\mathfrak{Q}$ can be spelled out in detail:

(49) *The questions $\mathfrak{Q}$ potentially solved by A, given $\mathfrak{D}$ and $\{Q_D : D \in \mathfrak{D}\}$:*

$$\mathfrak{Q} := \{Q' \in \{Q_D : D \in \mathfrak{D}\} : (\exists \delta \mid \delta \in \mathfrak{D})((\exists C_{w_0} \in Q')(w_0 \in C_{w_0} \wedge Exh(A, \delta) \subseteq C_{w_0}))\}.$$

Let us have a look at the condition $Exh(A, \delta) \subseteq C_{w_0}$ in (49). We want to know the question domain D of those questions whose answer cell C_{w_0} is subsumed by $Exh(A, \delta)$. What relation $R(D, \delta)$ must hold in order that $p_\delta = Exh(A, \delta)$ solves Q_D?

Let I be the set of all satisfiers of the question abstract $Que(x)$ of Q_D according to its true answer in w_0, C_{w_0}. Then I_δ is the set of all those satisfiers of $Que(x)$ that are truthfully specified in A. Because a perspective $\chi\delta$ taken for A is assumed to be adequate, any δ must contain these specified satisfiers: $\delta \supseteq I_\delta$ (see (48)). Now, (44) states that—for p_δ to solve the intended question Q_D—$p_\delta \subseteq C_{w_0}$ has to hold. So we have to distinguish between two cases: There are propositions which solve the question, $p_\delta \subseteq C_{w_0}$, and those which do not (entirely) solve it, $p_\delta \supset C_{w_0}$. Because in w_0 the satisfier sets I and I_δ are exhaustive with regard to D and δ respectively, we know that the sets $D \backslash I$ and $\delta \backslash I_\delta$ contain

non-satisfiers. So the proposition C_{w_0} and a question-solving proposition p_δ can be decomposed and rewritten as follows: [63]

$$p_\delta \subseteq C_{w_0} \tag{4.1}$$

$$\{w : (\forall i \mid i \in I_\delta)\,(w \in Que(i)) \wedge (\forall i \mid i \in \delta\backslash I_\delta)\,(w \notin Que(i))\} \subseteq \{w : (\forall i \mid i \in I)\,(w \in Que(i)) \wedge (\forall i \mid i \in D\backslash I)\,(w \notin Que(i))\} \tag{4.2}$$

$$\{w : (\forall i \mid i \in I_\delta)\,(w \in Que(i)) \wedge (\forall i \mid i \in \delta\backslash I_\delta)\,(w \notin Que(i)) \wedge (\forall i \mid i \in I)\,(w \in Que(i)) \wedge (\forall i \mid i \in D\backslash I)\,(w \notin Que(i))\} \subseteq \{w : (\forall i \mid i \in I)\,(w \in Que(i)) \wedge (\forall i \mid i \in D\backslash I)\,(w \notin Que(i))\} \tag{4.3}$$

Because in a subset-relation '$\subseteq$' we can always extend the conditions of the left side with the conditions of the right side, viz. (4.3), it can be easily seen that all the conditions by which C_{w_0} is defined also hold in p_δ-worlds. So for p_δ to solve the question, constraints (4.4) and (4.5) must be fulfilled:

$$I_\delta \supseteq I \tag{4.4}$$

$$\delta\backslash I_\delta \supseteq D\backslash I \tag{4.5}$$

$$D \subseteq \delta \tag{4.6}$$

Resolving the first two constraints finally results in (4.6): $R(D,\delta) := D \subseteq \delta$. Now, under the preconditions mentioned, the connexion (II.) between a δ-relative p and a solved question Q_D can be expressed as $\delta \supseteq D$.

At last, let us perceive fig. 4.1 as depicting the effect of a perspective chosen: (I.) In order to interpret A, a perspective $\chi\delta$ has to be chosen from those perspectives $\mathfrak{D}$ which are available in the utterance situation of A. A δ-specific interpretation of A, $Exh(A,\delta)$, is called an *interpretation of A in perspective* $\chi\delta$. (II.) Once a perspective is assigned to A, a particular set of questions is solved. When replying with A to a question Q, choosing a perspective $\chi\delta$ for A is tantamount to the choice of a particular set $\mathfrak{Q}$ of questions from the class $\{Q_D : D \in \mathfrak{D}\}$ of ambiguous questions originating from Q.

[63] $Que(i)$ is the short form for $(\lambda x\,.\,Que(x))\,(i)$.

Chapter 5

"But" in the Context of Questions

The previous chapter provided the foundation for the analysis of the exhaustivity-related use of but in terms of a perspective. Our next step is to study a simple case to show how the use of but can be related to exhaustive interpretations. We will see that there are clear limits for such an analysis, which raise doubts whether it is adequate even for the particular instances chosen. The second step will be to refer to an extended utterance background as described in the case study. Here I will be introducing the notion of an 'issue', the goal that motivates a question but which is usually different from the question's partition.

A formal treatment of the function of but is suggested for special cases. The discussion of these cases will lead us to the more general 'perspective'-related account of contrast that will be presented in detail in chapter 6; it will also employ the concept 'perspective', but that concept will be defined in a different, although related way. The core of the concept 'perspective' will remain the same: Being a choice function, a perspective will be a prerequisite for an issue, just like it is a prerequisite for a fully specified question—by determining its question domain.

It is worth noting that the instances of but in this section are special in many respects. The utterances where but is used as conjunction are restricted to *answers to direct questions*. So we will consider question–answer situations next. The answering reply consists of two parts, i.e., of two but-conjoined sentences. The form of the considered replies will be elaborated in detail. The questions are restricted to wh-questions. Note that these instances are not sufficient to immediately arrive at any comprehensive account of but .

Nevertheless, the claim will be that this role of but can serve as a starting point for a more general analysis of its function if (i) its role is treated in terms of 'consistency' (as will be introduced in 5.2.2) and if (ii) this consistency may be subject to modifications / generalisations when dealing with other instances. Concerning the essential concept 'perspective', i.e. the restriction of some con-

sidered domain, it will be shown that it is involved in those utterance situations which give rise to exhaustivity.

First, I introduce the question–answer scenarios which will be central to the discussion and the use of but in 5.2 .

5.1 Taking Perspectives in Discourse II

In 4.2.2, we did not address the dynamics of a discourse underlying fig. 4.1 and involving the choice of δ . Before going on to a case study, let us clarify in brief that perspective-taking is a repetitive commitment of both participants of a question–answer discourse to a particular context and that perspective-taking concerns both utterances—question and answer—plus their interpretation by the respective counterpart. We will thus have to talk about a perspective that is assigned to a question and about a perspective assigned to its answer. These perspectives are independent of each other in that they are held by different participants: the first one by the speaker of the question, the second one by the answerer. This being the *intended perspective* for a question or an answer (assertion), there will additionally be a representation of the perspective that takes part in the interpretation of the respective utterance on the part of its hearer: the *conceived perspective*. This is due to the answerer's interpretation of the question and the questioner's subsequent interpretation of the answer. So there are two parallel aspects of 'perspective'. We can say that, according to one aspect, a(n intended) perspective is assigned to a participant, according to the other aspect, a (conceived) perspective is assigned to an utterance. To sum up:

- An *intended* perspective is the speaker's perspective taken for his utterance.
- A *conceived* perspective is the hearer's perspective taken for his interpretation of the previous utterance.
- The perspective assigned to an utterance (question) can be the speaker's or the hearer's.
- The perspective assigned to an utterance (answer) can be the speaker's or the hearer's.

We will now sketch the stages of a minimal discourse related to these different perspectives. Then we will take a closer look at the role of the Stalnaker context set introduced in 4.1.3.2 .

5.1.1 Perspectives in the Course of Dialogues

Because there are various 'perspectives' in the course of a dialogue, let us trace the role of this notion in the course of asking, interpreting, replying, and again interpreting. According to the perspective assignments there are, one has to consider distinct representations for these stages in a discourse like (1) below:

1. The question's utterance: The speaker's (A) intended perspective of question (1)A.

2. The question's interpretation: The hearer's (B) conceived perspective of question (1)A.

3. The answer's utterance: The speaker's (B) intended perspective of answer (1)B.

4. The answer's interpretation: The hearer's (A) conceived perspective of answer (1)B.

Until now, we have been talking about two representations of a 'perspective': There is an intended question domain D assigned to a question Q_D and an intended domain δ assigned to an answer A.[1] The assignment of D refers to stage 1 above, whereas δ is assigned at stage 3. In 4.2, we analysed the effect a domain δ has on the interpretation $Exh(A, \delta)$ of a given answer A. This analysis revealed the relevance of the choice of δ to the solution of a question Q_D by means of A. The δ discussed in 4.2 is not to be confused with the answerer's or the questioner's perspective actually taken for A. Due to empirical adequacy, we must not conflate these perspectives but have to keep them separate, viz. stage 3 and stage 4. So until now we covered the perspectives associated with 1 and 3. Consider now the minimal question–answer discourse (1):

(1) A: Whom did they invite?
B: Fritz, Carl, and Bob.

Assigned to (1)A is a certain intended question domain D. Next, there is a domain relative to which the question is interpreted on the part of B. How to name this perspective? Is it the very perspective $\chi\delta$ intended by B for the answer? To validate this, the connexions between the perspectives of the stages 1 to 4 have to be reconsidered: B seeks to interpret the question in the originally intended question perspective χD. That is, depending on his knowledge about the question's utterance context, he can or cannot be confident that he understands the question with regard to its intended domain.[2] If he is confident that he does understand, then he is—as a co-operative and competent speaker—committed to answering the question completely. Thus we may assume that B's perspectives associated with 2 and with 3 are the same: His answer will consider the whole domain he thinks the question is about. So δ is the perspective associated with stage 2 as well as stage 3. The same consideration applies mutatis mutandis to 1 and 4 as well. If there is no reason for A to believe that B got something wrong, i.e., that the answer is not intended to cover the domain D, then A is going to interpret the answer in perspective χD again. That is, the questioner will take A to cover his originally intended question domain and will thus take $Exh(A, D)$ to hold.

[1] For exceptions see 'open questions', p 92.
[2] It will be explained below in 5.1.2 how an intended perspective depends on the utterance context.

So far the description of a *sound discourse*: A's final interpretation $Exh(A, D)$ of the reply as a complete answer to the question he intended to ask is justified if he is justified in taking $\delta \supset D$.[3] (Moreover, the question is answered precisely if nothing more than the exhaustive answer is conveyed, i.e., if $\delta = D$.) But a discourse might not always be sound.[4] Whereas in the current framework we will not be concerned with conditions which invalidate the assumption that the same domain δ is relevant for the stages 2 and 3, we will learn conditions which make it necessary to deviate from the original question domain D when interpreting A, stage 4: If A has reason to doubt that $\delta \supseteq D$, then it is *not* justified for A to apply the interpretation $Exh(A, D)$.

To conclude, it is essential for a sound discourse that the intended domains associated with the stages 1 and 4 remain the same across the utterance contexts of a question and its answer, or that $\delta \supset D$ holds. We will soon see what can go wrong in communication in case this is not so and the fact that $\delta \subset D$ cannot be realised by A. A subsequent line of inquiry is to take possibilities into account that exist for B to prevent the discourse from getting unsound: If the answerer is not sufficiently confident to understand the question with regard to its intended domain, then it is advisable for him to make his own intended domain explicit. We will discuss one such strategy to prevent an unsound discourse in 5.3. The strategy affects stage 3 and will prevent A from taking the intended answer domain δ for D mistakenly.

Unsoundness of a minimal question–answer discourse will be represented as a relevant discrepancy between the involved utterance contexts. Then, how does unsoundness relate to a common context set, which both participants share?

5.1.2 Perspectives and Context

Now something has to be said about where a perspective is situated. We have been talking of the answerer's "choice" of the domain δ which he takes for granted; nevertheless, there is no choice if the perspective is provided by the context already.

The following discussion is based on a Stalnaker context set as introduced in 4.1.3.2. Such a context set of possible worlds—as the question's utterance context—is important for the felicitous utterance of a question: If the context does not satisfy e.g. the existential presupposition of a question (see (34)), then the question is not even defined. The context (common ground) represents the knowledge which all discourse participants mutually agree upon.[5] Nevertheless, every participant holds his own context and his representation of the common context is meant to be *presumed* common knowledge. In a sound discourse, it does not matter whether the participants' representations

[3] See 4.2.2.

[4] Note that the distinction sound vs. unsound cannot be illustrated on the basis of the expressions in (1) alone since the intended domains are implicit here.

[5] Of course, there is no such shared resource of knowledge actually. But as Stalnaker points out, there might be commonly experienced changes in the current situation s.t. there is some evidence for these experienced changes/properties that is accessible to every participant.

of a common context are exactly the same or just close enough.[6] So to trace the course of a sound (and co-operative) discourse in which no rejections or negotiations take place, it is sufficient to consider one context set—because then there will at any time be a non-empty set of open possibilities the participants agree upon, which is represented by one consistent (i.e. non-empty) context set. Since it is necessary to consider the questioner's and the answerer's context separately, I introduce a naming convention: C stands for the utterance context the questioner takes for granted, C' is the utterance context the answerer takes for granted when answering. A context entails those propositions which a participant thinks to be mutual knowledge in the conversation as of the time being. With each utterance being made and accepted, the contexts change. But it might happen that both contexts are not updated with the same propositions: As we will see, there is the possibility of misconceptions of utterances which are due to a discrepancy between the contexts taken for granted by the utterer and the interpreter of an utterance.

Now, take the case of a somehow given question domain. The question might contain a partial description of the intended domain; furthermore, there is an overt sortal restriction on the elements of the intended domain. Both restrictions expressed by an interrogative Q are subsumed under the predicate $[\![\sigma_Q]\!]$ (cf. (36), p 106). An 'implicit' domain is then determined by another covert (implicit) restriction: Unless a *specific* domain is overtly mentioned as the wh-restrictor, specificity has to be accomplished by additional implicit restrictions.[7] The specific question domain D must be a proper subset of the overt restrictions' extension: $D \subset [\![\sigma_Q]\!]$. But still, the specific domain has to be accessible to the hearer. In our model there is only the context set C which can provide the perspective of a question: An intended question domain being 'implicit' means that it is taken for granted by the questioner. In other words, the perspective of the question is *presupposed*.[8] That is, the question receives a unique meaning only in an utterance context that provides a (unique) perspective: The utterance context disambiguates the question, determining its meaning. We also see how both the intended domain of an utterance and the domain taken for the interpretation of this utterance refers to its presumed utterance context, which in a sound discourse should be the same across all participants.

To model the question meaning as determined jointly by the logical form of an interrogative and the utterance context, I take a perspective to be part of the context, whereas in the representation of a question—the answer set $\mathit{Answers}(\,(?x \mid x \in D)(\mathit{Que}(x))\,)$—the domain D is a *contextual parameter* (see (37), p 107). And like with other contextual parameters, the contextual domain parameter D receives its value from the utterance context. Like e.g. deictic expressions (I, now, etc.), D represents a parameter whose reference varies

[6] See Stalnaker (1978, p 322).

[7] We have seen an example of a fully specified question domain in (16), p 95: With a list of proper names there can be no doubt about the specificity of the domain, i.e., the domain is fully determined and no additional implicit restriction is assumed.

[8] This is a reasonable assumption since an utterance involving a perspective can only be expected to be understood if the perspective too is presumed to be common ground.

with the utterance context; and before a (truth-conditional) evaluation is called for, first these references have to be anchored relative to an utterance situation.[9] Technically this is accomplished with a *choice function* (perspective) here, which is part of the utterance context and does provide a specific set of elements. I will not try to relate concepts like 'topic' or 'salience' to this presupposed set but stick to the terms 'question domain' and 'perspective' instead.[10]

5.1.2.1 Perspectives and Sound Discourse

We have seen before that not any perspective can be taken for a given question. There are (sortal) restrictions due to the question. And, given a question and a possibly implicit intended question domain D, the perspective chosen in order to interpret the question and to give an answer must be adjusted to D. Finally, we have argued that any question domain provided by the contextual perspective must be definite.

A domain of a question is unique in a context if the contextual perspective provides only one specific set D for Q s.t. D is fully compatible with the overtly mentioned restrictions on the domain in Q, $[\![\sigma_Q]\!]$: $D = (\iota x \mid \chi x \subset [\![\sigma_Q]\!])$.[11]

A participant takes a perspective by presupposing a context C that determines a choice function χ providing a unique domain fully compatible with $[\![\sigma_Q]\!]$. We will write $[\![Q]\!]_C$ for the question Q as anchored to a particular perspective. D stands for the intended question domain in a perspective, whereas δ will be the domain for an interpretation of Q. Because for the moment all contextual anchoring relative to some C is concerned only with

[9] With assertions, construing a proposition by anchoring its contextual parameters (like utterance time, utterance place, etc.) is a prerequisite for its truth-conditional evaluation in each still possible world of the utterance context (see Stalnaker (1978, p 318)). As for questions, it is a *set* of propositions whose contextual parameters first have to be anchored relative to one and the same context.

[10] It should be noted, however, that a contextual parameter 'perspective' ('domain') and a parameter like utterance time differ inherently: Whereas utterance time is independent of utterances, a domain can be introduced, changed, and removed by way of words: A domain only matters if it is itself a subject of the discourse. Thus, a domain conceptually belongs to a *discourse* universe of introduced referents (cf. Kamp & Reyle (1993)). As it seems, a domain is an entity that comes into existence and is changed through the discourse. But in general, a domain can come about by perception as well: In an utterance situation there may be perceptually highly salient—previously unmentioned—individuals which can be the most natural referents e.g. of demonstratives. Likewise, perceptual salience can determine what the perspective of a question in a given utterance situation is.

[11] Being definite and denoting a contextually given (complex) referent, a domain parameter in the logical form is similar to a plural anaphoric expression, i.e., to a (referentially used) plural definite description denoting $[\![\underline{\text{the}}_{[plural]}\ \sigma_Q]\!]$.

However, I will not try to model the assignment of D as an instance of anaphora resolution in DRT (Kamp & Reyle 1993). The concepts currently employed are not sufficient to do so: A context set C merely serves to represent propositions presumed to hold true and (at a separate preceding stage) to instantiate contextual parameters, yielding anchored propositions (see Stalnaker (1978, p 318)). — A representation to take stock of introduced discourse referents is missing here. When conceiving of the domain as a plural anaphoric expression, the overt description $[\![\sigma_Q]\!]$ might not suffice to denote the referent either, but the plural *definite* description nevertheless does, referring to a previously introduced specific set. But note that to cope with a domain in a discourse representation framework, the antecedent (i.e. the domain) must have been introduced in the previous discourse. It might be problematic to formulate adequate accessibility conditions. (Furthermore, the domain might not have been introduced explicitly at all.) But it would be worthwhile to follow this line of inquiry, "domains as anaphora", further.

perspectives, we may write $[\![Q]\!]_C = [\![Q_D]\!]$ if all possible worlds out of the context set C anchor the perspective s.t. it delivers D as the only compatible question domain for Q.[12] The same holds mutatis mutandis of an answer A: $[\![A]\!]_{C'} = [\![A_\delta]\!]$ means that context C' anchors the intended domain for an exhaustive interpretation of A to δ.[13]

To sum up, a perspective is part of the presupposed context. An adequate utterance context of a question Q has to provide a unique question domain with regard to $[\![\sigma_Q]\!]$. Now let us rethink what it means for a hearer of a question to adopt the (presumably intended) question domain. In terms of the presumed context this means that the hearer tries to stick to the same context the questioner has been taking for granted. In Stalnaker's terminology of a common context set, the participants' motive for maintaining the same domain across all stages 1 to 4, p 121, reads as follows:

> Because hearers will interpret the purposes and content of what is said in terms of their own presuppositions, any unnoticed discrepancies between the presuppositions of speaker and addressees is likely to lead to a failure of communication. Since the communication is the point of the enterprise, everyone will have a motive to try to keep the presuppositions the same. And because in the course of a conversation many clues are dropped about what is presupposed, participants will normally be able to tell that divergences exist if they do. So it is not unreasonable, I think, to assume that in the normal case contexts are nondefective, or at least close enough to being nondefective.[14]

In a sound discourse there are no failures of communication and the answerer will address the very intended question domain D with his answer—just like the questioner will take this for granted. A *defective context* comes about if the participants' representations of the common ground deviate essentially from each other. Let C and C' be synchronous contexts the discourse participants take for granted. The common ground is defective if there is a contradiction between the propositional contents of their contexts, $C \cap C' = \varnothing$; or their common ground might be defective if one context entails a proposition that the other context does not: If the questioner's context is more informative about the subject-matter of the question than the answerer's context is, then I take the common ground to be defective, too. Since the questioner has no sovereignty over the issue at stake, he cannot (on his own) take for granted any information about the subject-matter. (Whether the answerer—he is the only

[12] For the notation $[\![Q_D]\!]$ see (37), p 107; according to our naming convention, D is the domain associated with the questioner.

[13] $[\![A_\delta]\!]$ does not necessarily stand for the proposition $Exh(A, \delta)$ in general; it says that δ is assigned to A s.t. in case of A's use as exhaustive answer δ must be the effective domain. The proposition $[\![A_\delta]\!]$ thus depends on the reading of the declarative A: If A is taken to be strongly exhaustive, then e.g. (1)B, p 121, reads as "Fritz, Carl, and Bob (and nobody else out of δ)" and $[\![A_\delta]\!] = Exh(A, \delta)$; cf. the quotation (Groenendijk & Stokhof 1997) on page 93. In short, we may say that $[\![A_\delta]\!]$ *licenses* the exhaustive interpretation $Exh(A, \delta)$.

[14] Stalnaker (1978, p 322).

one in a minimal question–answer discourse who is in charge of the answer—would agree or not is just a matter of chance, depending on the answerer's background, which mirrors the actual state of affairs.)

Especially the stages 3 and 4, p 121, may be involved in a defective common ground in a minimal question–answer discourse: The questioner might interpret the answer relative to his own intended domain D, while the answerer's intention might have been to address a domain different from D with his answer.

Let us consider C (the questioner's context) and C' (the answerer's context) at stage 3, taken that these are not yet defective. What can we say about the contexts if there is a defective common ground after stage 4?[15] By updating his context C with $[\![A_D]\!]$, the participants' contexts become disjoint sets, viz. (5.1).[16] Or, more generally, the questioner's C entails propositions which are not entailed by C', viz. (5.2). This is why their common ground will be defective.

$$C' \cap [\![A_D]\!] = \varnothing \tag{5.1}$$

$$C' \setminus [\![A_D]\!] \neq \varnothing \tag{5.2}$$

Essential factors for a defective common ground therefore are:

- Only the elements of the domains D and δ are involved in the coming about of a defective common ground here. (In this respect, it is not relevant whether C and C' differ with regard to other individuals.)
- $[\![A_D]\!]$ and $[\![A_\delta]\!]$ are contradictory propositions or $[\![A_D]\!]$ is more specific than $[\![A_\delta]\!]$.

What clues are available to a questioner at stage 4 to presume that applying perspective χD to A will result in a non-defective common ground? Next we will discuss an instance of a question–answer dialogue and arrange different scenarios with regard to C, C', χD, and $\chi\delta$.

5.2 Question–Answer Scenarios

The discussion of question–answer scenarios will reveal more details concerning a defective common ground that is due to an undetected domain mismatch. In particular, there is the issue of the hearer's point of view: Under which circumstances is a hearer able to detect a domain mismatch? Furthermore, a discrepancy between the questioner's interpretation of A and the answerer's context C' (i.e. a defective common ground) will be distinguished from a discrepancy between the questioner's interpretation of A and the actual state of affairs (i.e. a *false* interpretation of A relative to w_0).

[15] So the premise of the following is a defective common ground as of stage 4.

[16] An update of C with $[\![A_D]\!]$ results in a new, reduced context which is the intersection of both: $C \cap [\![A_D]\!] \subset [\![A_D]\!]$.

Since a domain mismatch might not be detected by the questioner and he might thus arrive at a false belief, an answerer will have to consider these possibilities—this is all the more necessary when the answerer cannot be sure what perspective the question does presuppose.

So usually, after a given reply A, the questioner will be expected to interpret the reply relative to D. This is generally true if the questioner has reason to assume that the answerer understood his question as intended, so that the reply is appropriate. A reply is appropriate if there is no unnoticed discrepancy between the presupposed perspectives of the questioner and of the answerer through the stages 1 to 4, p 121. (Note that the answerer intended the reply to be interpreted relative to δ, though, supposing that $Exh(A, \delta)$ will yield an appropriate answer in that it solves the intended question Q_D ($\delta \supseteq D$).)

Let us consider four scenarios for ex (3) (following below), representing the possibilities $D \subset \delta$, $D \supset \delta$, $D = \delta$, and $D\backslash\delta \neq \varnothing \wedge \delta\backslash D \neq \varnothing$.[17] That is, the case study treats subcases of $\delta \cap D \neq \varnothing$ only. There are two reasons for doing so: (i) In general, if the domains have no element in common, then A_δ[18] cannot solve Q_D, see condition $D \subseteq \delta$, (4.6), p 118. (ii) But from the questioner's point of view, $\delta \cap D = \varnothing$ means that the satisfiers I_δ mentioned in A_δ cannot be from D (i.e., $I_\delta \cap D = \varnothing$). This is noticeable to the questioner; moreover, this is a strong clue for him that D and δ are disjoint sets. But there is still the logical possibility of common individuals. So, what if—given that $I_\delta \cap D = \varnothing$—$D$ and δ have elements in common nevertheless? Then either A_δ solves Q_D or A_δ does not:

- A_δ does not solve Q_D, $D \supset \delta$: Then there are satisfiers of the question abstract (in D) which are not covered by δ at all, i.e., $I \cap \delta = \varnothing$. Not supplying the answer to Q_D, this line does not have to be considered any further.

- A_δ solves Q_D, $D \subseteq \delta$: Then all elements from D which are not specified by A as satisfiers I_δ must be non-satisfiers, i.e., $D\backslash I_\delta$ are non-satisfiers.

What about the latter case? Why do we leave it out? For one, in w_0 there are no satisfiers out of D at all, in other words, the existential presupposition of Q_D is not met. And a reply mentioning satisfiers which are clearly not in D in a situation where there are no satisfiers of the question abstract in D seems unacceptable—*unless* there is e.g. intonational markedness. Cf. (2)B vs. B′ (small capitals indicate the constituent marked by accent):

(2) A: Who of Susan and Pat is going to the cinema?
B: #Richard is going.
B′: [RICHARD] is going.

[17] Like above, D is the intended domain the questioner A has in mind, whereas δ is the domain B takes into account w.r.t. A. And as in 4.2.2, the domain δ can be divided into the set I_δ of all (truthfully) specified satisfiers of the question abstract and the set $\delta\backslash I_\delta$ of the non-satisfiers in δ. Likewise, D can be decomposed into satisfiers I and non-satisfiers $D\backslash I$ in w_0: $D = I \cup D\backslash I$.

[18] Just like the notation Q_D, A_δ is similarly short for: A (read or intended) relative to the contextual domain δ (cf. 4.1.3.3 and footnote 13).

(2)B′ is acceptable if it reads: "Richard is going, and Susan and Pat are not going." — Referring to alternative semantics (Rooth 1992), the accentuated focus can be said to introduce an alternative set $\{w : (\exists i \mid i \in \delta, \text{Richard} \in \delta)(w \in (\lambda x \,.\, [\![\text{“}x \text{ is going (to the cinema)”}]\!])(i)\}$, which is the focus semantic value of the reply. Now, given a focus-marked reply one can formulate a question–answer constraint to restrict the class of questions the reply can be adequate for: Rooth (1992, pp 10f) observes that "the right thing to do is to insist that the ordinary semantic value of a question be a subset of the focus semantic value of a corresponding answer."[19] From the view of the answerer, this constraint determines the question context that he takes for granted when answering. So by introducing with his reply an alternative set on its own, he presumes an utterance context that holds a perspective covering Richard as well. In this way B′ is able to *extend* the original question domain. The acceptability of (2)B′ (as contrasted with B) can thus be explained via the newly introduced alternative set which covers Richard. Concluding, the question–answer correspondence in case of $I_\delta \cap D = \varnothing$ can only be established if the reply is apt to introduce its own alternative set. The (ordinary semantic value of the) reply as such is not a corresponding answer to a question Q_D whose domain does clearly not contain I_δ (viz. Richard), e.g. if $D = \{\text{Susan; Pat}\}$.

Leaving these cases with a particular modifying impact on the context aside, I will construe four scenarios for a minimal question–answer discourse. The scenarios then subclassify the case $\delta \cap D \neq \varnothing$.

(3) A: Who is going to the cinema?
B: Susan and Pat are going.

The intended answer domain δ will be fixed; let us therefore assume that $\delta = \{\text{Susan; Pat; Helmut; Gerhard}\}$. The questioner's domain of interest, D, varies across the scenarios. The Venn diagrams in figure 5.1 depict the four possible enclosure relations between δ and D:[20]

a) Scenario for $D \subset \delta$.
A wants to go to the cinema only if Susan is going too. To be able to come to a decision, the questioner has to know of Susan whether she is coming to the cinema showing or not. (Perhaps A should have asked more explicit "Is Susan going to the cinema?" —But perhaps A did not do so because he wanted to hide his motives.[21]) Thus, A's domain of interest simply is:
$D = \{\text{Susan}\}$.

[19] This is a subset-relation because of the wh-word's sortal restrictions which are not part of the focus semantic value in general. If we take the ordinary semantic value of a question to be the answer set $Answers(Q_D)$, then the ordinary semantic value consists only of those propositions for which there is a satisfier of the question abstract *out of* D.

[20] The hatched regions of the second and fourth case indicate an acute mismatch, cf. the discussion e.g. of case (b) on page 131. Like before, the intended question—assigned to D—is Q_D, the reply is A (written A_δ and A_D when assigned to δ and D respectively).

[21] Under circumstances like these, the domain of interest cannot be said to be contextually available to an answerer B. Nevertheless, to expect a helpful reply, the questioner acts on the assumption that the answerer's domain is at least possibly appropriate for his purposes. That is, A takes for granted a common ground that consists of at least some worlds whose perspective covers Susan.

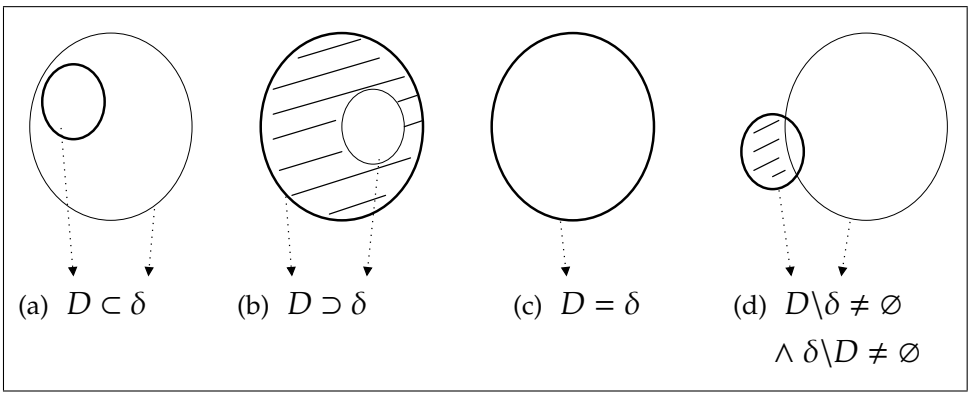

Figure 5.1: Deviations of the answer domain δ from a question domain D.

b) Scenario for $D \supset \delta$.
A wants to go to the cinema only in the company of five others. The five are: Susan, Pat, Helmut, Gerhard, and Richard. (That is, for the condition $D \supset \delta$ to hold, we must introduce another individual in addition to those in δ.)
D = {Susan; Pat; Helmut; Gerhard; Richard}.

c) Scenario for $D = \delta$.
A wants to go to the cinema if Pat and Gerhard are coming, but the questioner does not want to go if (also) Susan and Helmut are among the filmgoers. To make up his mind, the questioner has to know of Pat and Gerhard whether they are coming *and also* of Susan and Helmut:
D = {Susan; Pat; Helmut; Gerhard}.

d) Scenario for $D\backslash\delta \neq \varnothing\ \wedge\ \delta\backslash D \neq \varnothing$.
This presumably represents a frequent mismatch. It describes a partial hit of the answerer, but additional individuals (i.e. Pat) are considered as well. Like in (b), B mentions only some of the individuals A is interested in, not accounting for all of them. The questioner wants to go to the cinema only if Richard and Susan both come, with all other individuals—including Pat—being irrelevant:
D = {Richard; Susan}.

Contrary to what these descriptions let suppose, the pragmatic motives behind the interrogative are not at stake now: The examples' backgrounds serve merely to demonstrate the plausibility of utterance situations in which a hearer of an assertion refers to a particular domain when interpreting it as an answer. At the moment, nothing hinges on the specific problem the questioner faces and which motivates the question pragmatically. (Nevertheless, it will be argued later that the question's partition stands in a particular relation to another partition that represents the pragmatic motive for the utterance of the question.)

Consider the exhaustive interpretations of answer (3)B under the various domains. For every scenario (a)–(d), the *unrestricted* exhaustive interpretation (relative to the discourse universe of individuals in w_0, U_{w_0}) would lead to the conclusion that besides Susan and Pat nobody else out of U_{w_0} goes to the cinema. Surprisingly enough, this means that B has knowledge of anyone who might be among the filmgoers for the public cinema showing in question. This is very unlikely, so a contextual domain restriction must be assumed. This is accomplished by assuming a specific, fixed δ.

D, on the other hand, is variable across our scenarios. An interesting distinction now arises between cases where the given answer, which is about individuals of δ, supplies the *correct* results also for those individuals which are members of D—and such cases where A *might* arrive at *false* conclusions concerning members of D. Since the answerer is co-operative and competent, A provides true information in perspective δ. So A can only arrive at false information if his interpretation of A leads to a defective common ground. Therefore I focus on how a defective common ground can come about: It is $[\![A_\delta]\!]$ (stage 3, p 121) and the interpretation $[\![A_D]\!]$ (stage 4) which might yield disjoint contexts and thus can cause a defective common ground, cf. (5.1), p 126. C' will be the answerer's context, entailing $[\![A_\delta]\!]$ (since A is intended to be the complete answer to Q_δ and B knows the facts of $[\![A_\delta]\!]$ already), see p 126: $C' \subset [\![A_\delta]\!]$. C is the questioner's context not yet updated with $[\![A_D]\!]$. We will discuss whether this immediate update of C is in each case justified (from A's point of view) and what the consequences of this update might be. A relevant discrepancy between $C \cap [\![A_D]\!]$ and C' concerns only those individuals $D\backslash\delta$ which have not been taken into account by the answerer. I.e., a defective common ground can occur only with (b) and (d), where $D\backslash\delta \neq \varnothing$; see hatched regions in fig. 5.1. Neverthless, I will go through all four scenarios:

a) ($D \subset \delta$.) Questioner A wants to know of Susan whether she is going to the cinema or not. This information is semantically entailed by the answer (3)B and so A represents a solution to Q_D independent of an exhaustive interpretation. The information given about Pat is superfluous in this case. But all individuals of the question domain D are taken into account by B. This case is thus not a critical one: $D\backslash\delta = \varnothing$.
The exhaustivity-driven conclusions about the non-satisfiers of δ—Helmut and Gerhard—are not drawn by A, because for him there is no need to apply any exhaustive interpretation to A at all. But this might not be so for all instances of (a), because it is possible that D is not covered by I_δ. So it seems that—due to $D \not\subseteq I_\delta$—an exhaustive interpretation $Exh(A, D)$ reveals the answer to the questioner. But this interpretation is not justified from his point of view: Although he objectively cannot go wrong in applying $Exh(A, D)$, he does not *know* whether all elements out of D have been taken into account by B. All that A can get hold of is $D \neq \delta$, not $D \subset \delta$.
Although this case is not critical, the contexts of questioner and answerer differ with regard to Helmut and Gerhard. This is not sufficient for a defective common ground between the participants, though. The point

is that B presumes that his answer domain δ covers the question domain. Consequently, he is going to presuppose that henceforth $[\![A_\delta]\!]$ will be part of the common ground. But not so with A; according to him, the common ground does not entail whether Helmut and Gerhard are going to the cinema. So we might say that the contexts of B and A, C' and $C \cap [\![A_D]\!]$, are close enough for the current purpose (which is determined by A):[22] If the answerer takes the common ground to be more informative than the questioner does, then the participants can disagree only in whether the common ground is sufficient for a particular purpose (entailment); but in their propositional content the contexts cannot be contradictory. And no matter whether the exhaustive interpretation $Exh(A, D)$ has been applied by A or not, we can say that the common ground is currently non-defective, because a misconception w.r.t. information entailed only by C' does not become effective right now, and perhaps never will. We can call this a *potential* misconception.

b) ($D \supset \delta$.) Questioner A wants to know of Susan, Pat, Helmut, Gerhard, and Richard whether they are going or not. Not all of them have been taken into account in B's answer A_δ: $D \backslash \delta \neq \varnothing$. So this case is more critical than (a).
With the specified satisfiers being part of the question domain, it is not noticeable from the questioner's point of view whether $\delta \neq D$. Thus it seems justified for him to apply the interpretation $Exh(A, D)$. So from A's point of view, the answer conveys that Helmut, Gerhard, and Richard are no filmgoers. Since δ does not contain Richard, $C \cap [\![A_D]\!]$ and C' differ in this aspect: Whereas A takes it to be common ground that Richard does not go, B does not so. This time the questioner takes the common ground to be more informative than the answerer does. The questioner's misconception concerns an element not in δ. Beliefs concerning these individuals are not licensed by B, who is in charge of determining the extension of the question abstract for the common ground in this question–answer setting; thus the participants' contexts are not close enough and the common ground *is defective*.

c) ($D = \delta$.) The ideal case; *no misconception* can arise with this non-critical case: $D \backslash \delta = \varnothing$. There are neither individuals which A is interested in but which are left out of consideration by answerer B, nor are there individuals from δ of which B might falsely think that they were taken into account for an exhaustive interpretation by A (cf. the description of a potential misconception in (a)). Since it holds that $I_\delta \backslash D = \varnothing$, from A's point of view the interpretation $Exh(A, D)$ of A as answer to his question Q_D is justified.

[22] Cf. the description of a defective common ground under condition (5.2), p 126: Now it is the answerer's context C' that entails more information—on Helmut and Gerhard namely—than the questioner's context does. Yet, this does not lead to a defective common ground. Why? It is the answerer who is in charge of an update of the common ground with information about the subject-matter in this question–answer setting. So he has the sovereignty to change the common ground. — But it is the questioner who is in charge of "reading" the common ground by utilising propositions which the common ground entails.

d) ($D\backslash\delta \neq \varnothing \wedge \delta\backslash D \neq \varnothing$.) This case exhibits properties both of (a) and of (b). The questioner A is interested in Richard and Susan. Susan is "on the list" of the answerer; not so with Richard: $D\backslash\delta \neq \varnothing$, cf. (b). On the other hand, the answerer superfluously considers other individuals (Pat, Helmut, and Gerhard) as well: $\delta\backslash D \neq \varnothing$, cf. (a).
The consequences are alike: As for information entailed by C' only—it is the information on the non-satisfiers out of $\delta\backslash D$—, this case gives rise to a potential misconception. However, in this respect the common ground is still non-defective.
But like (a) (and unlike (b)), there may be satisfiers in I_δ which are not element of D. This detectable discrepancy between D and δ should keep the questioner from reading A as A_D, preventing a misconception concerning elements of $D\backslash\delta$. So like (a), instances of (d) have the potential for a defective common ground.

5.2.1 Misconceptions

5.2.1.1 Levels of Misconceptions

In the description of the different cases two aspects of 'misconception' have been mentioned. One aspect is the answerer's point of view: What clues are accessible to the questioner so that he is able to detect (the possibility of) a defective common ground (when C is to be updated with $[\![Exh(A, D)]\!]$)? Cases where C and A—both are known to A—are such that they might lead to a defective common ground are called "*subjectively critical cases*"; subjectively critical cases are detectable by A.[23]

The other aspect of 'misconception' is beyond a defective common ground: What are—in terms of D, δ, and I_δ—the conditions of an actually *false* conclusion drawn by A from A (in world w_0)? Cases in which the participants' contexts are such that A might arrive at a false belief on the grounds of A are called "*objectively critical cases*"; objectively critical cases can be detectable by A or not. In other words, objectively critical cases may be subjectively critical too. (A false belief depends further on the contingent actual state of affairs in w_0 concerning the individuals $D\backslash\delta$.) Note that (i) a defective common ground ('misconception') is a precondition for a false belief of the questioner; but (ii) what has been called 'potential misconception' does not amount to a defective common ground. The participants' contexts differ both in case of a potential misconception as well as in case of a defective common ground ('misconception'). Yet, whereas with a *potential* misconception it is the answerer who takes for granted a common ground that is more informative than the questioner actually *perceives* it to be, with a more severe misconception it is the questioner who takes for granted a common ground that is richer than the answerer actually *intends* it to be. So, a potential misconception lets the *answerer* presuppose facts about individuals $\delta\backslash D$ which the common ground does not entail; but as for a misconception, the *questioner* holds *false* presuppositions

[23] Hence the term "subjective".

about individuals $D\backslash\delta$. A potential misconception will not be dealt with any further, since it has no immediate effect and it may or may not become effective in the subsequent course of the conversation. This is beyond our current discourse settings.

By way of a defective common ground and a false belief, there can be still another level of conversational defect: It is then possible that the questioner makes a *wrong decision* with regard to the issue that motivates the question: e.g. w.r.t. going to the cinema or not.[24] (A wrong decision depends further on the particular impact of the false belief on a specific issue.) We can therefore set up a *hierarchy of conversational defects*, with a defect being a necessary but insufficient condition for higher-level defects. Precondition for deriving a higher-level defect is a domain mismatch between the domains D and δ, taken as the question's utterance context and as the answer's utterance context respectively. The sufficient conditions for a next higher defect are listed too:

(4) *Hierarchy of conversational defects caused by the truthful answer A_δ:*

1. *Domain mismatch:* $\delta \neq D$.
   It means that $C' \subset Exh(A, \delta)$. (It does not necessarily follow that $C \subset Exh(A, D)$.[25])

If the domain mismatch is *not* critical subjectively ($I_\delta\backslash D = \varnothing$) and if, moreover, the mismatch *is* critical objectively ($D\backslash\delta \neq \varnothing$), then it gives rise to a

2. *Defective common ground:* $C' \subset Exh(A, \delta)$, $C \subset Exh(A, D)$.[26]
   Now the questioner mistakenly presumes the common context to entail the complete answer $Exh(A, D)$ to his question.

If in w_0 there are satisfiers of the question abstract out of $D\backslash(\delta\backslash I_\delta)$ i.e., if in w_0 D contains satisfiers which have not been mentioned as yet, then the defective common ground involves a

3. *False belief:* $w_0 \notin C$.
   Due to a mistaken common ground the questioner holds a belief that is false in the actual world w_0.

If the satisfiers in $D\backslash(\delta\backslash I_\delta)$ in w_0 are relevant to the decision-making[27], then the false belief results in a

4. *Wrong decision:* The questioner comes to a conclusion (w.r.t. the problem that motivates his question) that is different from the decision which he *intended* to make relative to w_0.

[24] A decision of a participant is wrong in worlds W if it is *not* the decision the participant *intends* to make for worlds W. A wrong decision can come about if the participant's basis of decision-making is not adequate: e.g. in case he believes that propositions hold in the situation of the decision-making which are false in W. I.e., he might mistakenly take for granted wrong presuppositions for those situation which the decision is to be provided for. (Whereas the participant takes for granted false circumstances here, we will also see cases where the participant might consider not enough circumstances for the decision-making.)

[25] Here C is the questioner's context *after* the update with his interpretation of A.

[26] See footnote 25.

[27] This means that worlds in which there are no satisfiers in $D\backslash(\delta\backslash I_\delta)$ would give rise to a decision different from the one that is provided for those worlds in which the interpretation $Exh(A, D)$ (the questioner's interpretation of A) were to hold true.

Defects relevant to the questioner can emerge only if—with regard to the perspective—he takes the utterance context of the answer to be identical with the question's utterance context. But the questioner cannot take for granted that the answer presupposes the question's perspective if there are satisfiers I_δ out of $\delta \backslash D$. Then the situation is critical subjectively. This is possible only in instances of $\delta \backslash D \neq \varnothing$ (i.e. (a) and (d)), depending on the state of affairs in w_0. Note that the situation *might* be critical subjectively with (a) and (d), it does not have to be necessarily so, though.

But here are objectively critical cases, $D \backslash \delta \neq \varnothing$, where a domain mismatch is not detectable by the questioner, i.e., there are objectively critical cases which are not critical subjectively. This is so with some instances of (d) and with all instances of (b) . Unless there is no doubt that the perspective taken for granted at stage 2 is χD (see p 121), the problem for the questioner is that he cannot identify these objectively critical cases, given the answer A and C alone. In case there is any doubt about the context at stage 2 the point then is: What can the answerer do to prevent misconceptions at the level of a false belief and a wrong decision? First I discuss the answerer's choice of δ. Another attempt to prevent misconceptions is to indicate which purposes and exhaustive interpretations the perspective taken by him (at stage 3) is appropriate for, in other words, to indicate the *limits* of the entailments or conclusions which are licensed by his utterance of A.

5.2.1.2 The Answerer's Dilemma

Starting from the supposition that the question's utterance context is not sufficiently clear to the answerer w.r.t. the perspective, he could nevertheless try to appropriately answer the question. How is his choice of δ guided under these circumstances and in general?

First of all, the setting described for (3) is considered to be a *co-operative* one. Grice's maxims of conversation and the co-operativeness principle are assumed to hold. That is, B's reply has to meet several criteria.

Of course, perhaps the most fundamental assumption, the answerer has to be truthful, i.e., to assert only something he believes to be true and has sufficient evidence about (both *maxims of quality*). Therefore it can be assumed that the facts asserted by a speaker are in accordance with the actual world w_0. If the immediate context is given by an unsettled question—i.e., we observe the answerer at stage 2 now—, then with regard to subsequent utterances *the maxim "be relevant"* justifies this general assumption: Reply (3)B can be relevant in several ways; it can be relevant in that it is a direct corresponding answer to the intended question. For this to be possible, B has to take the question domain D as one of the question's determinants into account in the reply. So, a relevant reply (3)B can be expected to be a direct answer to the intended question, viz.: "I expect a partner's contribution to be appropriate to immediate needs at each stage of the transaction[.]" [28] I take the "immediate needs" to be given by Q_D directly. So the definition of a question as the set of

[28] Grice (1975, p 47).

its possible, complete direct answers fits a question–answer setting that is to obey the co-operativeness principle.[29]

When seeking an appropriate δ relative to D, the answerer could play safe by construing his answer with regard to the maximal domain of $\mathfrak{D}$, $[\![\sigma_Q]\!]$ (see (46), p 115). The *first maxim of quantity*, which requires to "[m]ake your contribution as informative as is required (for the current purposes of the exchange)", can be invoked as an argument to that effect.[30] But note that choosing the maximal domain means to have to specify in the reply all the satisfiers there are in $[\![\sigma_Q]\!]$. Even if the answerer is omniscient w.r.t. the question (in w_0), this normally cannot be accomplished for reasons of effort. So the choice is guided by another law with antagonistic effect here: There is the *second maxim of quantity*, which states "not [to] make your contribution more informative than is required."

Whereas the former group of maxims causes δ to be increased in cardinality, the latter maxims aim at minimising the effort and reducing δ. In terms of the relation between δ and D, there is the requirement to choose δ so that the information asked for is included, ensuring $D \subset \delta$.[31] — But obeying the second maxim of quantity means to minimise δ as far as possible and not to give superfluous information. Together, the maxims aim at an ideal choice of δ where it covers D precisely: $\delta := D$. This is in fact the lower bound of δ, since reducing the domain of the answer in a way that some element of D is ignored (i.e. $D\backslash\delta \neq \varnothing$) impures the answer's contribution, and we arrive at an objectively critical scenario, (b) or (d), again. This violates the first maxim of quantity and the maxim of relevance.

The maxims state that D is the optimum instantiation of δ. But they do not provide us with a method to derive δ. However, the problem of instantiating δ now displays a more *general dilemma*: that of choosing between a potential violation of either one or the other maxim. Either a rich δ is chosen, but then there is the danger of violating the second maxim of quantity—or a reduced δ is chosen, possibly violating the first maxim of quantity. Note that these maxims do not provide us with a strategy for the "optimal" choice of δ: Unless the maximal domain $[\![\sigma_Q]\!]$ of all possible domains is chosen for δ, there may always be an unconsidered individual that is in D, satisfies the question abstract, lets the questioner believe a proposition that is false in w_0, and in the end gives rise to a wrong decision (see hierarchy (4)).[32] But not even the tendency to enlarge δ is a feasible strategy for solving the question s.t. misconceptions are prevented: Then δ is more likely to contain satisfiers which are not in D. This amounts to a higher probability that the answer will be critical subjectively; and due to the apparent discrepancy between δ and D, the questioner will not expect the answer to meet his purposes (w.r.t. $D\backslash I_\delta$).

[29] Because these answers are the only replies defined here, the answerer's thorough competence w.r.t. the question (in w_0) has been assumed, though.

[30] Ibid., p 45.

[31] This condition prevents the objectively critical cases of $D\backslash\delta \neq \varnothing$, (b) and (d), too.

[32] Even if there is an exterior clue to D, this problem remains. So even if an upper bound of D is known s.t. the space $\mathfrak{D}$ of all possible question domains can be restricted further, a misconception might nevertheless arise unless δ is instantiated by this upper bound.

To conclude, the problem of choosing an appropriate δ cannot be solved by the answerer without him knowing D. When the answerer is going to give a direct answer, the only way for him to prevent the communication going awry is to rely on contextual clues to D. (In the worst case, there are no contextual clues and the only knowledge about D is acquired via $[\![\sigma_Q]\!]$.) So the cause of a misconception is a contextual one and is beyond the question–answer discourse; it cannot be nullified merely by reconsidering the choice of δ and giving a plain direct answer.

5.2.2 Consistent Perspectives

We have seen the kinds of misconceptions which can be triggered by a domain mismatch and what the conditions therefore are. In the dynamics of a question–answer discourse, a domain mismatch hinges on the choice of the answer domain for the stages 2 and 3, see p 121. We can now—relative to Q_D and w_0—characterise those perspectives which, taken for the answer, lead to a defective common ground, to a false belief, or even to a wrong decision. An answer-induced inconsistency that is meaningful to the questioner is a false belief. A defective common ground in itself does not necessarily have an impact on the questioner's intentions: If the propositions which A concludes from his mistaken, updated context C and which are not licensed by B happen to be true in w_0, then there is no false belief and thus the epistemic basis for his decision-making is not inconsistent with the actual state of affairs. Perspectives which do not lead to a false belief (but which may nevertheless give rise to a defective common ground) are called '*consistent perspectives*'. The 'consistency' of a perspective δ taken for an answer is thus determined by reference to w_0, not by reference to the answerer's context C'.[33]

Since the answerer B is competent w.r.t. the subject-matter of the question in w_0, 'consistency' can likewise be determined by reference to his beliefs in w_0. His actual beliefs are collected in the set $\mathfrak{Bel}(\mathsf{B}, w_0)$ of worlds he believes to be still possible.[34] So $\mathfrak{Bel}(\mathsf{B}, w_0)$ as well as w_0 can be '*reference worlds*' in order to determine 'consistency'. The difference between these reference worlds and C' is that the former must entail the *complete answer* to the question Q_D, whereas C' entails merely a *partial answer* to Q_D if $D \backslash \delta \neq \varnothing$. Generally, such reference worlds are crucial for inconsistencies like mistaken belief of the questioner (about facts in w_0): As it stands, we can say that a perspective is consistent relative to some reference worlds if it does *not* give rise to a contradiction with these reference worlds. But note that the reference worlds are *logically independent* of propositions which contradict them. The contradicting propositions are due to an *in*consistent perspective: E.g., it is not the reference set $\mathfrak{Bel}(\mathsf{B}, w_0)$ which is subject to an update with the contradicting interpretation of an answer. So the reference worlds remain untouched by these inconsistencies.

[33] Note that—under the current assumption of B being honest and competent (cf. the Gricean maxims of quality, 5.2.1.2)—C' cannot entail the contrary of what is the case in w_0.

[34] Whereas there may be many open issues in $\mathfrak{Bel}(\mathsf{B}, w_0)$ (viz. the issue of the actually intended question domain D), the question is settled in $\mathfrak{Bel}(\mathsf{B}, w_0)$ for *any* domain compatible with $[\![\sigma_Q]\!]$, because B is thoroughly competent.

Since we take only *adequate* perspectives into account, a possible perspective—be it consistent or not—has to include at least those individuals which A does mention (as satisfiers); see (48), p 116 .

(5) *Consistent Perspective* $\chi\delta$ *:*

An adequate *perspective* $\chi\delta$ taken for the direct answer A *is consistent* with a corresponding question $(?x \mid x \in D)\,(Que(x))$ and reference worlds W_{ref} iff

(Viz.: The exhaustive interpretation of A in an adequate perspective $\chi\delta$, taken as the direct answer to $(?x \mid x \in D)\,(Que(x))$, is consistent with regard to $W_{ref} := \{w_0\}$ iff)

a) $D\backslash\delta = \varnothing$ or

b) $\bigcup_{i\in D\backslash\delta}\{w : w \in (\lambda x.Que(x))(i)\} \cap W_{ref} = \varnothing$.

A perspective is consistent if it is—relative to w_0 —adapted to the immediate purpose of the question. Condition (a) covers the case where the complete answer to Q_D is licensed / entailed by the answerer's conception C' of the common ground; the second condition (b) says that, in case the complete answer is not licensed through C' , a perspective is nevertheless consistent if $Exh(A, D)$ happens to hold in the reference worlds w_0 and $\mathfrak{Bel}(\mathsf{B}, w_0)$: Then these reference worlds do not supply any satisfier of the question abstract out of $D\backslash\delta$. Whether the perspective δ taken for A at stage 3 (p 121) has been consistent or not cannot be determined by A : Both a delta that is apparently deviating from D , $I_\delta\backslash D \neq \varnothing$ —i.e., a delta in a subjectively critical case—, as well as a delta that does not display any deviation from D , $I_\delta\backslash D = \varnothing$ —i.e., a delta in a subjectively non-critical case—, can be consistent or it can be inconsistent.

The term 'reference worlds' is a generalisation of w_0 or of the answerer's $\mathfrak{Bel}(\mathsf{B}, w_0)$ in w_0 . According to (5), the consistency of a perspective $\chi\delta$ taken for A depends—besides the reference worlds—on the contextual question's perspective χD as well as the exhaustive interpretation of A . All these contextual factors are given or can be assumed for A in a specific question context Q_D . In particular the exhaustive interpretation principle, which is taken for granted in definition (5), is due to the question context. To take hold of the general idea behind (5), let us paraphrase the term 'consistency' it defines in more general terms: A perspective taken for a declarative A is consistent if the interpretation of A in this perspective does not contradict the reference worlds. In this more general paraphrase it is open, however, what an "interpretation in a perspective" amounts to.

In short, there are three determinants for 'consistency', which might be subject to a generalisation, in case the concept 'consistency' as defined by (5) proves to be too specific when employed for the use of but :

- A contextually given *perspective* χD .
- An *interpretation* in a perspective (in terms of possible worlds).
- *Reference world(s)* which are logically independent of the mentioned interpretation.

5.3 The Role of "but"

The concept 'consistent perspective' serves to describe perspectives in which misconceptions relevant to the questioner are impossible. Furthermore, we have seen that a co-operative participant is obliged to give an answer that solves the intended question (see (37), (44)). But if there is any doubt about the question domain the answerer encounters the dilemma that he might not be able to prevent possible misconceptions: Unless the maximal compatible domain $[\![\sigma_Q]\!]$ is chosen, it is not possible to exclude the emergence of a false belief on the part of the questioner. But although the answerer could in this way prevent the answer from being critical objectively, this is not a feasible strategy to avoid a subjectively critical answer (see 5.2.1.2).

In this section we show that there is another way to prevent relevant misconceptions at the levels 'false belief' and 'wrong decision', cf. (4) . In short: The effect of but in an answer can be employed by the answerer to indicate the way in which the domain presumed to be the question domain may *not* be extended without bringing about a false belief (on the grounds of the exhaustive interpretation relative to the presumed question domain). To this end, but introduces the specification of satisfiers which are not in the presumed question domain. This amounts to a change of the chosen perspective by way of but . While this explanation of the use of but in answers depends on the exhaustive interpretation principle, we will encounter instances where this effect of but cannot hold. Still, I will stick to the idea underlying this exhaustivity-related use: In 5.3.2 and 5.3.3 we will see that to prevent a possible misconception at the level of a wrong decision, but may introduce statements which seem to have a direct impact on the issue that—from the questioner's point of view—the answer to the question is to solve. Given this additional, but-introduced proposition, the answer given to the question proves to be 'inconsistent' w.r.t. the *issue*. This is but a circumscription. It remains to elaborate what an 'issue' is, in what way a proposition can be said to have an "impact on the issue", and what 'inconsistency' w.r.t. an 'issue' can mean.

5.3.1 Preventing a False Belief

5.3.1.1 Outline of the Analysis

Under the precondition that the answerer might not know the intended domain of the question, he can nevertheless try to give an answer. We have seen that—even by considering the maximal possible domain $[\![\sigma_Q]\!]$—he cannot escape

the dilemma of possibly giving rise to a misconception. But the answerer can adjust the reply to this situation

a) by *choosing a domain which he thinks is appropriate*.

And, moreover, he can adjust the reply to the uncertainty condition (of not being sure about the precise current situation)

b) by *indicating the underlying situation which he takes for granted* provisionally.

The underlying situation taken into account involves a perspective $\chi\delta$ from $\mathfrak{D}$, based on the general question context $\{Q_D : D \in \mathfrak{D}\}$. So it is justified to assume that a specific perspective must apply to the answer. A further precondition is that the answerer is unsure of this perspective. This implies its implicit givenness; the perspective is not entirely determined by the question. A questioner's background issue, e.g. the decision to go to the cinema or not, is not taken to be accessible to the answerer either. (We will drop this condition later, though.) On the other hand, if the questioner knows the actual situation (in terms of Q_D), then the reply will be appropriate and safe from being misconstrued; no further considerations on the part of the answerer will be necessary.

The stage for but should have been set by now. The crucial point that motivates the analysis of but in such a context is: When the answer is composed of two conjuncts—each of which has the form of a direct answer—by way of but, can we identify a particular effect of this conjunction in terms of the presupposed perspective? Is there an effect on the possibility of a misconception? A thesis on this effect is formulated and will be discussed on the basis of selected examples.

The examples have the form of (7) or, schematically, (8). These replies are contrasted with those plain direct answers with the same content, which give a list of the satisfiers, see (6). Exx (6) and (7) do not constitute a minimal pair.

(6) Susan, Pat, and Richard are going.

(7) Susan and Pat are going, but Richard is going too.

(8) $A \equiv$ "R but S"

The conjuncts of and in an answer like (6) are considered to contribute to the answer in the same way: The answer is given stepwise until complete; all (constituent) conjuncts are direct (elliptical) partial answers to the same question. Accordingly, the replying utterance will be considered to be the complete answer if it is not critical subjectively, i.e., if it does not mention satisfiers which are not in D. In short, I take it that there are per se no objections to a *unitary* perspective taken for (6). I suggest that replies like (7) are different in this respect; the conjuncts of but do not take part in the answer to one and the same question.

But is supposed to *indicate a particular shift in the perspective* taken by the speaker of the replying utterance. Choosing a domain means to presuppose

an utterance context with this specific perspective. Shifting the perspective amounts to a change of the set of individuals currently considered, thus taking for granted different presuppositions. By but the reply is divided into two parts, each associated with a distinct perspective. Since the first conjunct will be interpreted relative to presuppositions different from those of the second conjunct, a perspective shift can only be thought of in terms of a separate interpretation of each conjunct, one after the other. Before we can evaluate this thesis, we have to elaborate it in more detail.

Until now, we elaborated on the role of a perspective for questions and assertions. What does it mean for a replying utterance if within it there is a *shift* in the perspective? Let R be the part of reply A that precedes but; S is the part of A that is introduced by but, cf. (8). Furthermore, let $\chi\delta$ be the speaker's intended perspective taken for R; $\chi\delta'$ is the perspective for S. A crucial consequence of a perspective shift then is: When R is supposed to correspond to a δ-specific question, then the part S after a change in the perspective *cannot* correspond to exactly the same question associated with domain δ. This follows from definition (37): Associating an interrogative Q with a different domain results in a different question in terms of the answer set. By modifying a specific perspective $\chi\delta$ in the course of the reply, the speaker does no longer consider exactly the same domain δ, and consequently S is about a different question.

What is the *particular* quality of this shift? But indicates that the perspective associated with S, δ', is *not* suited for a consistent, exhaustive interpretation of the first part R of the reply. In other words, if R is interpreted as the complete answer to the question $Q_{\delta'}$, then there are inconsistencies between this interpretation $Exh(R, \delta')$ and the reference worlds.[35] Thus, this inconsistent interpretation is not the intended one for R and will lead to a false belief of the questioner in case his question domain is δ' instead of δ. Note that both $Q_{\delta'}$ and Q_δ belong to the class $\{Q_D : D \in \mathfrak{D}\}$ of ambiguous questions; possible sets of reference worlds are $\mathfrak{Bel}(\mathsf{B}, w_0)$ and $\{w_0\}$.

(9) *Conditions for the use of but:*

But is felicitously used in a reply of the form "R but S" in a context $\{Q_D : D \in \mathfrak{D}\}, W_{ref}$ iff

a) there are (adequate) perspectives $\chi\delta$ and $\chi\delta'$ associated with R and S respectively s.t. $\delta \neq \delta'$ and

b) whereas $Exh(R, \delta)$ completely answers the corresponding question Q_δ, perspective $\chi\delta'$ —although adequate for R too—is *not consistent* with R:

$Exh(R, \delta')$ contradicts the reference worlds.

What fits these conditions and what do they fail to explain? These detailed conditions clearly require a highly specific context. Where these contextual requirements are not met, definition (9) is not able to explain the contribution of but. In particular, both R and S must be direct replies to questions out of

[35] The set of reference worlds is written W_{ref}, see (9).

the same class $\{Q_D : D \in \mathfrak{D}\}$ of ambiguous questions, which is construed in compliance with the question abstract. Thus the perspectives $\chi\delta$ and $\chi\delta'$ are required to belong to the same question domain class $[\![\sigma_Q]\!]$. I will turn to a generalisation of these requirements in 5.3.2 and 5.3.3.

The Extended Perspective $\chi\delta'$. Concerning (9), it has to be explained how the perspective taken for S, $\chi\delta'$, is construed. Without employing a detailed model of discourse representation and its updates, I will describe updates in terms of the context sets C and C' held by the participants; furthermore, the current context that is to be updated must satisfy those presuppositions which are triggered in the expression that is to be interpreted.[36] Considering the iterative interpretation of discourse as a sequence of updates, this requirement says that there must be an intermediate update between two expressions of which the latter expression triggers presuppositions which are introduced into the context by the prior expression. Concerning the granularity of updates, I take main clauses to be the smallest update units.

The claim that the perspective presupposed by $S_{\delta'}$ is different from the one that has been presumed for R_δ can only be upheld if there is an intermediate context change, i.e. an intermediate update taking place after R, before S. There is another clue indicating that the updates of R and S should be separated. Consider (7), repeated as (10)B, with R = "Susan and Pat are going" and S = "Richard is going too". The clue concerns a requirement that is due to too in S: The context of the interpretation of S must entail the presuppositions of S. Too triggers a presupposition. In (10), too is associated with Richard; S then presupposes that there are other satisfiers of the question abstract besides the associated constituent, Richard.[37] Now there are two options: Either the conjunction "R but S" is updated as a whole, or there are separate updates, "but S" after R. Without updating the context with R first, it does not entail that there are other satisfiers of the question abstract besides Richard.[38] So, without an update with R, the context does not satisfy this presupposition of S. For this reason, a preceding update with R is obligatory under the current assumptions, since an update with S is not defined otherwise.

(10) A: Who is going to the cinema?
B: Susan and Pat are going, but Richard is going too.
B′: Susan and Pat, but Richard too.[39]

Now we determine the perspectives for R and S separately. An adequate perspective $\chi\delta$ for R clearly consists of Susan and Pat, and maybe of some others, $\delta\backslash I_\delta$, which are non-satisfiers of the question abstract; cf. (48), p 116. S entails that, among others, Richard goes to the cinema. For a perspective $\chi\delta'$ taken for S to be adequate, Richard is an element of δ'. Furthermore, (9)

[36] Cf. 5.1.2.
[37] For the presupposition of too, see e.g. Krifka (1999).
[38] Note that this requirement is different from the existential presupposition required by the question (see definition (37), p 107): that its context of utterance is such that there is at least one satisfier of the question abstract.
[39] B′ is but an elliptic equivalent of B.

requires δ' to be applied to R, too. Therefore δ' has to be adequate also for R; the straightforward way to accomplish this is to just *extend* δ with Richard. Note that the perspectives $\chi\delta$ and $\chi\delta'$ are determined by R and S only in terms of all of their satisfiers; i.e., the perspectives are not fully specified by R and S. (This indeed is the origin of a domain mismatch.) So, taking the consistency condition (9)(b) for but into account, a hearer of (10)B knows the perspectives by their characteristic relation to R: Whereas the perspective $\chi\delta$ taken for R must be consistent, $\chi\delta'$ is inconsistent for R.

Now, sticking to ex (10), δ' is a domain that contains the satisfiers Susan and Pat as well as Richard. We will run through the example to show what 'inconsistency' of this extended domain δ' w.r.t. R means. We will verify the inconsistency of δ' as applied to R by interpreting R in perspective $\chi\delta'$.[40] Thus δ' has to be such that there will be an inconsistency with the reference worlds if this perspective is taken for granted for the interpretation $Exh(R, \_)$. As the reference world we take the actual world w_0. Note that the propositions which the speaker intends R and S to convey are facts of w_0. The fact that Richard goes to the cinema is taken to be true in all utterance situations of the answer (10)B, see the maxims of quality, 5.2.1.2. So, given that the assertion of S corresponds to the state of affairs in w_0, a contradiction between $Exh(R, \delta')$ and w_0 arises, viz. (a) vs. (b):

a) $Exh(R, \delta') \models_C [\![\text{"Richard is not going"}]\!]$

b) $\models_{w_0} [\![\text{"Richard is going"}]\!]$

$\Longrightarrow Exh(R, \delta') \models_{w_0} \bot$.

Because "Richard is going" is a fact of w_0 and concerns the quesion's subject-matter, which the answerer is assumed to have thorough knowledge about, "Richard is not going" contradicts not only w_0 but also the answerer's actual belief $\mathfrak{Bel}(\mathsf{B}, w_0)$.[41] For this reason, also the set $\mathfrak{Bel}(\mathsf{B}, w_0)$ can be considered as reference worlds s.t. an inconsistency can be derived from the interpretation of R relative to the inconsistent domain δ'; viz. (a) vs. (c):

a) $Exh(R, \delta') \models_C [\![\text{"Richard is not going"}]\!]$

c) $\models_{\mathfrak{Bel}(\mathsf{B}, w_0)} [\![\text{"Richard is going"}]\!]$

$\Longrightarrow Exh(R, \delta') \models_{\mathfrak{Bel}(\mathsf{B}, w_0)} \bot$.

Alternatively, we can write $Exh(R, \delta') \cap \{w_0\} = \varnothing$ or $Exh(R, \delta') \cap \mathfrak{Bel}(\mathsf{B}, w_0) = \varnothing$ for the inconsistencies above, which consist of contradicting, i.e. disjoint sets of worlds. Another remark is due: Since it is the questioner who possibly interprets R as $Exh(R, \delta')$, C represents the questioner's context. Like before, C and the answerer's context C' differ only with regard to their perspective, the common ground between them being non-defective in any other respect.

[40] We will also speak of a domain as being consistent or inconsistent, given that the domain is the value of a contextual perspective.

[41] Cf. (5), p 137.

Thus, the exhaustive interpretation of R relative to δ' may be applied only in context C, but not in the context of answerer B.

By utilising "but S" as a continuation of R, the answerer qualifies the perspective he presumed for R as not including Richard. Scheme 5.2 renders the effect and the possible intention behind the use of but in a case like (10) for a reply "R but S".

Effect of "R but S" w.r.t. the exhaustive interpretation principle:
R — "But now, if you are interested in and look at further individuals in addition to those considered for R (i.e., if you are about to *extend* the current perspective in a particular way), the individual satisfiers specified in R are no longer the only ones, contrary to what you might have thought!"

Scheme 5.2: The effect of but in a reply "R but S", with R and S corresponding with the same question abstract.

5.3.1.2 Why Misconceptions Might Not Occur

There is an imminent false belief if the satisfiers which are specified by the answer are understood exhaustively in an inconsistent perspective. Until now, we have just argued that an answer like (10)B conveys that the perspective $\chi\delta'$ taken for the second conjunct S is different from the one taken for the first conjunct R; further, that δ' is inconsistent for R. But what is it that prevents answer (10)B—as compared e.g. to (6), "Susan, Pat, and Richard go"—from being misconstrued? Why should (10)B not be interpreted exhaustively in the intended question perspective by the questioner?

The key are the participants' assumptions about the utterance context of R: Since the utterance of R immediately follows the question—and R on its own is subject to an update, separately from the question and from S—, the perspective introduced or adopted by the question must be maintained for R on behalf of a sound and co-operative discourse; see 5.1.1.[42] So unless R is critical subjectively, at stage 4 (p 121) of the dialogue the questioner is likely to assume that the anwerer's perspective intended for R is identical with the contextual question perspective; cf. 5.2.1.2. And so the answerer in turn must act on this assumption and should foresee: that the questioner will take for granted that R presupposes the question perspective. (But note that right now we talk of the case in which the answerer himself is unsure about the correctness of the presumed question domain.) Let us retain this as a bias as to the perspective intended by the participants; R must be an immediate, direct reply to the question:

[42] When the immediately following reply which the context is to be updated with next mentions satisfiers not contained in the intended question domain D, then this answer is critical subjectively. And the questioner then knows that the answer's presuppositions do not fit the question perspective.

(11) *Participants' assumption about the common ground, based on the cooperativeness principle and the separate update of R:*
In the discourse it is mutually presumed that the perspective taken for R is the question perspective.

Now in S the answerer extends the *perspective of* R, which at that point is *mutually presumed to be* the question perspective. (The distinctiveness of the perspective of S is an inherent precondition of the felicity conditions of but in (9).) The questioner as the hearer of the answer is then able to distinguish between two cases: In S the answerer either specifies individuals which are elements of D (see (1.) below); or in S the answerer does *not* specify individuals which are elements of D (see (2.)):[43]

1. In S the answerer specifies individuals which are elements of D.
   (a) The answerer does not really know the question domain D; the intention to properly answer the question failed.
   (b) The reply R does not go astray and S purports to serve a different intention.
2. In S the answerer does *not* specify any elements which are elements of D.

The first case then clearly reveals to the questioner that the perspective taken for R cannot be his question domain D: The domain for R does not contain those individuals mentioned in S. So in particular, the intended domain for R does not contain those elements of D which are specified in S; therefore, whatever the perspective taken for R may be, it cannot be χD. Note that with an R like this, the answerer does not meet the immediate needs of the question; herein the answerer unintentionally violates the Gricean maxims. But unless this violation is *mutually apparent* to the questioner *and* the answerer, the questioner will conclude that there is a flaw in the common ground, when interpreting A along the lines of (11) above.[44] (But note that in case the questioner finds that in A all elements of D are mentioned explicitly, i.e., if the literal meaning of the reply *cannot be critical objectively* due to the particular condition $D \backslash I_\delta = \varnothing$, then the flaw in the common ground does not have any substantial consequence: because the literal meaning of the reply solves the intended question Q_D completely.) This analysis covers (1a.); it is the consequence of the use of but as compared with a plain list of the satisfiers, cf. (6) vs. (10)B (repeated here as (12), (13)):

(12) Susan, Pat, and Richard are going.

(13) Susan and Pat are going, but Richard is going too.

[43] Note that there is a third possibility which I will neglect: Elements from *D and* beyond *D* might be specified in S. Empirical findings should determine whether hearers in this case tend to take for granted (1a.) or (1b.).

[44] If the violation is mutually apparent, the questioner may look for a connected interpretation (e.g. in terms of an implicature) which the answerer might have intended by deliberately violating the maxims, cf. 5.2.1.2.

The inconsistency of χD for R—evident to the questioner by S—seems to be but a contingent *side-effect or epiphenomenon* of the answerer's use of but that is due to but's distinction between the perspectives of R and S. This might not be the kind of inconsistency purported by the answerer employing but: Since with R the immediate needs of the question are not met and it is thus concluded that the answerer does not really know D, it cannot be clear precisely which inconsistency in terms of the perspectives he took for R and S the answerer *intended* to convey.[45]

At this point two issues occur:

(i) First, what is the speaker's motive for adding S and using but to introduce it? Since R is assumed to cover the question domain, S must be intended to be an extension of the question domain. Until now, we have been discussing the exceptional case (1a.), where the violation of the maxims through R is not mutually apparent and "but S" cannot be explained as due only to the answerer's ignorance. The effect of indicating to the questioner a discrepancy between the answerer's conception C' of the common ground and that of the questioner, C, does depend on the answerer's misconception at stage 2 (p 121) and as such cannot have been the intention of using "but S". So it remains to discuss the non-exceptional case, i.e., to explain the use of but *according to the speaker's intention*. From here we will proceed in two directions:

- Either there is no apparent difference between δ and D at all; then, following (11), the question is taken to be solved by R.
  Then we must account for an intention behind the 'superfluous' information given in S, which effectively extends the question domain D, see (2.).
- Or the answerer is nevertheless known to know the question domain D; then the difference between δ and D is *mutually* known.
  Then we must rethink the possible intention behind this deviation and the use of but, see (1b.).

(ii) The second issue then is: Are there instances of this non-exceptional case as discussed in (i.)? As it turns out, cases like these exist: It is mutually known that the answerer knows D—or rather, the answerer acts on this assumption—; the perspective of R is indicated not to be the question domain D. Nevertheless, (14)B is acceptable and considered to be an appropriate answer: [46]

(14) *[Context: Decision scenario* (c) *applies, i.e.,* A *wants to go to the cinema if Pat and Gerhard are coming, but the questioner does not want to go if (also) Susan and Helmut are among the filmgoers.]*
A: Who of Susan, Pat, Helmut, and Gerhard are going to the cinema?
B: Pat and Helmut are going, but Susan and Gerhard are going too.

[45] The inconsitent perspective $\chi\delta'$ can accidentally be equal to D, though.

[46] The evidence for the mutual knowledge of D, which the answerer takes for granted, is given *within* the question–answer pair for demonstration purposes. It is, however, still assumed that the domain may be given implicitly and that the evidence therefore is external.

Ex (14) is a case of (1b.); here it is necessary to rethink the motive behind but. But one might ask: How is it possible that the intended question domain D is mutually known to the participants, that R is taken to refer to the question and to solve it, but that this is deliberately violated by the answerer? These cirumstances can be accounted for if we take the intentional and mutually known violation of Gricean maxims as a way to arrive at *implicatures*. It will be argued that—by way of an implicature—'inconsistency' based on R and S will then mean something different than the inconsistency in terms of an exhaustive interpretation, i.e., in terms of the interpretation of R and S as answers to Q_D (or a related question out of $\{Q_D : D \in \mathfrak{D}\}$).

Note that both (1b.) and (2.) involve a contextual reference that goes beyond the question–answer dialogues considered. With (1b.) (p 144, discussed in (ii.)), a violation of the Gricean maxims can be employed only if the answerer assumes there to be some external *evidence* of the intended question domain and the questioner in turn has external evidence of the answerer's knowledge of the intended question domain. However, arguing on the grounds of a context that is limited to a question–answer pair s.t. the intended question perspective involved is *implicit*, we would clearly have to look for some external evidence of the participant's mutual knowledge of D; this is outside the scope of our inquiry. On the other hand, with (2.) (p 144, discussed in (i.)), the question domain D is considered in R, but it is extended in S. This extended perspective of S is not licensed by the question domain, however. Whatever it is that accounts for it, the motive for extending D has to originate from outside the minimal question–answer discourse. Although an extended perspective δ' relates to the corresponding question $Q_{\delta'}$ out of $\{Q_D : D \in \mathfrak{D}\}$, this question $Q_{\delta'}$ can be no final clue to the problem. With an actual extension of the question domain (by specifying additional satisfiers in S, see (2.)), inconsistency can be rendered: "R is the answer to your very question Q_D, but R does not identify the answer to/does not solve $Q_{\delta'}$." — But then, how is $Q_{\delta'}$ to be introduced into the discourse when arguing within a context that is limited to the question–answer pair and with Q_D being the only available question? In the following discussion, I will turn to scenarios like (a) to (d) above, see pp 128ff: The questioner's motive for asking the question might indeed lie *beyond* the immediate informational needs to solve it and might establish a connexion to the 'extended' question $Q_{\delta'}$.

5.3.2 Beyond False Belief

An imminent misconception at the level of a false belief about the subject-matter of the question could not *explain* the use of but along the lines of (9). So whereas 5.3.1 was concerned with mismatches of considered domains for the question abstract and misconstrued sets of its satisfiers, we now look at a different level of language understanding and misconception: the questioner's decision on the basis of the facts learnt from the answer. Therefore, I will refer to the scenarios for (3) again. An *issue behind the question* will play a crucial

role. It is further assumed that there is no external evidence that the answerer knows the intended question domain; i.e., the question domain is implicit and the answerer's assumption about D might be wrong. First, we will recapitulate instances of an issue behind the question. Then the question's relevance to such a background issue will be sketched out. The topic in 5.3.3 will be: If the answerer aims at preventing a possible misconception at the level of a decision of the background issue, then how does (9) apply? And are there conditions for trying to prevent a threatening misconception at this level?

At first, the role of extending the current perspective in S by $\chi\delta'$ was to prevent a wrong conclusion about $Q_{\delta'}$ on the part of the questioner that contradicts w_0 and $\mathfrak{Bel}(\mathsf{B}, w_0)$. Furthermore, a wrong perception of the actual world concerning singular propositions of the form $Que(i)$ can cause other actions of the questioner which are 'wrong' in w_0, see hierarchy (4). According to this hierarchy, a 'wrong' action is always based on a false belief. But the connexion between the two has to be considered in more detail. To do so, the answers A considered will be plain satisfier listings as in (12).

Let us look at scenario (a) on page 128. There is a (stipulated) problem, involving that A wants to know of particular individuals—in scenario (a) it is only Susan—whether they are going to the cinema. The problem that necessitates this knowledge motivates the question ("Who is going to the cinema?"). The problem for A is to decide between going to the cinema and not going there. In the situations given, the semantic extension of the question abstract in w_0 influences the decision on this issue in a certain way. In scenario (a), only Susan's going to the cinema represents an argument for A to go there too. Based on the questioner's belief about this proposition, we can distinguish between three kinds of possible worlds and anticipate the questioner's respective decision in each of them:

1. Worlds in which A believes that Susan is going to the cinema are associated with his intention to go there too.

2. Worlds in which A believes the opposite—Susan is not going to the cinema—are associated with his intention not to go there.[47]

3. Finally, there are worlds in which A's belief state does entail neither "Susan is going to the cinema" nor its opposite. In these worlds, A is still undecided about going to the cinema; A does not have a definite intention with regard to this issue yet.

This connexion between a question and an issue behind it seems to be too strict: No matter which w_0 applies—be it that Susan is actually going to the cinema or not—, the answer decides the issue in w_0; if the question is left unanswered, then also the issue is left open. This means that scenario (a) involves

[47] If the situation is such that A wants to go to the cinema *if*—not: *only if*—Susan is going there too, then no intention can be associated with A's belief. In this case, only the belief that Susan is going to the cinema (see previous item) seems to provide a sufficient premise for A to come to a decision.

equivalent partitions of the issue and the question; in other words, every cell of the question's partition is equivalent to a distinct decision.[48] But considering the hierarchy (4), we see that a wrong decision based on an inconsistency due to false belief does not depend on the equivalence of the question partition and the issue partition: It is merely stated that the issue-related conclusions drawn by the questioner from a misconceived answer differ from his intentions based on a correct understanding of the actual world w_0. This leaves open many possibilities as to the relation between the question and its issue. And it means that the contrast of 'wrong' vs. 'correct' does not even have to be represented as two mutually excluding decisions (represented as propositions); there is also the possibility of not deciding the issue on the basis of a given belief state at all. The difference between a 'wrong' and a 'correct' behaviour w.r.t. an issue should thus be expressed in a very general way: It can either be

- the difference between deciding the issue vs. not (yet) deciding the issue or
- the difference consists in two different decisions.

So to retain the inconsistency condition at the level of an issue, it is sufficient to presume a connexion between the issue and a false belief and a connexion between the issue and a true belief which differ from each other in the above sense.

We will now have a look at question–answer pairs from another perspective. Resuming the decision scenarios of (a) to (d), p 128f, some answers given are critical objectively, namely in (b) and (d). These instances might imply imminent wrong decisions based on the misconceived answers, whereas all answers of B—interpreted relative to δ—are correct in the respective world w_0. But since only (b) is both critical objectively and non-critical subjectively, this is the only safe candidate for a wrong decision. (With a subjectively critical reply like in (d), however, the questioner might be warned not to conceive it as a proper answer to his question.)

a) (D = {Susan}.) Some consistent δ (w.r.t. A, D, and w_0), $D \subset \delta$, and its result in the decision-making of scenario (a):
   B: Pat, Helmut, and Susan are going.

$$\delta = \{\text{Pat; Helmut; Susan}\}$$
$$Exh(A, D) \models_C [\![\text{"Susan is going"}]\!]$$
$$\models_{w_0} [\![\text{"Susan is going"}]\!]$$

$\Longrightarrow$ A correctly decides to go to the cinema.[49]

[48] We will see what it takes to consider an issue as a decision problem involving a partition. Just note for now that all the decisions an issue is composed of are *mutually excluding*.

[49] The falsity of $Exh(A, D)$ can come about through an answerer's perspective not containing Susan and an answer thus not mentioning her.

b) (D = {Susan; Pat; Helmut; Gerhard; Richard}.) Some inconsistent δ (w.r.t. A, D, and w_0), $D \supset \delta$, and its result in the decision-making of scenario (b):
B: Susan and Pat are going.

δ = {Susan; Pat}
$Exh(A, D) \models_C$ [[“Helmut, Gerhard, and Richard are not going”]]
$\models_{w_0}$ [[“Helmut, Gerhard, and Richard are going”]]
$\Longrightarrow$ A wrongly decides not to go to the cinema.

c) (D = {Susan; Pat; Helmut; Gerhard}.) The fully consistent δ (w.r.t. A, D, and w_0), $D = \delta$, and its result in the decision-making of scenario (c):
B: Pat and Gerhard are going.

δ = {Susan; Pat; Helmut; Gerhard}
$Exh(A, D) \models_C$ [[“Susan and Helmut are not going”]]
$\models_{w_0}$ [[“Susan and Helmut are not going”]]
$\Longrightarrow$ A correctly decides to go to the cinema.

d) (D = {Richard; Susan}.) Some inconsistent δ (w.r.t. A, D, and w_0), $D \backslash \delta \neq \varnothing \ \wedge \ \delta \backslash D \neq \varnothing$, and its result in the decision-making of scenario (d):
B: Susan and Pat are going.

δ = {Susan; Pat}
$Exh(A, D) \models_C$ [[“Richard is not going”]]
$\models_{w_0}$ [[“Richard is going”]]
$\Longrightarrow$ A might wrongly decide not to go to the cinema.

The last case is subjectively critical: The plain fact that the domain considered by the answerer differs from his own domain might make the questioner suspicious about the appropriateness of the reply for meeting his needs.

But under which circumstances is a wrong decision based on $Exh(A, D)$ actually made? Without taking the questioner's belief state $\mathfrak{Bel}(A, w_0)$ and his reasoning capabilities into account, we cannot determine the real causes of a wrong decision by A or why a decision has not yet been made. All that we can accomplish here is: to state what kind of issue it takes to retain the inconsistency condition at this level (of an issue), i.e., how an issue must be related to the question partition.

In 5.3.1.2 we discussed how the effect of preventing a misconception at the level of a false belief comes about. The answerer's intention of preventing a misconception could not sufficiently explain why he extends the presumed question perspective and why he uses but. Note that under the conditions of (1a.), p 144, the same is true when we look at the level of an issue-related misconception, because a false belief is a precondition of an issue-related misconception. Consider ex (13); as long as it is not mutually known that the answerer knows the issue behind the question, a subjectively critical difference

between δ and D (obvious to the questioner) also means: The answerer's extension of the domain by using but does not purport to inhibit the questioner from drawing consequences which he does not actually intend to make in w_0.

When trying to explain a speaker's intention behind the use of but, it is not enough to just make use of an issue behind the question, keeping every other assumption about the utterance situation the same. To overcome the difficulties, we must depart from those utterance situations in which the answerer knows that the questioner has reason to assume the question domain or the issue is *not* known to him. There are two possibilities for doing so:

- Contexts must show evidence that the question domain or the issue is known to the answerer, i.e., it is mutually known that the answerer knows the question domain or the issue (see (1a.), p 144); or
- A must not be critical subjectively. Then the questioner has reason to assume that the perspective taken by B for R is indeed D (see (2.), p 144). Furthermore, A is non-critical objectively either.

5.3.3 Preventing a Wrong Decision

It remains to exploit a discourse setting of replies of the form *"R* but *S"* that is different from the setting in 5.3.1 and 5.3.2: Consider B's intention of aiming directly at an issue behind the question with a reply like (10). What exactly then are B's intentions and what are the prerequisites? How does (9) comply with this use of a reply? Since we are not yet in a position to apply (9) in a fairly general way, only the outline of this other use of (10) is sketched by means of those concepts currently provided. A rationale similar to the one in the scenarios (a)–(d) of 5.2 applies here. In 5.3.1 and 5.3.2 the starting point was that the answerer is not sure about the actually intended D. "But *S"* has been taken as a method of preventing a *potentially* inadequate understanding of the preceding R. The derivation of the particular properties of this use now starts from the observation: Under *the premise that the answerer knows the intended question domain*, he nevertheless can give an adequate reply of the form *"R* but *S"*. R and S share the abstract with the corresponding question again. I seek to analyse such a setting on the grounds of the felicity conditions of (9), too. And I will stick to the idea of a particular perspective shift leading to inconsistency. But spelling out 'inconsistency' and what entities a domain will then consist of might involve an implementation of these concepts that is different than in (9).

I will distinguish two variants here, cf. schemes 5.3 and 5.4. In terms of the question domain, these schemes differ in the distribution of the domain elements among R and S:

- The perspective $\chi\delta$ taken for R is the intended question domain D. So in S the question domain D is extended.
- δ is but a subset of D, i.e., the question domain is not yet fully covered in R. The perspective $\chi\delta'$ of S additionally contains further elements of D.[50]

[50] Whereas S may indicate to the questioner that there is a difference between R's perspective $\chi\delta$ and D, the perspective of S, $\chi\delta'$, does not exhibit any difference between δ' and D.

Given this, we depart from a previously regarded motive for a perspective shift: The answerer's intended motive cannot be to prevent an interpretation of the reply in an inconsistent perspective, because as a co-operative interlocutor he will consider the actual question domain D in his reply completely.

Next I discuss the former case where R acts as the complete answer to Q_D, cf. scheme 5.3. It implies that S adds information not asked for. With the latter case, cf. scheme 5.4, no additional information is supplied by S; rather, S completes the question domain in a sense.

R Is the Presumed and Actual Answer to Q_D. Similar to scheme 5.2, the idea behind this use is rendered by 5.3. As described in 5.3.2 on page 148, 'inconsistency' related to an issue can involve either two different decisions or a decision and a state in which no decision is made. Like we saw in the

Effect of "R but S" w.r.t. a decision problem behind the question (variant 1):

R — "But now, if you are open to take into account further individuals in addition to those your decision making is based on and which have been considered for R (i.e., if you extend the intended perspective), your decision based on R might no longer hold!"

Scheme 5.3: The effect of but w.r.t. an issue behind the question, with R and S corresponding with the same question abstract (variant 1).

discussion of (4), the indicated shift of the perspective might accidentally cause the questioner to revise a decision in an undirected way, because it changes the basis of the decision-making. But being confident that he knows D, B can make a point of shifting the perspective taken. Also, assuming that the answerer knows D, it can be presumed that the answerer intends to make a point of shifting the perspective. B may *on purpose* suggest a specifically extended perspective which he believes will have a different influence on A's treatment of the issue—as compared with the non-extended perspective. What is necessary for B to successfully convey this intention?

The reasoning is as follows. If the perspective $\chi\delta$ taken for R is not critical subjectively, and thus nothing does conflict with the assumption that R is the direct answer to the question Q_D, then the questioner probably will assume that B knows D.[51] This is the non-exceptional use of but as discussed in 5.3.1.2 (see (i.), p 145). Here the intention behind the effect of but as indicating the inconsistency of perspective $\chi\delta'$ for R cannot be to prevent a false interpretation of R (and A) as the direct answer to Q_D: The informational needs of the question are met by R completely. B's intention behind indicating inconsistency through "but S" can refer to the next higher level of inconsistency instead: to prevent a wrong decision. So the proposal here is to conceive of the answer as addressing an issue which the question Q_D is a means to decide. In the scenarios, "to go or not to go to the cinema" serves as an illustrative

[51] Given principle (11), no external evidence of B's knowledge of D is necessary.

issue. Note that an issue will generally not be an element of the class $\{Q_D : D \in \mathfrak{D}\}$. How can direct answers to the class $\{Q_D : D \in \mathfrak{D}\}$ of questions address a semantically independent issue at all? Answers can aim at an issue if they are considered to participate in A's process of decision-making.

What is the intention of shifting a perspective with regard to the issue, then? The answerer effectively extends the perspective by those individuals which he thinks might have a particular influence on the decision by the questioner. The particular feature of the perspective shift indicated by but is not to yield a perspective that is inconsistent for the interpretation $Exh(R, \_)$; the peculiarity of the shift is to yield a perspective that is not apt to decide the issue the same way as R in perspective D does. But to do so, the answerer B *has to have an idea about the issue at stake*. Moreover, since the influence of the changed perspective on the issue is different from that of D, B must have an idea of the perspective's role in the process of decision-making. The relevance of a different perspective to the issue was described in 5.3.2: An inconsistent perspective is different in that it makes the questioner arrive at a *different decision* or there is a difference between *making a decision and not arriving at a decision* at all (or vice versa).

An example will illustrate this. Let us consider A's basis of decision-making in scenario (c), representing the motive for his question ("Who is going to the cinema?"). The motive is taken to be understood by B as long as R is apparently the answer to the question Q_D: A wants to go to the cinema if Pat and Gerhard are coming, but he does not want to go if (also) Susan and Helmut are among the filmgoers. Ex (15) shows how the interpretation of the reply influences the decision. D, the actual question domain intended by A, consists of {Susan; Pat; Helmut; Gerhard}.

(15) *[Context: Decision scenario* (c) *applies.]*
B: Pat and Gerhard are going, but Richard is too.

R = "Pat and Gerhard are going"
δ = {Susan; Pat; Helmut; Gerhard} = D
$Exh(R, \delta) \models_C$ [["Susan and Helmut are not going"]]
$\models_{w_0}$ [["Susan and Helmut are not going"]]
δ' = {Susan; Pat; Helmut; Gerhard; Richard} $\supset D$
$Exh(R, \delta') \models_C$ [["Richard is not going"]]
$\models_{w_0}$ [["Richard is going"]]

$\Longrightarrow$ Based on D, A decides to go to the cinema, which is correct according to his intended perspective.

S = "Richard is too"

$\Longrightarrow$ According to the extended perspective, A might revise his decision (based on R_D) to go to the cinema.

If the participants' contexts C and C' agree in the question domain and the answer is also about the questioner's issue, the scheme 5.3 would predict that B intends his reply to be understood according to (15): that it relates to the

decision-making in this way. On the other hand, (15) might have no influence on A's final decision; it is A's turn to draw issue-related conclusions. B has no preference for A to arrive at a particular decision or any decision at all. The relevance of this extended perspective as the new basis of his decision-making can then be adopted by A or not. Thus, the intention of B is to suggest to A a way of how to reach a decision that conforms to A's overall goals, i.e., to offer a different view on the issue.

Again, in order that the answerer succeeds in conveying this intention to broaden the basis of A's decision-making in a relevant way, it is necessary that the questioner is sure that his question was understood by B—at least in terms of D. So D must be the *mutually assumed* domain of Q. Taking just the given question–answer pair into account, it is—due to principle (11)—sufficient that "but S" does not indicate that the perspective taken for R is critical subjectively.[52] If there is nothing that objects to the coverage of D by R, then the perspective χD can indeed be regarded as the current perspective of the common ground.[53]

Note that in (15) the issue-related 'inconsistency' of δ' for R seems to apply in addition to the exhaustivity-related inconsistency of δ' for R; both kinds of inconsistency can be aligned. Are instances of issue-related inconsistency necessarily based on exhaustivity-related inconsistency? We can easily modify ex (15) to realise: It is *not necessary that the inconsistency* of a perspective as required by the felicity conditions (9) *does refer to the exhaustive interpretation* of R. It proves possible that a *'different' decision*, to which R gives rise to in an 'inconsistent' perspective, fulfils the inconsistency condition instead. (Note that this kind of 'inconsistency'—different from definition (9)—is still to be defined in detail.) In (15), inconsistency of $\chi\delta'$ can be based also on the exhaustive interpretation of R, viz. $Exh(R, \delta') \models_C$ [[“Richard is not going”]] and $\models_{w_0}$ [[“Richard is going”]].

Let us vary w_0 and the issue at stake: Now w_0 entails "Richard is not going to the cinema"; furthermore, Richard' influence on B's decision may be the other way around—Richard not being among the filmgoers might now be in accordance with B's decision not to go to the cinema any more. The extension of δ with "but Richard isn't" is acceptable, although in this case the resulting perspective $\chi\delta'$ is *not inconsistent* w.r.t. the exhaustive interpretation $Exh(R, \delta')$:

(16) *[Context: The question Q_D relates to the decision scenario* (c).*]*
B: Pat and Gerhard are going, but Richard isn't.

R = "Pat and Gerhard are going"
δ = {Pat; Gerhard; Susan; Helmut} = D
$Exh(R, \delta) \models_C$ [[“Susan and Helmut are not going”]]
$\models_{w_0}$ [[“Susan and Helmut are not going”]]

[52] It is not clear whether the issue too has to be assumed mutually. I will leave it open whether the questioner has to assume that the issue is known to the answerer.

[53] That is, on the part of the questioner δ' is not critical subjectively relative to R and there is no subsequent objection by the questioner to the appropriateness of the reply for his purposes; cf. the discussion on a reply's epiphenomenal effect to cast doubts as to the alignment of the participants' contexts C and C', p 160.

δ' = {Pat; Gerhard; Susan; Helmut; Richard} $\supset D$

$Exh(R, \delta') \models_C$ [["Richard is not going"]]

$\models_{w_0}$ [["Richard is not going"]]

$\Longrightarrow$ Based on D, A decides to go to the cinema, which is correct according to his intended perspective.

S = "Richard isn't"

$\Longrightarrow$ According to the extended perspective, A might revise his decision (based on R_D) to go to the cinema.

So here the perspective associated with S is not inconsistent for R. The felicity conditions (9) are not met, although S is a direct reply to Q and (16)B is an adequate utterance in that question context. What might be the explanation for this?

The clue to this problem is $Exh(R, \delta')$, the exhaustive interpretation relative to a domain δ' containing Richard. Why does this interpretation not meet the inconsistency condition? The answer is that it cannot explain the use of "but S": for $Exh(R, \delta')$ *does not apply* here. (And thus $Exh(R, \delta')$ is not suited for the inconsistency condition as defined in (9).) Like before in 5.3.1.2, it is important to derive the felicity conditions of but from the intention of the speaker. So how does a speaker of (16)B know that $Exh(R, \delta')$ does not apply? Because it is mutually assumed that D is the question domain, the answerer acts on the assumption that the individual Richard might just not be considered by A for the issue either: According to what is known due to the common ground, the update with R does not have an impact on $\mathfrak{Bel}(\mathsf{A}, w_0)$ as concerns the propositions "Richard is going to the cinema" / "Richard is not going to the cinema". — The felicity conditions cannot address this kind of exhaustivity-related inconsistency here.[54]

Therefore one might argue that the exhaustive interpretation $Exh(R, \delta')$ is not applied in (15) either. As a consequence, the fact that there is a contradiction between $Exh(R, \delta')$ and w_0 in (15) would turn out to be accidental. But furthermore, (15) can still be adequate according to scheme 5.3 and the point of uttering (15) might remain untouched even if A already knew that Richard is going to the cinema: The main point is that the answerer takes it that the individual Richard does not belong to the question domain of A for the presumed issue. An utterance of (15) then still complies with scheme 5.3. So in order to derive the felicity conditions of but in (15) it seems crucial that—by extending the perspective in *S by individuals or facts which* A *did not intend to be taken into account in answering his question*—the basis of A's decision-making is enlarged. This case is an argument that the concept 'perspective' is not just a label for the domain restriction with exhaustive interpretations; the concept 'perspective' is inherently connected with the context of utterance via the issue, too. Accordingly, more comprehensive felicity conditions of but should account for this.

[54] From the point of view of imminent misconceptions, we can say that no false belief on the basis of $Exh(R, \_)$ is involved here.

And considering an issue is also a chance to cope with instances where the specification of *non-satisfiers* in S makes an analysis along the lines of (9) impossible. So whenever 'inconsistency' cannot be derived via the exhaustive interpretation principle, the use of but will be assumed to be related to an issue instead.

R **Apparently Is an Incomplete Answer to** Q_D**.** This reminds to a domain mismatch due to a lack of knowledge of D, These cases are subjectively critical and the questioner recognises that some fraction of the domain has been neglected in R. We have seen that this can come about if the answerer lacks knowledge of the question domain, see the discussion in 5.3.1 : The questioner can see that R is but an incomplete answer to Q_D. But the main difference to those cases in 5.3.1 now is: It is not accidental that R does not cover D; it is intended by the answerer. But in order for this to be recognised by the questioner, the answerer's intention must be mutually apparent to the participants. The precondition is external evidence that the question domain D is mutual knowledge. So it is common ground that the perspective χD applies here. Since it is then mutually apparent that with R the answerer violates the first Gricean maxim of quality, the questioner realises that R cannot be meant to be the answer and so it cannot be the purpose of "but S" to indicate a potential misconception based on R. But note that we should explain the appropriateness of but from the speaker's point of view and his assumptions on the utterance situation. It is therefore sufficient that the answerer justifiably takes for granted that it is common ground that D is the current perspective.

Under these premises, an inconsistency of the perspective δ' taken for S cannot be meant to indicate an eventual domain mismatch between δ and D. We might thus expect that an exhaustive interpretation $Exh(R, \delta')$ does not play a role for the use of "but S" here, because B knows that it will not apply.[55] The dilemma of an appropriate explanation of "but S" emerges again. Can we think of another derivation of 'inconsistency' besides in terms of $Exh(R, \_)$? Taking the co-operativeness principle and its maxim of relevance into account, the answerer might instead refer to the questioner's intention behind the question. The purpose of the question is called an 'issue'. A proposed answer scheme covering an issue is 5.4. (Note that the premise of the underlying use of but is that the answerer takes it the questioner will realise: With R he does not yet cover the entire domain, and intentionally so.)

To act according to scheme 5.4, the answerer has to have an idea of the questioner's issue. Whereas in 5.3.1 the answerer was taken to have an at least vague idea of the question domain, he assumes D to be common ground in this case. The question–answer setting taken for granted here provides a more profound understanding of the context by the answerer; his context C' is richer.

Let us now see whether the inconsistency of δ' w.r.t. $Exh(R, \_)$ is in fact independent of a so-called issue-related 'inconsistency' along the lines of 5.4. Or is the inconsistency due to (9) but a necessary precondition to derive issue-related 'inconsistency'? (I.e., is an issue-related 'inconsistency'—being an

[55] Cf. the previous paragraph, pp 151ff.

Effect of "*R* but *S*" w.r.t. a decision problem behind the question (variant 2):
R — "But now, since your intention is to take into account further individuals in addition to those considered for *R* (i.e., if the perspective extends to the intended basis of your decision making), a decision is reached that is correct (according to your intended basis) and different from what *R* is the basis of!"

Scheme 5.4: The effect of but w.r.t. an issue behind the question, with *R* and *S* corresponding with the same question abstract (variant 2).

epiphenomenon—tied to the exhaustivity-related inconsistency?) To go into this, the following possibilities are tested for adequacy:

(I) Both kinds of 'inconsistencies' apply, see (17);

(II) none of these applies, see (18);

(III) only the issue-related 'inconsistency' applies, see (20);

(IV) or only the exhaustivity-related inconsistency applies, see (21).

Instances of these possibilities are created by first fixing a context: *D* is mutually known, there is a questioner's issue, and the answerer at least presumes such an issue. Accordingly, answers can be given which exhibit different 'inconsistencies' w.r.t. *R* but which are (literally) true in the actual world w_0.[56] Note that with an existent questioner's issue, the adequacy of a reply might depend also on whether the issue-related 'inconsistency' indicated in the reply fits the questioner's issue: An 'inconsistent' interpretation of *R* should decide the questioner's issue in a different way than *S* does, see 5.3.2.

Ex (17) is an instance of (I.). Let us go through scenario (c), A wants to go to the cinema if Pat and Gerhard are coming, but he does not want to go if (also) Susan and Helmut are among the filmgoers:

(17) *[Context: Decision scenario* (c) *applies.]*
B: Pat and Gerhard are going, but Susan and Helmut are too.

R = "Pat and Gerhard are going"
δ = {Pat; Gerhard}
D = {Pat; Gerhard; Susan; Helmut}
$Exh(R, D) \models_C$ [["Susan and Helmut are not going"]]
$\models_{w_0}$ [["Susan and Helmut are going"]]
$\Longrightarrow$ Due to $Exh(R, D)$, A would (wrongly) decide to go to the cinema.
S = "Susan and Helmut are too"
$\Longrightarrow$ A (correctly) decides not to go to the cinema.

[56] Note that the possibilities (II.) and (III.) are due to the mention of *non*-satisfiers in *S*, cf. (16).

The basis of A's decision-making is not broadened in S. The reply A is a corresponding answer to the question Q_D. The use of but is both aligned with the exhaustive interpretation principle according to (9) and relates to the issue: Based on the inconsistent interpretation $Exh(R, D)$, R and S are contrarily relevant to the issue. According to scheme 5.4, "but S" does correspond with the questioner's issue here. Note that the reply is *felicitous*. The domain is chosen optimally, covering D; there are no superfluous individuals specified in A and all necessary individuals have been mentioned, for precisely all satisfiers from D have been specified in A. The issue-related 'inconsistency' derives from R as an epiphenomenon of the inconsistent exhaustive interpretation of R.

Whereas the properties of (I.) correspond with the contextual domain D and the questioner's issue, no such correspondence with the context is involved in (II.), (18). Here A's decision scenario is the same as in (17), but the context varies in w_0 in that the opposite about Susan and Helmut is true:

(18) *[Context: Decision scenario* (c) *applies.]*
B: #Pat and Gerhard are going, but Susan and Helmut aren't.

R = "Pat and Gerhard are going"
δ = {Pat; Gerhard}
D = {Pat; Gerhard; Susan; Helmut}
$Exh(R, D) \models_C [\![$"Susan and Helmut are not going"$]\!]$
$\models_{w_0} [\![$"Susan and Helmut are not going"$]\!]$
$\Longrightarrow$ Due to $Exh(R, D)$, A would (correctly) decide to go to the cinema.
S = "Susan and Helmut aren't"
$\Longrightarrow$ A (correctly) decides to go to the cinema.

The reply "Pat and Gerhard are going, but Susan and Helmut aren't" is *not adequate* in this context; the infelicity of B's reply is marked with "#". Let us go into the details. $Exh(R, D)$ does not contradict w_0, so the exhaustive interpretation of R relative to D is not inconsistent: The felicity conditions (9) for but are not met. Thus, the consequence of $Exh(R, D)$ w.r.t. the issue does not deviate from the consequence of S w.r.t. this issue. Even if we do not interpret R exhaustively as the answer to Q_D but literally as "Pat and Gerhard are going [and nothing is said about Susan and Helmut]", it relates to the issue in the same way that S does: in that it is an argument for the same decision.[57] So (18) does not involve any issue-related 'inconsistency'. B provides all the information which is asked for, but the use of but is not related to the issue the questioner has to decide. Note that a conjunction with and, (19)B', is much more adequate under these circumstances, where no 'inconsistency' applies:

(19) A: Who is going to the cinema?
B: #Pat and Gerhard are going, but Susan and Helmut aren't.
B': Pat and Gerhard are going, and Susan and Helmut aren't.

[57] Whereas the update with R—the information about Pat and Gerhard—is *necessary but insufficient* for a decision of the issue, the information state after the update with S (which then includes R) is *sufficient* for A to be able to decide the issue.

Not surprisingly, the adequacy evaluation of (I.) and of (II.) was clear-cut. More interesting are cases (III.) and (IV.). It is now necessary that the context and the answer are designed s.t. an issue-related 'inconsistency' can apply independently of and is not tied to the inconsistent exhaustive interpretation. By (20), (III.), it can be shown how $Exh(R, D)$ happens to be consistent and at the same time an 'inconsistency' of R with regard to the questioner's issue arises. The issue scenario is (d): A wants to go to the cinema only if Richard and Susan both come, with all other individuals being irrelevant.

(20) *[Context: Decision scenario* (d) *applies.]*
B: Richard is going, but Susan isn't.

R = "Richard is going"
δ = {Richard}
D = {Richard; Susan}
$Exh(R, D) \models_C [\![$"Susan is not going"$]\!]$
$\models_{w_0} [\![$"Susan is not going"$]\!]$
$\Longrightarrow$ Due to $Exh(R, D)$, A would decide not to go to the cinema.
S = "Susan isn't"
$\Longrightarrow$ A decides not to go to the cinema.

The reply "Richard is going, but Susan isn't" *is adequate* for scenario (d). And yet, clearly, with $Exh(R, D)$ not being inconsistent, (20) does not comply with the felicity conditions (9).

But what about the consequences w.r.t. the issue? The decisions based on $Exh(R, D)$ and on *"R* but *S"* do *not* differ in (20), nor is the interpretation of *"R* but *S"* inconsistent with $Exh(R, D)$. This parallelism between an inconsistent pair of decisions and an inconsistent pair of interpretations has been the basis of construing issue-related 'inconsistency' until now. But there is no exhaustivity-related inconsistency here. So why is it that (20) can nevertheless be uttered felicitously? To maintain 'inconsistency' w.r.t. the issue as the more important concern than exhaustivity-related inconsistency, another, more adequate method is called for: It is then required that 'inconsistency' is derived *independently of* the exhaustive interpretation principle. Therefore it is necessary not to interpret R as answer to the question Q_D, i.e., it is necessary not to relate the issue to the exhaustive interpretation. So, skipping $Exh(R, D)$, we can argue in the following way: Whereas R literally ("Richard is going [and nothing is said about Susan]") represents a *necessary*—though *not sufficient*—premise of the decision to go to the cinema, perspective χD associated with S is *sufficient* to come to a different decision that is in accordance with the intended basis of A's decision-making.[58] Or, to put it differently: Although it should—according to the exhaustive interpretation of R—not be necessary to mention that Susan is not coming, this fact is so important to the decision that it is appropriate to mention it anyway. *So, it seems that the (decision of the) background issue may in*

[58] Note that the exhaustive interpretation of R *does not* play any role in deriving 'inconsistency' in this way.

fact be more relevant to to an inconsistency-based explanation of the use of but than the exhaustivity w.r.t. the question domain.

But note that for an exhaustive interpretation not to be applied, it seems that D must be mutual knowledge, see the discussion in 5.3.1.2 and 5.3.2 : Since it is mutually known that R involves a false belief when it is considered as the answer to the intended question, it is mutually clear that such an interpretation of R cannot have been intended by the answerer. Instead, 'inconsistency' must be construed in a different way, e.g. in the way that has been introduced in the discussions of (18) and (20) above. Accordingly, this derivation of an issue-related 'inconsistency' is not based on $Exh(R, D)$.

For the last case (IV.) , (21), look at scenario (c) again: A wants to go to the cinema if Pat and Gerhard are coming, but he does not want to go there if (also) Susan and Helmut are among the filmgoers. The set that B considers for R is $\delta =$ {Pat} . But in S , B completes the domain by mentioning Gerhard. In effect, R would lead to an inconsistent interpretation $Exh(R, \_)$ relative to the perspective χD , but an issue-related 'inconsistency' does not at all come about. The reply "Pat is going, but Gerhard is too" is *not adequate* in this context of Q_D and the questioner's issue:

(21) *[Context: Decision scenario* (c) *applies.]*
B: #Pat is going, but Gerhard is too.

R = "Pat is going"
δ = {Pat}
D = {Pat; Gerhard; Susan; Helmut}
$Exh(R, D) \models_C$ [["Gerhard, Susan, and Helmut are not going"]]
$\models_{w_0}$ [["Gerhard is going"]]
$\Longrightarrow$ Due to $Exh(R, D)$, A would decide not to go to the cinema .
S = "Gerhard is too"
$\delta' = D$
$\Longrightarrow$?

Which 'inconsistencies' do apply to this highly inadequate reply? First, $Exh(R, D)$ is an inconsistent interpretation, so (21) complies with (9). And in case the issue-related 'inconsistency' was based on this exhaustivity-related inconsistency, it would hold in (21) too. In this way, both kinds of inconsistencies can be derived. So what can be the reason for the inadequacy of (21)B ? Nevertheless, I want to argue that, as the inadequacy of (21) lets suppose—which is intuitively due to the issue—, no issue-related 'inconsistency' seems to apply here. That is, does the issue-related inconsistency also hold if it is not based on the exhaustive interpretation relative to D ? It does not: R ("Pat is going [and nothing is said about Gerhard, Susan or Helmut].") is a necessary—and insufficient—premise of the decision to go too; but by way of S this decision is *not* changed. The update with S under the perspective χD supplies a sufficient premise of just the same decision.

So, although both the exhaustivity-related inconsistency and the issue-related 'inconsistency' that is based on it hold, a reply like (21) is awkward. Therefore also (IV.) shows that a concept of 'inconsistency' that is independent of the exhaustive interpretation is called for if it is to explain the (in)adequacy of "but *S*". For that matter, I consider the issue-related 'inconsistency' for now to be derived along these lines: *R* is a necessary but insufficient premise of a decision and *S* then causes an update with a sufficient premise for a different decision.

Note that the inadequacy of (21) is so severe that it is even unclear whether it will enable A to arrive at a decision on his issue at all: The use of "but *S*" is not in accordance with the issue-related 'inconsistency' (as described above). This means that (21) cannot be understood as relating to the questioner's issue and suggests that the answerer does not understand the purpose of the question. Because B might refer to a different issue with (21), this reply can cast grave doubts whether B has a complete grasp of *D*: for a different issue might involve a different question domain. Why is (18) different in this respect? The reply (18)B does not involve an issue-related 'inconsistency' either, but it still induces a final decision on the issue. This decision is possible because of the explicit mention of all elements of *D*. (With (21), however, it is not clear whether all elements of *D* have been taken into account.) And although the answerer does not refer to the questioner's issue here either, this mismatch concerning the current purpose of the question has no substantial consequence for the questioner: because he can see that the reply solves the intended question Q_D completely.[59]

This last case shows another epiphenomenon of the use of "but *S*" with regard to the alignment of both participants' contexts *C* and *C'*. Recall that we assumed for each of the cases (I.) to (IV.) that there is some external evidence s.t. the answerer assumes that *D* is mutually known. But now, if the questioner's intention behind the question is to decide an issue, then the (in)adequacy of the issue-related 'inconsistency' is nevertheless apt either

- to *cast doubts* as to the alignment of the participants' contexts *C* and *C'* w.r.t. the issue behind the question and possibly even w.r.t. *D*, or
- to *ascertain* that the issue has been rightly understood (and also *D* has been covered).

This kind of epiphenomenon, i.e., making obvious a misalignment of *C* and *C'* concerning *D*, was the starting point for the inconsistency-based analysis of but in 5.3.1: If the exhaustivity-related inconsistency of a reply "*R* but *S*" (viz. (9) reveals that the perspective taken for *R* cannot be the question domain *D*, then this reply was called to be "critical subjectively"; then the questioner has grave doubts as to the coverage of *D* altogether and he has to assume that the answerer has a different conception of the question domain.

[59] Cf. the discussion on another non-critical flaw in the common ground due to apparently different conceptions of the question domain, p 144.

The same sort of pattern can be found in (21); also, doubts remain w.r.t. the contextual issue: If the issue is not common ground (but D can be presumed to be common ground), then the distribution of the elements of D among R and S has to be s.t. R and S address the issue in different ways. Otherwise the issue cannot be taken to be rightly understood by the answerer. (And, as (21) suggests, this might even negatively affect the common ground which was taken to supply D as the current perspective.)

The adequacy results from (17) / (I.) to (21) / (IV.) are summarised in table 5.1 . It is an overview of the occurrences of 'inconsistency' and the reply's adequacy. "Exh-related" stands for an inconsistent interpretation $Exh(R, \delta')$ as well as an issue-related 'inconsistency' that is based on it. "Issue-related" stands for the independent issue-related 'inconsistency' that skates over the exhaustive interpretation. Adequate replies are marked with "√", inadequate ones with "#" :

'inconsistencies':	exh-,	issue-related
√(17)	+	+
#(18)	−	−
√(20)	−	+
#(21)	+	−

Table 5.1: Occurrences of 'inconsistency', given a contextual issue and D being common ground.

The survey reveals

a) that the adequacy of a reply does not correlate with the exhaustivity-related inconsistency as postulated in (9). This is explicable by the fact that, throughout (I.)–(IV.) , D is considered to be (externally) given: The intention behind the use of "but S" cannot imply the exhaustive interpretation in a perspective whose inconsistency is considered to be apparent to both parties. So $Exh(R, \delta')$ is not taken to apply and thus cannot be the basis for an explanation of the speaker's motive for "but S".

b) The adequacy of a reply rather correlates with an issue-related 'inconsistency';

c) this kind of inconsistency is required to be derivable independently of the inconsistency that is due to (9).

5.3.4 Conclusions and Outline

5.3.4.1 The Exhaustivity-related Perspective

Starting point for the correlation between an exhaustive interpretation and the felicity conditions of but was the supposition that "but S" might be used

to signal a limitation on R: The specification of other satisfiers out of the question domain in S signals that the perspective taken for R is such that it does not contain those additional satisfiers. Indicating such a limitation on the perspective taken for R prevents misconceptions on this level of exhaustive interpretations of R. In other words, it is indicated by "but S" that R cannot be used as the answer to those questions which quantify over individuals specified in S. Once the questioner can see that the perspective taken for R is not D, then—under the premise that the question domain is not mutually known—there are also doubts as to the coverage of D by A altogether. To arrive at this analysis, (11) is important. Accordingly, replies which cover the question domain with R and extend D in S can be regarded to be non-exceptional (see the paragraph "R Is The Presumed And Actual Answer To Q_D", pp 151ff), whereas replies which distribute D among R and S (see paragraph on pages 155ff.) are exceptional in this respect.

It turned out, however, that the possible prevention of a misconception can hardly be the actual purpose of the use of "but S". Also, there are crucial restrictions involved in this exhaustivity-related explanation:

- The exhaustivity-related perspective does not explain nor give any parameters with which individuals the answerer does extend the perspective in S (in the exceptional or the non-exceptional case).
- The explanation cannot handle an S that corresponds to the question in the predicate but specifies non-satisfiers, see e.g. (16): There is no evidence for the possibility of an inconsistent interpretation of R in terms of (9) whatsoever, no matter what the perspective taken for S is. Also, if the predicate in S differs from R's predicate in general, the exhaustivity-related explanation does not hold.

5.3.4.2 Beyond the Exhaustivity-related Perspective

If we take into account a situation like those of the model scenarios (a)–(d), then we can try to tie the felicity conditions of but to the specific parameters of these contexts. Note that we have not modelled a proper representation of these contexts yet. Following the scenarios, a contextual issue was introduced that lets the questioner decide between two mutually excluding alternatives: to go to the cinema or not to go there. Furthermore, the question is a means to decide the issue. The question domain likewise correlates with the issue. This is characterised s.t. from the questioner's point of view the decision of the issue does not depend on any other individuals.

The preliminary proposal of a concept 'issue' will be given in 5.3.4.3. Below I list those consequences of 5.3 which emphasise the contrast between the exhaustivity-related account and an issue-related account of the felicity of but in replies of the form "R but S".

1. In contexts which involve a questioner's issue, replies of the form "*R* but *S*" can be construed relative to this issue:

According to table 5.1, the adequacy of such a reply apparently correlates with a property that has been called 'issue-related inconsistency'. In 5.3.3 we distinguished between two types of replies:

- The answerer *deliberately violates* the maxims with R in case R is not the answer to Q_D. Since the violation has to be official, the speaker takes for granted that D is common ground: He then arranges R and S s.t. the elements of D are distributed among R and S in a particular way; R and S then denote facts which do not give rise to one and the same decision on the issue. Since no other elements besides those out of D are considered, the indicated issue-related 'inconsistency' is to mirror the role of the elements of D in the questioner's process of decision-making (see scheme 5.4).

  If this correlation between R and S on the one hand and the 'inconsistency' related to the questioner's issue on the other hand does not hold, the participants' contexts apparently are not in alignment with each other w.r.t. the issue and possibly not w.r.t. D either.

- The answerer *does not violate* the maxims with R; R is the complete answer to Q_D. S then purports to give additional information: The intended correlation is s.t. the decision on the questioner's issue according to R does not equal the decision on the questioner's issue according to an information state that has been subsequently updated with S (see scheme 5.3).

  In contrast to the first type, it is not apparent to the hearer of the reply whether this correlation does indeed hold or not: Although a reply like this is not critical subjectively, it might nevertheless be critical objectively. That is, R might not cover D, and thus the consequences of $Exh(R, \delta)$ w.r.t. the questioner's issue might deviate from those consequences of $Exh(R, D)$.

2. Adequacy w.r.t. the issue—if the issue-related 'inconsistency' of R and S corresponds with the contextual issue as described above—may also *ascertain* that the entire question domain D has been taken into account by the reply. This is true in particular of the first case above (deliberate violation of the maxims), with R apparently being an incomplete answer, since no new "argument" is introduced by S in this case.

3. The occurrence of an issue-related 'inconsistency' is in general *independent* of an inconsistent exhaustive interpretation $Exh(R, \delta')$; the former is not an epiphenomenon of the latter.

But until now, we have been employing a preliminary notion of the three determinants of this kind of issue-related adequacy:

- issue
- issue-related perspective
- issue-related inconsistency

These notions must be defined in order to account for the adequacy of replies of the form *"R* but *S"* in terms of felicity conditions of but.

5.3.4.3 An Outlook

What are the requirements for these modified concepts 'perspective' and 'inconsistency' to refer to issues rather than to questions? A hint to a more general formulation of the contribution of but might be given by the relations 'to decide an issue' and 'to solve a question', which seemed to play a similar role for the adequacy of but in the examples so far. That is, we must be able to describe what 'to decide an issue' means. So, let us determine 'issue' by way of the function of the questions we encountered: The answer to a question can be a sufficient means to decide an issue, i.e. to identify a decision. Next, a representation of the issue behind the question is introduced. But before I go into this, let us revisit some properties of 'issue' which have already been suggested.

That an issue can be decided on the strength of a question means that *there is at least one answer in the question's answer set that is sufficient to choose among alternative ways of deciding the issue*, i.e. to exclude some alternative decisions. However, not every possible answer might enable a decision. Assigning a decision to each answer would be an inadequate assumption about the relation between questions and issues. To see why, let us have a look at the scenarios' issues. For some of them ((a), (b), and (d)) the relationship between a premise Φ and the decision Ψ, going to the cinema, was paraphrased: "Ψ only if Φ." Then the antecedent Φ is one of the possible answers[60] to the question and the consequent Ψ is a decision, which is distinct from other possible alternatives. Here the only other distinct alternative tacitly assumed is not going to the cinema.

So in these cases the following holds: (i) The relationship between the decision and its premise corresponds to the equivalence $\Phi \longleftrightarrow \Psi$.[61] Note that the premise Φ stands in opposition to other possible answers to the question. Because a question partition is total, it seems that besides the Φ-worlds there are in fact no other possible worlds which entail the decision Ψ. (But whether Φ is actually meant to be the *only* possibility to yield Ψ might well depend on other facts as well, as we will see.) (ii) The total decision space comprises

[60] More generally: Φ *entails* a possible answer.

[61] Note that the equivalence relation does not imply any semantic dependence between the propositions Φ and Ψ. It just describes the interrelation between both of these from the questioner's point of view, rendered: "The questioner is going to decide that Ψ if and only if Φ is known to be true."

two mutually excluding alternatives only. So given (i.) and (ii.), each possible answer decides the issue in the above decision scenarios: If Φ does not hold, then the only remaining possible decision is $\neg\Psi$.

But consider the following variant of this scenario: "Ψ if Φ." Then there is no equivalence any more ((i.) above does not hold), only the weaker $\Phi \rightarrow \Psi$ holds. And if the answer in w_0 does not entail the antecedent Φ, then nothing can be concluded concerning $\Psi/\neg\Psi$. Thus it is justified to take utterance situations into consideration in which the answer does not provide the premise of a decision Ψ on the issue: Neither can Ψ be excluded in this case—nor can a different decision, viz. $\neg\Psi$, be definitely made. Relying just on the actual answer to the question, the decision problems posed by these scenarios are semi-decidable.

Likewise, consider a decision scenario where (ii.) above does not hold (but (i.) does): A scenario in which not every possible answer—according to the questioner—immediately determines a decision is one that provides more than the two mutually excluding alternatives $\Psi/\neg\Psi$: $\Psi_1, \Psi_2, \ldots, \Psi_n$. Let us assume that there is a premise assigned to each alternative, so associated with n consequents are n premises.[62] Now, let Φ be the antecedent of one of these alternatives, say Ψ_i: $\Phi \longleftrightarrow \Psi_i$. Moreover, let Φ be a possible answer to the current question which the issue, with its alternative decisions $\Psi_1, \Psi_2, \ldots, \Psi_n$, gives rise to. Because—should the answer entail $\neg\Phi$—the premises of $\Psi_1, \Psi_2, \ldots, \Psi_n$ might not be possible answers to the current question (to which Φ is a possible answer) any more, the actual answer might not be suitable in order to choose Ψ_i nor to identify an alternative decision out of $\Psi_1, \Psi_2, \ldots, \Psi_n$. Also, in a situation like this the answer to a question does not provide the premise of any one decision on the issue. So the relation between the function of a question—which is the identification of the answer in w_0—and the function of an issue—which is the identification of the decision in w_0—is not straightforward.

To untangle this plot, it will be helpful to distinguish between an *issue* and a *strategy* to determine a decision for it. Whereas the description of a scenario—like "Φ if Ψ" or "Φ only if Ψ"—is just a partial strategy to come to a decision, an issue itself may well be defined as a total partition e.g. of the questioner's current context set. In such a situation a question can serve as a *partial strategy* to finally come to a decision on the issue. If the answer in w_0 does not map to a decision immediately, the next step of a *complete strategy* may be to apply another partial strategy (adapted to the updated context that entails more facts about w_0 now) that may then consist of just another question.

Furthermore, what is a 'total decision space'? Alternative decisions for the same issue were taken to be mutually excluding alternatives. Why? The approach to contextual issues pursued in chapter 6 conceives of *questions as particular issues*. The idea behind this is to employ a similarity between questions

[62] No claim about the relation between the premises is made—whether these are mutually exhaustive logically or not—, nor anything is said about whether there may be several reasons (in terms of premises) to arrive at the same decision.

and issues and so to treat the relation 'to decide an issue' in a similar manner as 'to solve a question': In both cases this boils down to an identification of one cell of a partition of a context set of possible worlds. The answer space comprises those possible worlds which define the current, mutually known context set, which is the common ground. Whether the decision space is a different set of possible worlds is to be discussed.

Now, what does '*perspective*' mean when the goal is not to find the answer to a question but to decide an issue? To shed light on the function that a (modified) 'perspective' fulfils here, I stick for the moment to the proposed role of $\chi\delta$ and $\chi\delta'$ with regard to the issue. In the discussion of the scenarios we observed that a reply "R but S", which is assumed to relate to the issue, is adequate if:

- R represents a premise of a decision Ψ_i and
- in perspective $\chi\delta'$, R proves to be insufficient for Ψ_i. On the other hand, in perspective $\chi\delta'$, S either provides a premise of an alternative decision Ψ_j, so that the decision Ψ_i is excluded, or, more generally: S just nullifies the decision Ψ_i in perspective $\chi\delta'$, thereby perhaps preventing a decision on the issue.

The issue-related '*inconsistency*' of a perspective taken for R would then come about due to these different reasons for or against a decision Ψ_i. For what reason a perspective extended by means of S decides the issue differently is not clear at this point.

Chapter 6

"But" in the Context of Issues

The thesis that will be put forward in this chapter is a generalisation of the inconsistency defined in (9). As we have seen, this felicity condition is not adequate for those instances of *"R* but *S"* where non-satisfiers are specified in *S* ; neither is (9) adequate for those instances where *S* is no direct reply to the question which *R* directly corresponds with.

The proposed generalisation of (9) involves an *issue*, which the questioner seeks to decide by way of the answer to his question. Conversely, the rationale of the answerer's reply will equally be based on such a presumed issue, cf. schemes 5.3 and 5.4 . The co-operativeness principle is still assumed to hold true: The sole purpose of the answerer is to give an answer to the intended question. Along with this requirement, the answer has to be in accordance with the questioner's issue as well. Co-operativeness also holds if the answerer gives additional information that has not been asked about, e.g. about individuals which do not belong to the question domain *D* , but which nevertheless can be considered relevant to the issue (see (15), p 152, and (16), p 153). Still, *no preference* for any specific decision (by the questioner) is involved in compiling the answer; the issue will in fact be decided by the questioner. That is, the answerer tries to adopt the interests and preferences of the questioner. The only preference the answerer has is with regard to what his utterance of *R* and *S* commits him to, i.e., what the utterance is intended to convey. So according to the answerer, the common ground is compatible with the corresponding propositions $[\![R]\!]$ and $[\![S]\!]$ he contributes. So we may say that the answerer's prefererences are such that the common ground must be compatible with the propositions the answerer intends to convey with *"R* but *S"*. Given that the answerer is competent and in charge of the update of the common ground (as far as concerns the question's subject-matter), this preference bears no potential for any disagreement between the participants; the answerer is in authority here.

However, the questioner's background might cause conflicting preferences between the participants if the answer given is not a direct one; the questioner might hold a different belief in any other matter that is not the question's subject-matter any more.[1]

Whereas 6.1 specifies the concepts necessary to determine more general felicity conditions of but, 6.2 describes the new variety of 'inconsistency'. The description also includes some parameters provided by the framework.

6.1 The Elements of a Description

First, the concept of a contextual *issue* will be sketched. This is crucial for a revision of the notion 'perspective', as well as for the 'inconsistency' involved with the use of but.

6.1.1 The Contextual Issue

6.1.1.1 The Concept 'Issue'

I will conceive of *questions as particular issues*. What is it that makes questions particular issues? According to the possible answers-account, questions partition a specific set of possible worlds totally (see 4.1.2 and 4.1.3.3). Since the actual answer will be part of the common ground, the set of possible answers can be considered to be the common ground. The common ground represents those possibilities which all the participants mutually assume to be still open. The question is solved if exactly one of the possible answers, i.e. one of the partition cells is identified. 'Identification' basically means that it is mutually known to the participants in which cell the actual world w_0 is located. This can be accomplished by a multitude of propositions, cf. (44), p 112. Due to mutual exclusiveness, the identification is unique in the sense that for each cell there is no other cell s.t. both overlap. Likewise, for the alternative decisions on an issue there is the same condition of uniqueness: When w_0 is known to be located in a particular cell of the issue, i.e. in a cell which makes up a decision, then this should imply that there is no other overlapping alternative decision. So the definition of an issue has to ensure that their alternative decisions are mutually excluding. An issue is thus made up of a total partition of a set of possible worlds into mutually excluding decision cells. The cells are called alternative decisions, or *alternatives* for short.

Which possible worlds are partitioned by an issue? As to questions, the common context set is subject to the partition. As for issues, it is not necessarily the common context that is subject to the partition, since the issue does not have to be officially known to all participants. But the issue behind

[1] In his probability-based argumentative account of but, Merin (1999a) assumes a different setting in which the participants' preferences w.r.t. the issue are not aligned: This setting is a non-cooperative one. Each participant tries to put through the preferred decision by means of arguments and counter-arguments they supply. In case making a decision means accepting and adopting a specific belief, arguments usually consist of some empirical evidence. See 2.4.

a question must be known at least to the questioner A: So the questioner's background $\mathfrak{Bel}(\mathsf{A}, w_0)$—i.e. the set of worlds which he does believe to be still possible in w_0—is partitioned by the issue. On the other hand, a fully specified question (which is a particular kind of issue) establishes a partition that is officially known to all participants. (This is why it can be said to partition the common ground.) The properties of issues so far are:

- A question can be thought of as a(n epistemic) issue, consisting of alternative decisions, either of which is to update the questioner's belief state $\mathfrak{Bel}(\mathsf{A}, w_0)$. Being an official issue, a (fully specified) question partitions the common ground.
- Every issue comprises at least two alternative decisions.
- Like possible answers, alternative decisions are considered to be mutually excluding. And since they partition a set of possible worlds, also 'decisions' are sets of possible worlds—just like answers; both entities are of type proposition.

Thus every question is an epistemic issue: With a question the questioner wants to find out with which alternative (i.e. which partition cell) from a set of mutually excluding alternatives (i.e. from the partition) to update his belief state next. This points to the illocutionary dimension of questions, which applies to issues in general: [2]

> [...Q]uestions are regarded as tools for reducing states of rational doubt. The questioner expresses what he knows concerning the given subject matter by saying 'This or that is the case' or 'Some things are so and so'; and the respondent then, if he chooses, matches this with a counterstatement which provides more information and thereby lessens the questioner's doubt.[3]

What about the *contents* of alternative decisions? How are those worlds associated with a distinct decision distinguished from other worlds? This concerns the subject-matter of 'issue': What kind of facts can be involved in a decision? Here we must take into account that a decision is always agent-relative; a participant *makes a decision*. Because every participant is in charge of his own background, he can adopt propositions (i) for his own *epistemic background* or (ii) for his own *deontic background*. After a decision has been made, the participant's actual deontic background or his beliefs entail this proposition. Note that not only an issue's partition but also the process of decision-making is agent-relative. The decision scenarios of 5.2 described the agent-relative basis of an issue; the decision whether to go to the cinema or not was deliberately dependent on properties of the actual world w_0. An agent A's decision like "to go to the cinema" is an intention and thus immediately enters his very own deontic background: Thereafter his background consists only of

[2] Note that questions have been considered *as a means* to decide an issue; it is the issue behind the question that motivates A's question in the scenarios (a) through (d).

[3] Harrah (1963, p 28).

worlds in which "A goes to the cinema [at a given time and place]" is true. Now some more notes on (i.) epistemic issues and (ii.) deontic issues:

(i.) Being related to a question, a decision of a participant is dependent on what he believes *to be the case*. Let the issue be about what the participant believes to be the case. Then a propositional premise is assigned to each decision as the basis of the decision. So by learning the answer a participant infers and believes that some other proposition holds or does not hold in the actual world. This concept of inference usually will go beyond semantic entailment and meaning postulates. Note that a relation like this also plays a role in the question account of Ginzburg (1996, p 407).[4] In his approach, the resolvedness property of answers is a powerful concept of inference (see p 99); however, this concept is hard to formalise: Ginzburg's agent-relative notions 'goal' and 'consequence' maps some fact τ given by the meaning of an assertion to a different goal-related proposition: $\tau \Rightarrow_{ms}$ goal-content(ms). Being assigned to the mental state ms of a hearer A, 'goal-content(ms)' can be understood as the gain in knowledge, A's actual epistemic background $\mathfrak{Bel}(\mathsf{A}, w_0)$; a resolving reply that provides the fact τ results in this knowledge gain. Thereby the notion 'answer' is determined relative to the current 'goal' of the questioner. Likewise, an answer to a question can be thought of as the decision on an issue—by means of an agent-relative consequence like '$\Rightarrow_{ms}$'. Although this consequence cannot be specified in detail, we can say that it must be a reflexive relation; any proposition can be inferred from itself. A question is always an epistemic issue on its own. And so, a question is just a particular kind of issue.

(ii.) Besides the belief about the actual (external) state of affairs, a decision may also concern the participant's attitude of how affairs in fact ought to be, i.e., it can be a decision about which desires, wishes, and goals to have. These might be still possible, i.e. consistent with what he believes to be the case; or they are inconsistent with it. In the former case, a participant's intentions and actions will be governed by his desires, wishes, and goals. However, if they are not achievable any more—as in the latter case—, the participant might regret this but they might be upheld.[5] Let the set $\mathfrak{Vol}(\mathsf{A}, w_0)$ consist of the worlds in which all desires, wishes, and goals of participant A are true.[6] This concept in fact mirrors the *ideal worlds* as opposed to A's epistemic possibilities $\mathfrak{Bel}(\mathsf{A}, w_0)$. Thinking of ideal worlds which are independent of and may deviate from w_0, one can imagine still other references for "ideal", e.g. those worlds which are in accordance "with what the law provides", etc.[7] Be it as it may, the worlds so characterised (as ideal worlds) are assigned to a participant. Although these worlds need not reflect his private goals, he might be taken as representing

[4] See the discussion on issues in the "Interlude: Appropriate Answers", pp 97ff.

[5] Nothing is said here about the logical structure of the contents of such a volitional background. This concerns e.g. these questions: Is w_0 contained in it? How are e.g. entailment and consistency defined? I will not go into the peculiarities of epistemic logic; I rather assume that standard logic applies, cf. (10) and (11)—unless otherwise stated. E.g., I do not regard problems like: Cannot one person have contradicting wishes? Volitional states are non-empty sets of possible (perhaps fictional) worlds s.t. they consist of propositions which can be true at a time—although possibly not in the actually still possible worlds.

[6] '$\mathfrak{Vol}$' ('Vol') stands for volition.

[7] There are many possibilities as to which worlds can play a role here; see e.g. the various modal bases one needs for an appropriate treatment of modal operators (Kratzer 1991).

them—representing e.g. the law or even the private wishes and goals of others. In this sense ideal worlds are given by some accessibility relation assigned to a participant. In most of the cases this set will usually not contain all worlds from $\mathfrak{Bel}(\mathsf{A}, w_0)$ or will be inconsistent with it. The connexion between a question and its motivating issue will usually be like this: A's private wishes depend on his belief state. Since the scenarios' underlying decision of A "to go to the cinema" is actually still possible and he himself is the actor, we can paraphrase this decision as one of participant A's intentions:[8] $\models_{\mathfrak{Vol}(\mathsf{A},w_0)} [\![$"A goes to the cinema [at a given time and place]"$]\!]$. This intention can be rendered as a fact of w_0 too: $\models_{w_0} [\![$"A decides to go to the cinema [at a given time and place]"$]\!]$.

An agent's decision to adopt a proposition as his epistemic background is equivalent to the action taken by a questioner when accepting the answer: Accepting the answer is believing it to hold true. But unlike answers, deciding a possibly covert issue does not necessarily make the decision common ground. This is so for two reasons. First, not all participants might be aware of the issue at stake. Second, other participants might not be inclined to decide in the same way, according to their knowledge background; i.e., not all participants might adopt the very decision if the epistemic issue (partition) behind the question is not the question (partition) itself. This is true even if the participants are all aware of the issue behind the question.[9] So it is $\mathfrak{Bel}(\mathsf{A}, w_0)$, not the common ground, that is subject to a decision at the epistemic level.

In (1), 'issue' is defined as a total partition of either $\mathfrak{Bel}(\mathsf{A}, w_0)$ or $\mathfrak{Vol}(\mathsf{A}, w_0)$ into a set of mutually excluding alternative decisions. The partition is thus agent-relative to some participant A; ψ stands for a propositional alternative that A can adopt as his belief or volition—or he rejects it. For this reason, "decides for" below subsumes the predicates "believes" and "wants", each having a propositional argument.

(1) *The decision space, Decisions(ISS), of an issue ISS for participant* A*:*[10]
$Decisions(ISS) =$
$\{p : (\exists\psi)\,((\forall w)\,(w \in p \longleftrightarrow (w \in (\lambda x\,.\,[\![$"A decides x"$]\!])\,(\psi)))\,)\,\}$.

Let us have a look at examples, comparing (2) with (3).[11] As is the case with possible answers, ψ ranges over disjoint sets of possible worlds. However, possible answers as well as alternative decisions, which too are mutually excluding, may be composed partly of propositions which they share with other

[8] On the other hand, to intend something that he considers to be actually impossible would not be compatible with the assumption of a rational participant. So "A intends ψ" would presuppose that ψ is still possible according to A's epistemic background.

[9] Participants might inofficially disagree which each others' decisions because of the the agent-relativity of the consequence relation, e.g. $\tau \Rightarrow_{ms}$; this is the essential of the process of decision-making based on the answer, see above.

[10] An issue *ISS* is given in terms of its decisions, which are thought of as propositions. Since issues might not be uttered explicitly, there might not be a linguistic realisation of an issue. Furthermore, depending on the domain of the decision, ψ must be restricted either by A's current belief state or by his volitional background. This is due to the requirement of consistency of any epistemic or volitional background: All rationally possible decision alternatives must be compatible with the background: $\psi \in \mathfrak{Bel}(\mathsf{A}, w_0)$ or $\psi \in \mathfrak{Vol}(\mathsf{A}, w_0)$.

[11] Consider these as independent of each other.

alternatives; cf. the set (2) of possible answers (to some appropriate question about Susan and Richard) and the partition (3) of $\mathfrak{Vol}(\mathsf{A}, w_0)$:

(2) *Answers*(Q_D) =

{ [[“Susan is coming and Richard is too”]];
[[“Susan is coming and Richard isn’t”]];
[[“Susan is not coming and Richard is coming”]] }.

(3) *Decisions*(*ISS*) =

{ [[“A buys a tent and goes camping in Alto Adige”]];
[[“A buys a tent and goes camping in the Bretagne”]];
[[“A travels to Rimini [and does not buy a tent]”]] }.

Both alternative sets are *total* partitions of the context set they apply to. Nevertheless, alternative decisions differ from possible answers in two respects: (i) They constitute a decision space that *prima facie* does not exhaust the remaining epistemic possibilities[12], whereas an answer set exhausts the common ground, see (2).[13] But note that this is a misconception about *Decisions*(*ISS*). What makes also *Decisions*(*ISS*) a total partition is just a different context the issue at stake relates to. E.g., only after all other logical possibilities not listed in (3) had been rejected for $\mathfrak{Vol}(\mathsf{A}, w_0)$, the issue is a total partition (of $\mathfrak{Vol}(\mathsf{A}, w_0)$) nevertheless. Usually the context that is relevant for the decision problem ensures that the issue’s partition is total too; at least we can conceive of the corresponding context in this manner. This I will take for granted. (ii) A decision, as we intuitively comprehend it, comprises (conjoined) propositions which are connected with one another on some basis; any such connexion does not seem to exist between the propositions of an answer, see e.g. (2). But what connexion? Consider (3). The intention to buy a tent can be regarded as being factually connected with the intention to go camping. To buy a tent might not be an independent intention: Buying a tent is a factually necessary precondition of going camping *under particular circumstances*, e.g. in a situation where there is no tent at A’s disposal and buying is the only possible way to get one. And even if “A buys a tent” were not part of the issue, a decision to go camping would nevertheless be tied to this or to a more general, related requirement like “A needs a tent” *due to circumstantial necessity*, we may say. Intuitively, any such proposition that takes part in only some but not all decisions—like “A buys a tent” —can serve as a *criterion* in the decision-making process.

So, propositions which jointly constitute one decision are usually not tied to each other through inter-subjective necessity, e.g. logical, physical, or factual necessity.[14] Usually, one such proposition will necessarily depend on another one of the same decision only under very particular circumstances;

[12] E.g., are there really no other destinations one can think of under the circumstances of issue (3)?

[13] Due to the existential presupposition of a question, the meaning of a question is only defined relative to a common ground which entails that there are question satisfiers. With Q_D in (2) ranging over Susan and Richard, “Susan does not come and Richard neither” (i.e.: “Nobody does”) is thus excluded from *Answers*(Q_D) at the outset. Furthermore, every answer in *Answers*(Q_D) must be still possible in the actual common ground, see definition (37), p 107.

[14] For an excellent description of various possible notions of ‘necessity’ see Lewis (1973, p 7f).

i.e., necessity might come about just by deliberately restricting the relevant set of possibilities. And so the interdependencies between the propositional components of one and the same decision are strict necessities just relative to an appropriately chosen (restricted) context set. This restriction of the overall possibilities, however, is due to a highly subjective, agent-relative conception.

To give another example, consider (4); here it is more obvious that the connexion between conjoined propositions which constitute a decision is agent-relative:

(4) *Decisions*(*ISS*) =

{ [[“A gives up the habit of smoking and starts eating chocolate”]];
[[“A gives up the habit of smoking and starts using nicotine chewing gum”]];
[[“A does not quit smoking [and does not need a substitute either]”]] }.

According to the alternatives this issue consists of, the choice between eating chocolate and using nicotine chewing gum is at stake only in case A quits smoking. But from an objective point of view, there are other methods to quit smoking—e.g. without using substitutes. So the issue in (4) induces a *dependence* of giving up smoking on the disjunction of taking either one of the substitutes.[15] This dependence might not be a necessary one according to a different point of view, i.e., relative to a different context: This dependence might not exist any more as soon as other worlds are considered possible. As a consequence, this dependence might be comprehended but possibly cannot be shared by participants whose epistemic background allows for other possibilities like: “A gives up the habit of smoking, not taking any nicotine substitutes.” [16] But when the consideration only of selected possibilities creates an exhaustive decision space, criteria, i.e. the components of the single decisions, can have a decisive influence on the decision-making. In (4), which states that besides the mentioned ones no other possibilities are considered for $\mathfrak{Vol}(\mathsf{A}, w_0)$, eating chocolate or using nicotine chewing gum can actually serve as a criterion for A’s choice between “giving up smoking” and “continuing with smoking”. Similarly, in the decision space (3) both the decision for Alto Adige and the decision for the Bretagne cannot be separated from “A buys a tent”. It can be argued that the only difference w.r.t. (4) is that the dependence of going camping on buying a tent *seems* to be necessary for more objective reasons.

There is yet another difference between (3) and (4), showing in what respect criteria may differ from issue to issue: What has been taken as a criterion in (3)—buying a tent—is a circumstantial *precondition* for what is then considered the actual subject of the decision, viz. where to travel.[17] On the other hand, what served as a decision criterion in (4)—eating either one of the considered substitutes—is a circumstantial *consequence* of the actual subject of the

[15] Similarly, neither the possibility of taking both substitutes at once is considered.

[16] Also A might at the epistemic level perceive and consider this possibility. However, basis for A’s issue in (4) is his volitional background, which can be deliberately restricted as compared to $\mathfrak{Bel}(\mathsf{A}, w_0)$.

[17] That is, under the considered circumstances it is a precondition for some of the travelling destinations to buy a tent.

decision, viz. to quit smoking.[18] Thus, it is not essential on which components of a decision the agent's choice is based; and the decision criteria which have been taken for granted just served explanatory purposes. The main point is that any component of alternative decisions that is tied only to some but not all alternatives can potentially serve as an agent's criterion to make his choice. And once a criterion is considered essential in the decision-making process, the choice can be narrowed down to that subset of decisions which meet the criterion. In this respect, a criterion can play an important role in the strategy to solve an issue. In order to stepwise solve the issue, it might be wise to ask a question that clarifies the questioner's own attitude towards a criterion and in this way to probably exclude a large number of alternatives.

A criterion is a set of worlds by which at least two possible decisions can be distinguished from one another. This does not imply that those decisions sharing one criterion cannot be disjoint. Neither does it mean that a criterion must be a bipartition of the decision space by merging the decisions into two groups. Technically, the term 'criterion', as it is used here, is defined by two conditions:

- A criterion includes at least one decision cell.
- There is at least one decision that is not included in the criterion nor intersects with it.

Summing up so far, an issue is made up of a deliberately restricted space of alternative decisions, the decision space. A decision may comprise several conjoined propositions. Any one of these propositions may be regarded as a decisive criterion for the whole issue, in particular if two or more (but not all) decisions share such a proposition. Note that 'criterion' helped us to explain the principal similarity between issues and questions: Decision criteria involved in issues are but a means of construing this highly subjective partitions. And so, given that the issue's overall decision space can be a deliberately restricted, subjective context, the concepts 'issue' and 'question' are alike. But *why* have the decisions been composed by a participant the way they are? This is beyond a definition of 'issue' we are after. It is enough to assume a sufficiently defined, plausible notion of contextual 'issue' that helps to construe issue-related replies containing but. Therefore we do not have to ask why, under which circumstances nor how issues arise. A plausible sketch of issues will do.

As mentioned above, also the context partitioned by a question must be appropriately restricted beforehand s.t. it satisfies the question presuppositions (cf. footnote 13). Although there are verbalisations by which decisions as well as issues could be made common ground, issues will often remain implicit in discourse. With attitude verbs ("intends", "believes") any content of modal contexts like $\mathfrak{Vol}(\mathsf{A}, w_0)$ and $\mathfrak{Bel}(\mathsf{A}, w_0)$ can be expressed as a property of the actual world, i.e., modal embeddings make these attitudes a fact of the actual

[18] That is, under the circumstances considered for the issue eating either one of the substitutes is a consequence of the choice to stop smoking.

world (see p 171) : "[It is the case that] X intends to/believes that . . . " Still, the major difference between issues and questions is that issues in general do not have to be mutually known.

Of course, (3) is but an example and also (1) does not tell us anything as to which alternative decisions ψ an issue in fact consists of. And so, with issues being covert, there seems to be nothing one can say about them; issues are but stipulated, it seems. Not quite so. I want to argue that in discourse there are at least clues that they exist. Issues might leave their traces in utterances dealing with them. In case of a *covert issue* behind an *overt question*, the reply to the question might be about the issue too. To be more precise, from a reply we can learn something about the issue *that the answerer assumes* to be at stake. Replies of the form *"R* but *S"* suggest a common property in this respect. Before going into this, it must be mentioned that there are related concepts of 'issue' in the literature which have been utilised for the analysis of questions and answers, too. What distinguishes the proposed notion 'issue'?

6.1.1.2 Decision Problems

'Issues' and 'decision problems' are not a new view on language use. I will describe one approach (van Rooy 2003b), which resumes ideas of the context-dependence inherent in the concepts 'appropriateness' and 'usefulness' of answers (Grewendorf 1981, Ginzburg 1995). With a rough description of this approach I want to point out what the current proposal is not intended to cover. Another probability-based approach (Merin 1999b), which explains the pragmatic conditions of language use in terms of social decision making, is mentioned in the next paragraph 'Relevance'; Merin's (1999a) account of but is based on these suggestions, see 2.4 .

Relevance. Information which a participant provides in a discourse is relevant only with regard to a *hypothesis*. A hypothesis is a cell of an unresolved issue, which is a partition of the space of actual possibilities. It is crucial for this setting that participants are not neutral to a hypothesis. Contradicting interests are modelled in this way: one speaker prefers a hypothesis H , while the other participant prefers $\neg H$. The (cross-speaker) issues considered by Merin always consist of two alternatives, one being the *logical* complement of the other. Discourse is argumentative, it is not bare information exchange. There may always be some hypothesis H which is the argumentative goal of a speaker in a discourse.[19] If the goal is to make somebody believe in the truth of some proposition H , the epistemic hypothesis H can be backed by some evidence, $\neg H$ by some counter-evidence. The relation between an utterance and an assumed hypothesis is based on a probability-based model of the epistemic strength of an evidence. This relation is then employed in explaining in pragmatic terms why an expression has been chosen in a particular hypothesis situation

[19] This setting of Merin (1999b) is due to Anscombre (1973) and Ducrot (1973) who, as Merin puts it, seek to explain implicatures by means of the 'valeur argumentative' of an expression for a salient conclusion or hypothesis H .

or which interpretation of it has been intended by its speaker. The epistemic effect of some propositional evidence E with regard to the belief that H holds true is expressed by means of a conditional probability function. A probability function $p(\cdot|\cdot)$ mirrors the epistemic background of a participant. It is the probability the participant associates with hypothesis H, given the propositional evidence E: $p(E|H)$.[20] For E to be informative, this probability function must represent an information state that does not yet decide E nor $\neg E$. (And once a proposition H is adopted, any probability function of the respective information state assigns 1 to H.) With an epistemic background, the argumentative value of E as evidence for H is defined as *relevance* $r_H(E)$ of E to H in the given epistemic context $p(\cdot|\cdot)$:

$$r_H(E) = log\left(\frac{p(E|H)}{p(E|\neg H)}\right).$$

Relevance is determined relative to a context of conflicting epistemic alternatives. Turning to but, a relevance-based account of the felicity of the conjunction but presumes the accessibility of some hypothesis H. When interpreting 'A but B', with A and B being the propositions conveyed by the first and second conjunct of but, the utterance of such a sentence is felicitous only relative to an addressee's information state if the following holds: $r_H(A) > 0$, $r_H(B) < 0$, and $r_H(AB) < 0$. It is shown that these conditions hold for $H = \neg B$ as well as for an appropriate independent hypothesis. Basically, these conditions require epistemic unexpectedness of some $\neg H$, given A, in view of the addressee.

Because (i) a hypothesis and its counter-hypothesis are logical complements and (ii) the felicity conditions operate on the contents of some epistemic background, the expectation of the hypothesis/counter-hypothesis is bound to the unexpectedness of its complement. Accordingly, what acts as evidence for one of these must count as evidence *against* its complement. This means that the objection B in 'A but B' cannot have the effect of just deferring the decision on the issue $\{H; \neg H\}$—i.e., an objection B is not intended to make the addressee reconsider the issue. According to Merin (1999b), but indicates a relationship between propositional contents of belief. Contrary to this, the pragmatic explanation along the lines of scheme 6.1 (which will be introduced on page 181) refers to the *action* a participant might intend to take in response to some proposition that he learns. — The approach described in the next paragraph, however, goes one step further and focuses on the action alternatives of a participant which are considered basic components of a context in general. In a context of given action alternatives, new information will be 'relevant' due to the utility involved.

Considering Utility. Van Rooy (2003b) utilises decision problems for a pragmatic explanation of what it means to answer a question appropriately. Information given in an answer is to help the questioner decide between alternative actions. To make a decision means to take a particular action from a given set of

[20] Note that the propositions E and H are considered to be embedded in the epistemic background of the interlocutor; E and H are not of the form "the interlocutor believes that . . . ".

alternative actions on the grounds of the currently available information state. To be able to compare the *utilities of answers*, a utility value is assigned to every alternative action in every world.[21] The optimal decision *in a world w* amounts to the action that offers the maximal utility value of all alternative actions in w. Worlds usually differ in the optimally useful action. To arrive at the optimal decision, an agent has to have enough knowledge of the world he actually lives in.[22]

In van Rooy's account, an action from a given set of alternative actions can have a distinct utility value for *each* world (out of the considered set of still possible worlds). Then an agent would be in a position to decide / act optimally only if he had complete knowledge of the world he lives in. Moreover, a utility function detailed like this involves that, in order to calculate the utility values of a particular action, the agent may take into account every fact that he can get hold of. But founding the agent's decision-making process on complete knowledge seems inadequate. For explanatory purposes van Rooy calculates utility values only for a small number of single worlds; the model is meant to be applied not only to single worlds, but to distinguished sets of worlds, too.[23] Furthermore, the account presumes that the agent's (incomplete) epistemic background can be represented as his idea of the probability of single possibile worlds. Accordingly, the *expected utility* of an action is the basis of the agent's considerations: The agent's conception of the utility of an action is based on this estimation. According to this (incomplete) knowledge, 'optimal decision' is the choice of that action that yields the maximum of all expected utility values; the expected utility EU of an action is calculated over all possible worlds: [24]

$$EU(a) = \sum_{w} P(w) \times U(a, w)\,.$$

To sum up the elements of 'decision problem':

> A decision problem of an agent can [...] be modeled as a triple, $\langle P, U, \mathcal{A}\rangle$, containing (i) the agent's probability function, P, representing the *beliefs* of the agent; (ii) her utility function, U, which helps to represent her *desires*; and (iii) the alternative *actions* she considers, $\mathcal{A}$.[25]

What role do questions and answers play in the decision-making process? Answers supply new information. Therefore answers have the potential to refine the agent's probability function P. In turn, this refinement usually changes the expected utilities of the alternative actions. And so, due to the answer, the ranking of the alternative actions according to their expected utility might change. The *usefulness of an answer* can now be measured as the gain in

[21] An action is conceived of as the set of those worlds in which it is taken; this set can be a singleton too.
[22] However, an agent's decision will usually depend on a few selected criteria.
[23] The definition of a utility function can easily account for this by assigning all worlds of one set the same utility value for each action. Worlds of one and the same set are indistinguishable w.r.t the utility function and the set of actions considered.
[24] See van Rooy (2003b, p 733).
[25] Ibid.

the utility value of the action chosen according to the refined new probability function as compared to the utility of the action that would have been chosen according to the original probability function. The decision does not necessarily change, though; it can be strengthened (or weakened to some degree) by the answer, too. Since—besides U and $\mathcal{A}$—also the probability function defines the decision problem, see the quotation above, by learning the answer the questioner's decision problem in fact changes, too. The modification of the agent's belief state P causes the original decision problem to be refined. However, the set $\mathcal{A}$ of alternative actions is taken to remain the same.

So far, this model imposes an ordering on answers (assertions):[26] In a particular situation supplying a set of alternative actions to choose from, one assertion can be more useful than others. On the other hand, there can be more than one optimal action for a particular state of affairs. According to van Rooy (2003b), this is typically so with mention-some readings of wh-questions. If there is more than one optimal action, the participants takes it that it is sufficient to give an answer that enables the selection of *one* optimal action only. Because an action is represented as the set of those worlds in which it is actually optimal, it means that alternative actions can be overlapping in case of mention-some questions. In these intersection worlds, any one of equally optimal actions can be selected; so in these worlds there is *no unique* solution to the decision problem. In other words, the set of alternative actions is not necessarily a partition of the possible worlds into mutually excluding possibilities. And so the decision space does not necessarily consist of disjoint alternatives.

The difference between this model of decision problems and the concept 'issue' proposed in 6.1.1.1 mainly lies in the decision criterion; to put it simply: Whereas the decision-making according to van Rooy (2003b) is utility-driven, no such *external decision criterion* is provided for 'issues' in 6.1.1.1 . So the proposed 'issue' does not explain *why* a particular decision is made and why it is preferred over another alternative decision. To focus on the dependence of the underlying issue on a corresponding question, decisions are represented there as a function of possible answers. Being the motive for a question, the issue should be s.t. at least one possible answer to the question immediately enables the questioner to arrive at a decision. Depending on the actual state of affairs, the answer might not at all be helpful, leaving the questioner in a position in which he reconsiders his issue: E.g., further information might be required then or the decision space (i.e. the alternative decisions) might be subject to modifications. As to the differences between both conceptions of decision problems, definition (1), p 171, requires that an issue partitions a context set into mutually excluding alternatives. That is, decisions either are unique or cannot be reached

[26] Besides, the model also establishes a classification of questions as to their expected utility value: Their expected utility value EUV of a question is composed of the sum of the products of the expected probability of each possible answer q , $P(q)$, and the utility value of the action selected in q-worlds, $UV(q)$:

$$EUV(Q) = \sum_{q \in Q} P(q) \times UV(q) .$$

on the grounds of the current epistemic background at all. Given an epistemic context and an issue, an ordering relation on the set of all alternative decisions could only distinguish between the chosen alternative and the rest, thus establishing just two equivalence classes of alternative decisions—whereas with a decision problem according to van Rooy (2003b), the alternative actions can be ordered totally as per their expected utility values if there are no actions having the same expected utility value, e.g. in case of a question in a mention-some context. This correlation between a question and an issue needs to be clarified further.

6.1.2 The Question–Issue Correlation

We now want to account for this correlation in terms of certain answers to the question. This is necessary, for the aim is to analyse the contextual conditions of the use of *"R* but *S"*, which is the form of answers to be considered now. The focus on this overt expression is necessary also since answerer and questioner hold separate epistemic contexts—e.g., their beliefs about a covert issue are not common ground and are thus not mutually accessible. What does a given answer of the form *"R* but *S"* convey about the issue taken for granted? Can essential aspects of a covert issue be reconstructed through an answer of this form?

Generally, the core of a plausible correlation is that at least some of the possible answers enable the questioner to identify a distinct decision. This induces a contraint on possible decision spaces. The properties of 'issue' suggested so far are:

- An issue is a total partition into mutually excluding sets of possibilities.
- The originally partitioned context set is s.t. a questioner A is in charge of its modification: Any decision on an issue has consequences for $\mathfrak{Vol}(\mathsf{A}, w_0)$ as well as $\mathfrak{Bel}(\mathsf{A}, w_0)$.[27]
- An issue can be an appropriate context for those questions which are at least *partial strategies* to arrive at a decision on it.[28]

So let us start from a given direct answer, which we can take for granted in a setting characterised through co-operativeness and competence of the answerer. However, if a question is just a partial strategy for coming to a decision, not every possible answer need necessarily decide the issue. But then, how can we say anything about the intended issue if it is not even known of any actual answer whether it does contribute to its solution or not?

Clues as to how to cope with this problem have already been indicated. For one, also the answerer faces the problem of meeting the needs of the covert

[27] The kind of worlds $\mathfrak{Vol}(\mathsf{A}, w_0)$ considered to be ideal by A in w_0 may vary. These may well deviate from A's private bouletic context: As noted before, A might adopt other ideals or goals for $\mathfrak{Vol}(\mathsf{A}, w_0)$.

[28] That is, the mapping of the possible answers to a question on the decision alternatives of the issue can be a partial function. Cf. also the term 'criterion', p 174.

intended issue. So the issue that a reply aims to address is not necessarily the questioner's intended issue. Rather, the answerer assumes and intends to address an issue which he *believes* to be the contextual issue of the questioner. A reply of the form *"R* but *S"* will then impose particular conditions on *R* , *S* , their associated 'perspectives', and the issue. The claim is not, however, that the issue can be figured out in detail, *not even single alternative decisions*.

Let us reconsider the examples in 5.3.3 . As these suggest, a decision comes about through *R* that is (under a different perspective) nullified by the utterance of *S* , see the discussion in 5.3.4 . Furthermore, two aspects have to be taken into account:

- The mapping from *R* to some decision will usually not simply be a matter of semantic inference nor of any other inter-subjectively necessary inference. This is what the discussion on decision criteria in 6.1.1.1 suggests. Rather, speaker B has to assume that, given *R* , there is such a mapping according to the questioner's context.

- The answerer's model of the issue must mirror the utterance situation, the common ground of which does not yet contain the answer to the question. That is, a representation of the issue has to reflect the kind of situation it apparently applies to: A does not yet know the answer *R* to his question.

Consider the decision space (4), p 173 . "Eating chocolate" and "using nicotine chewing gum" have been called 'decision criteria' for the major decision whether to give up smoking or not; that is, these criteria may help to decide the issue (4) as a whole. By making up his mind as to the criteria the participant might arrive at a decision on the issue. Accordingly, a question that is motivated by this issue may explore the criteria further: "Does eating chocolate or using nicotine chewing gum have any side-effects?" We see that the suggesting consequences of the possible answers for an issue—although comprehensible intuitively—are in no way semantic inferences; these consequences come about by deliberately restricting the decision space to a few particular alternatives.

Now we are prepared to relate the issue that is taken for granted by the answerer to *R* and to *S* . From the answerer's point of view, the problem with the presupposed questioner's issue as of the time of the question can be represented as a *counterfactual* (see scheme 6.1) that refers to certain kinds of decisions without specifying these. Such a counterfactual is claimed to be a possible paraphrase of the contextual conditions of appropriately uttering *"R* but *S"*; some details will be formulated in 6.2 . The counterfactual connects *"R* but *S"* with the issue, although it does not specify the issue in terms of its alternatives. According to the questioner's belief about the actual context, any

alternatives ψ_R , ψ_S that fit 6.1 may belong to this issue.[29] Note that thereby the 'contrast' that is indicated by means of *"R* but *S"*—whatever the notion 'contrast' will turn out to be—is due to the *speaker's* conception of the context.

With a reply *"R* but *S"* an answerer addresses a questioner's issue in the following way: Let ρ and σ be the propositions conveyed by *R* and *S* respectively; furthermore, let there be no doubt about these interpretations of *R* and *S* . Then the contextual condition of an utterance *"R* but *S"* is that either the counterfactual (a) or (b) holds. So the contextual condition requires the existence of an issue that is characterised in an indirect way:

If the questioner were to know whether ρ ,

a) then he would *decide* an issue by committing himself to a decision (ψ_R). And if, moreover, the questioner were to know that σ , then he would *not decide* the issue in the same way or make no decision until further evidence may become available.

b) then he would *not (yet) decide* an issue. And if, moreover, the questioner were to know that σ , then he would *decide* the issue by committing himself to a different alternative (ψ_S).

Scheme 6.1: Explanation of the questioner's issue from the answerer's point of view, given *"R* but *S"*.

How are we to read these conditions (a) and (b) ? As for 6.1 (a), the second consequent "he does not decide the issue *in the same way* or does *not (yet)* make a decision" means that the questioner would either commit himself to some other alternative ψ_S that is disjoint from ψ_R or not decide the issue right now. This can be simplified so that: "he does *not decide* the issue by committing himself to alternative ψ_R ." This is the negation of the first consequent of (a). But it is not the negation of the presumed questioner's choice ψ_R itself. In other words, the presumed consequence of *S* is that the decision ψ_R *is nullified*. So, according to the contextual conditions of *"R* but *S"*, it is *not* the effect of *S* that it necessarily shifts the questioner's decision to some alternative decision, be it $\neg\psi_R$ or any other decision.[30]

A remark on the counterfactuals' antecedents is due. Premises of the form "if the questioner were to know *that* ρ" contain a factual presupposition. This presupposition (that ρ is the case) is not entailed by the questioner's background, of course. The fact that the questioner does not know *that* ρ

[29] Although the answerer should have an idea what the alternatives ψ_R and ψ_S might be, it is not possible to specify these by means of a linguistic analysis of *"R* but *S"* and the corresponding question. As said before, the analysis is forced to abstract from any *specific* issue when there is no further information on the covert issue besides a question. So the specific issue which the answerer might take for granted must remain implicit.
If we regard the scheme as a representation of the contribution of but in *"R* but *S"*, then we can conceive of ψ_R and ψ_S as indefinite expressions introducing two distinct existential presuppositions.

[30] That is, in case of condition (a) the answerer takes it that *S* does not exclude the decision ψ_R from possibly being chosen later on.

generally means that the questioner does not know *whether* ρ is the case or not: In those worlds where ρ holds true this means that the questioner does not know that ρ and he does not know whether ρ either; whereas in those worlds where ρ does not hold true, this means that the questioner does not know whether ρ.[31] The factual presupposition that ρ is the case merely reflects the epistemic background of the answerer, which satisfies it. According to the questioner's background, both ρ and its complement are still possible.[32]

Note that a hearer of an issue-related utterance *"R but S"* who has no knowledge of the addressed issue would not be able to distinguish between the two possible subcases (a) and (b).[33] Either way, the essential condition of an issue-related use of a reply *"R but S"* is in the difference between the roles which *R* and *S* play for the decision-making. This introduces another sort of 'inconsistency': the 'inconsistency' of a proposition with regard to an issue. But what exactly does it mean 'to take a perspective' s.t. interpreting a reply in this 'perspective' yields 'inconsistency' w.r.t. an issue?

There is still another open question. In scheme 6.1 we have been talking of *one* issue. For *R* as well as *S* just one issue has been considered: It is the one which the answerer takes to be the questioner's immediate issue behind the question. But is *S* not meant to address a different issue than *R*? Consider the exhaustivity-related inconsistency along the lines of (9), p 140. There the change in the perspective from *R* to *S* (by taking additional potential question satisfiers into account) is an extension of the question domain and thus implies that *R* addresses a *different* question than *S* does. Coming now back to scheme 6.1, can we not discern a similar change in the issue that is caused by a change in the 'perspective' here?

6.2 Perspective and Inconsistency Revisited

In chapter 5, the notion 'perspective' is defined as a choice function which selects the set of those individuals from the discourse universe which contribute to the exhaustive interpretion *of a declarative sentence*; this restricted set of discourse referents instantiates the domain of universal quantification therein (see the definitions (45), p 113, and (47), p 115) and thus specifies the propositional

[31] This problem is related to the interpretation of "A knows whether ρ". According to Lewis (1998b), the meaning of such utterances is double-indexed. Their interpretation is relative to an index *i* that determines whether ρ or $\neg\rho$ is the case at *i*. Once *i* is fixed, it is determined relative to a second index whether A knows the respective fact ρ or $\neg\rho$. It would be worthwhile to rewrite 6.1 by using double indices.

[32] Is it possible that the factual presupposition (that ρ is the case) is not entailed by the questioner's background because it is incompatible with it? In this case the questioner's background would entail the opposite: that ρ is *not* the case. But as long as ρ is the direct answer to a question, the question presuppositions require that the questioner does not know *whether* ρ is the case or not. On the other hand, when it comes to *S* and the corresponding factual presupposition (that σ), it might be necessary to reconsider this condition: A setting where *S* is not a direct answer to the question would license the questioner's belief that σ is *not* the case. Then *S* in *"R but S"* would contradict the questioner's beliefs.

[33] The questioner of course knows whether and which one of the subcases fits his issue and intentions—although this does not guarantee that the questioner's original issue and the answerer's assumed issue are in fact identical. For a discussion on the distinction between these two possibilities (a) and (b), see 5.3.2, p 148.

value of the sentence. As for issues, we need a different explication of the term 'perspective'. Referring to the paraphrases of the proposed felicity conditions in scheme 6.1, the contribution of a perspective is to *reduce the vagueness* of the subjunctive counterfactual conditionals in (a) and (b). This way those contexts can be determined in which the issue-related use of a reply *"R* but *S"* is appropriate.

To determine a counterfactual's propositional content, it will be necessary to specify a presupposed set of considered premise propositions (rather than a set of considered discourse referents). That kind of 'perspective' will then be the basis for the formulation of an issue-related 'inconsistency' ('inconsistent perspective').

6.2.1 Issue-related Perspective

Let us focus on the conditions (a) and (b) of scheme 6.1. Both determine a property of *R* and *S* in terms of the consequents of the counterfactuals they entail. More precisely, the consequents are assumed to hold if ρ or both ρ and σ belong to the recipient A's beliefs respectively. So, what kind of 'perspective' can we assign to the conjuncts *R* and *S* therefore?

The antecedents in the scheme take into account what the questioner actually knows: All his decisions are dependent on his epistemic background. The process of his decision-making—as it is modelled in the scheme—*is tantamount to* his knowledge of particular propositions being the case or not. So whatever it is that the questioner is assumed to decide currently, his decision is taken to depend on whether ρ holds or both ρ and σ hold.[34] Then ρ and σ are decision criteria, see 6.1.1.1. So the contribution of but in the reply *"R* but *S"* is analysed in terms of the answerer's assumptions about these decision criteria.

Although this cannot be the place to go into the difficult analysis of the meaning of counterfactuals, the contextual conditions of scheme 6.1, which involve the decision criteria, will be represented through the meaning of counterfactuals.

6.2.1.1 Counterfactuals

There are two major accounts of counterfactuals: the *premise semantics'* approach, proposed by Kratzer (1981a), and the *ordering semantics'* account, introduced by Lewis (1973, 1981). The crucial ingredient of any analysis of counterfactuals is the characterisation of the antecedent: Which worlds in which the antecedent holds are meant to entail the consequent?

Since the counterfactual propositional antecedent is wrong in the utterance situation—which is called the *epistemic* or *factual background* and amounts to what is assumed to be the fact—, the set of worlds which are meant to entail the consequent has yet to be construed, starting from the given background. In

[34] We may say that by learning a criterion, e.g. by the knowledge that ρ is the case, the questioner will *identify* a particular decision—just like the questioner was said to *identify* the exhaustive answer to a question on the grounds of *R*.

Lewis' words (1973, p 220, emphases added), in terms of premise semantics the task therefore is: [35]

> These facts [i.e. the given factual background] serve as *auxiliary premises* which may join with the antecedent of a counterfactual to imply the consequent, thereby making the counterfactual true against the factual background. The obvious problem is that some of the facts will contradict the antecedent (unless it is true), so the entire set of them will join with the antecedent to imply anything whatever. We must therefore use *subsets of the factual premises*, cut down just enough to be consistent with the antecedent. But how shall we cut the premise set down—what goes, what stays?

What goes and what stays can be specified by means of a *partition function* that groups all propositions holding in a given world into facts. A fact is a collection of propositions which are true of false together—these propositions cannot be true or false independently of each other.[36] Kratzer (1981a, ibid., emphasis added) notes: "In theory, there are many possible partition functions. But in practice, their range is restricted by our *modes of cognition*. The human mind doesn't split up the world in any arbitrary way. A further narrowing down of possibilities comes from the context of conversation." "As Kratzer explains in (Kratzer 1981a), the outcome [i.e. the propositional content of a subjunctive conditional sentence] depends on the way we *lump* items of information together in single premises or divide them between several premises. *Lumped items* stand and fall together, divided items can be given up one at a time. Hence if an item is lumped into several premises, that makes it comparatively hard to give up; whereas if it is confined to a premise of its own, it can be given up without effect on anything else." [37] There is a difference between a partition $f(w)$ induced by a partition function in w and an issue. While both are represented as a set of sets of worlds, an issue, we said, is a set of mutually disjoint sets of worlds; a partition, on the other hand, consists of sets of worlds which necessarily have worlds in common, for it must be the case that $\bigcap f(w) = \{w\}$. The reason for this fundamental although not essential difference is that a partition $f(w)$ describes the single world w, whereas an issue describes disjoint *alternatives*

[35] In the following, I will stick to the analysis of counterfactuals in terms of premise semantics. Lewis (1981) showed that this method of describing the truth conditions of counterfactuals is in principle equivalent to the ordering semantics' approach. —See footnote 44 for the ordering semantics' approach, which describes a counterfactual as a strict (modalised) implication: "It is necessary that ϕ implicates ψ." The crucial ingredient is a restriction of the ϕ-worlds by limiting the necessity of the implication to particularly accessible worlds only.

[36] Kratzer (1981a, p 211) introduces a partition function on a (contextual) set of worlds, which "assigns to every world 'what is the case' in it[.]" The partition value $f(w)$ for a world w is the set of all those propositions 'which are the case' in it; so $f(w)$ is a set of sets of worlds. Note that—different from the partitions discussed so far—these sets of worlds *do* overlap.

> A *partition function* is then a function which assigns to every world a partition of it. Formally, a partition function is a function f on W which assigns to every w in W a set of propositions such that $\bigcap f(w) = \{w\}$. [...] The notion of a 'fact' would then have to be relativized to a partition function: a proposition p is a *fact* of a world w with respect to a partition function f if and only if p is a member of $f(w)$.

[37] Lewis (1981, p 221, emphases added) again.

(sets of worlds).[38] However, an inherent property of both issues and $f(w)$ is the concept of *lumped propositions*: Propositions might not be lumped due to some kind of inter-subjective necessity but rather according to our "modes of cognition" or wishes (see above).

For an example of lumped and independent items in a partition, consider partition (3), p 172; this issue concerns the volitional background of a participant A. The partition consists of those alternatives which are considered by A. We can say that lumped items in (3) are e.g. "participant A travels to Rimini" and "A does not buy a tent": According to A's arrangement of his volitional alternatives, the intention not to buy a tent cannot be given up without also giving up the intention to travel to Rimini; similarly, A's intention to buy a tent cannot be given up without also giving up both the intention to travel to Alto Adige and the intention to travel to the Bretagne.[39] So, as before, I take participant-relative partitions to be a linguistically relevant parameter for those utterance situations whose representation includes counterfactuals. No other rationale behind the assumption of such issue partitions will be considered here.

The truth of a vague subjunctive conditional sentence in a world is determined relative to the available background of this world.[40] Following Kratzer (1981a), the background is specified through a partition function, representing for each world 'what is the case' in it in terms of lumped propositions.

What about the vagueness of the conditions in scheme 6.1? As for the first counterfactuals of (a) and (b), for which worlds the implication "If the questioner knows that ρ, then he would decide the issue by committing himself to alternative ψ_R" is meant to hold? Given merely the factual background, this cannot be answered straight away, because any world in which it holds that the questioner knows ρ is not compatible with this background. Since the conditional has to be evaluated relative to counterfactual worlds only, these worlds need to be derived first. As for (a), the problem in terms of premise semantics is: What is the premise composed of s.t. in every world that complies with this premise it is also true that "the questioner decides the issue by committing himself to alternative ψ_R"? In addition to the questioner's knowledge of ρ, what else has to hold for this to happen? Can the premise be specified more precisely?[41]

We can say more about this by turning our attention to the second contextual condition. The second counterfactual of (a) tells us under which circumstances a speaker of "*R* but *S*" assumes that the consequent "the questioner

[38] How to conceive of 'alternatives' is a conceptual matter, as we have seen; derived from Hamblin-style questions, issues are construed as a collection of mutually excluding sets.

[39] See Kratzer (1981a, 1989) for more elaborate examples of lumped and independent items.

[40] See Kratzer (1981a, p 212): "The variability and indeterminacy of the partition function determines the variability and vagueness of counterfactuals." Note that this does not mean that—because it is covert—the partition associated with the utterance of a subjunctive conditional sentence may not be a *specific* one.

[41] In the following, case (a) will be discussed; mutatis mutandis, the results apply to the second case (b) as well.

decides the issue by committing himself to alternative ψ_R" does *not* hold.[42] Therefore it gives us an item of information which—if added to the first counterfactual's premise—would make the first counterfactual false in the utterance context of R: the questioner's knowledge of σ.

The truth conditions of counterfactuals as proposed by Kratzer (1989, p 635) are:

(5) A 'would'-counterfactual with [the propositional] antecedent p and [the propositional] consequent q is true in a world w if and only if for every set in $\mathbb{F}_{w,p}$ there is a superset in $\mathbb{F}_{w,p}$ which logically implies q.

In an earlier formulation of premise semantics (Kratzer 1981a), the set $\mathbb{F}_{w,p}$ is implemented in terms of possible worlds. I will follow this account here. Thus, $\mathbb{F}_{w,p}$ is the set of *all consistent subsets* of $f(w) \cup \{p\}$ which contain p.[43]

Because the consequent of the second counterfactual is the negation of the first counterfactual's consequent (see footnote 42), the two counterfactuals cannot both be evaluated relative to the same partition.[44] So let f_R be a *partition function* relative to which the first counterfactual is interpreted; accordingly, let $f_R(w)$ be the function's *partition value* in w. Also, let us consider a separate partition $f_S(w)$ for the interpretation of the second counterfactual in world w.[45] Each partition is a set of facts, composed only of propositions true in w.

Let us look at the partition $f_R(w)$ first. Since the contextual conditions of scheme 6.1 must be interpreted relative to an utterance context that is in principle appropriate for the reply "*R* but *S*", it must be the case in w that the questioner does not know whether ρ. Let ϕ_R be this proposition that "the questioner does *not* know whether ρ". Thus there is a cell in $f_R(w)$ that consists

[42] The consequent of the second counterfactual is equivalent to the negation of the first counterfactual's consequent in (a) and in (b); in short:

(a) $\neg[\![$"A decides the issue [by ψ_R]"$]\!] \equiv [\![$"A does not (yet) decide the issue [by ψ_R]"$]\!]$.

(b) $\neg[\![$"A does not (yet) decide the issue"$]\!] \equiv [\![$"A decides the issue [by ψ_S]"$]\!]$.

[43] Kratzer (1981a, p 201). See footnote 36 for the partition function f. Furthermore, (5) can be understood more easily if we construe $\mathbb{F}_{w,p}$ as the set of all consistent collections of *facts* (from $f(w) \cup \{p\}$). However, I will uphold the set of worlds-notation for propositions.

[44] Lewis (1973, p 10) introduced a "centered system of spheres" to be able to process such a sequence of counterfactuals (with pairwise contradicting consequents) relative to a context that remains constant. (Example: "If Otto had come it would have been lively. — If Otto and Anna had come it would have been dreary.") A system of spheres centered around a world w is an ordering over accessibility relations for w. In the following, Lewis' counterfactual conditional operator "$\Box\!\!\rightarrow$" is rewritten as a strict implication, which makes explicit the modal embedding due to the necessity operator (ibid., p 4, pp 10f):

(i) $\Box(\phi_1 \rightarrow \psi)$.

(ii) $\Box(\phi_1 \& \phi_2 \rightarrow \neg\psi)$ or: $\neg\Box(\phi_1 \& \phi_2 \rightarrow \psi)$.

To make both counterfactuals (i) and (ii) true in a constant context (relative to one system of spheres), *different kinds of necessity* (spheres / accessibility relations) have to be associated with (i) and (ii). As for the premises in (i) and (ii), this means: there are no $\phi_1\&\phi_2$-worlds among the accessible ϕ_1-worlds in (i).

[45] At this point, it is essential that these partitions $f_R(w)$ and $f_S(w)$ are *distinct* from each other and that both partitions take for granted the same set of true propositions. The latter is ensured by f_R and f_S sharing their argument w. — However, it will be reconsidered whether it is adequate for our current purposes to assume two *separate partition functions* f_R and f_S in order to get just independent partition *values* for the first and the second counterfactual.

only of ϕ_R-worlds. This cell might be composed of still other propositions which are lumped with ϕ_R. But "the questioner does not know whether σ" (ϕ_S) need not—and, as we will see, must not—be one of those propositions lumped with ϕ_R. Although ϕ_S is another necessary contextual assumption for the reply *"R but S"*, ϕ_S constitutes a separate fact in $f_R(w)$, independent of ϕ_R:

(6) *An appropriate partition $f_R(w)$ for the first counterfactuals of* (a) *and* (b) *(see scheme* 6.1*), with*
$\phi_R = \{w : \mathfrak{Bel}(\mathsf{A}, w) \not\models \rho \ \wedge \ \mathfrak{Bel}(\mathsf{A}, w) \not\models \neg\rho\}$,
$\phi_S = \{w : \mathfrak{Bel}(\mathsf{A}, w) \not\models \sigma \ \wedge \ \mathfrak{Bel}(\mathsf{A}, w) \not\models \neg\sigma\}$*:*
$f_R(w) = \{\{\phi_R \cap \ldots\}; \{\phi_S \cap \ldots\}; \ldots\}$.

To construe the meaning of the first counterfactuals of (a) and (b), we need a representation of the worlds consistent with "the questioner *knows* whether ρ", $\neg\phi_R$. And to build $\mathbb{F}_{w,\neg\phi_R}$—the set of all subsets of partition $f_R(w)$ which are consistent with the antecedent's proposition $\neg\phi_R$—we must first discard all facts from the partition which are not consistent with $\neg\phi_R$. So the fact represented by the cell $\{\phi_R \cap \ldots\}$ will be discarded, whereas ϕ_S ("the questioner does not know whether σ") will not: there will still be sets in $\mathbb{F}_{w,\neg\phi_R}$ which contain ϕ_S. Discarding the cell $\{\phi_R \cap \ldots\}$ from partition $f_R(w)$ means that the questioner would decide the issue by choosing ψ_R, no matter whether he knows of σ or not. According to this partition in (6), the decision for a ψ_R is dependent on the questioner's knowledge of ρ, but it is independent of him knowing whether σ.[46]

What would an appropriate partition $f_S(w)$ for the second counterfactual of (a) look like? Again, the facts of $f_S(w)$ are composed of those propositions which are true in the utterance situation of *"R but S"*.

But although $f_S(w)$ is a partition of the same factual background, it can describe a significant change in the context as compared to the previous partition $f_R(w)$. In order to appropriately compile the facts from the same set of propositions for the new partition $f_S(w)$ (that is to apply after having uttered *S*), we must pay attention to new *hypothetical* assumptions: Besides ψ_R ("the questioner does not know whether ρ"), also ψ_S has to be discarded to conceive of the new hypothetical background correctly. That is, the questioner will also have knowledge of σ.—Let us turn to the contextual conditions of *"R but S"*in 6.1. As for the first counterfactual in (a) or (b), we have to discard the fact that entails ψ_R. But as for the respective second counterfactual, we will additionally have to discard the fact that entails ψ_S. Furthermore, scheme 6.1 requires that the counterfactuals' consequents are inconsistent with one another. Now,

[46] Here we can draw a parallel between the relevance of (the questioner's knowledge of) some such σ and the relevance of individuals which are not included in a question domain of a wh-question: The truth of any proposition σ that is not lumped with the answer ρ according to a given partition does not play a role in identifying (choosing) an alternative from the issue, i.e., it does not play a role in deciding the issue. Similarly, it does not play a role in identifying the answer to the wh-question whether any individual not in the question domain is a truthful question satisfier or not: These individuals do not play a role in solving the question. Assuming that a context provides a question domain (due to a wh-question) or a partition (due to an issue), there is a parallel between the question domain and a lumped set of propositions as to how an answer / decision is identified.

what exactly is the role of lumping here? Lumping the propositions ψ_R and ψ_S differently in $f_R(w)$ and $f_S(w)$ just *enables* these two counterfactuals with contradicting consequents to be true in one and the same context, which is the factual background of "R but S". (Viz. the following sequence of two counterfactuals and also see footnote 44: "If Otto had come it would have been lively. — If Otto and Anna had come it would have been dreary.") And this change in the partition from R to S mirrors the different behaviour of A w.r.t. epistemic states after having learned these two parts of an answer respectively.

Let us construe $f_S(w)$. Is $f_S(w)$ the very same partition as $f_R(w)$, then? This will not do, because after having discarded the fact $\{\phi_S \cap \ldots\}$ the premise "the questioner does not know whether ρ" would still be available as a possible auxiliary premise.[47] However, having uttered R beforehand, this cannot be the case for any utterance situation of S in a context "R but S": In every such utterance situation of S the questioner already knows that ρ. How to account for this? The partition $f_S(w)$ must be such that both ϕ_R and ϕ_S are discarded then. Therefore the partition $f_S(w)$ must have the property shown in (7): ϕ_S lumps ϕ_R. That is, although both $f_R(w)$ and $f_S(w)$ comprise the same propositions, which take part in the factual background of the utterance of "R but S" ($\bigcap f_R(w) = \bigcap f_S(w) = w$), the partitions lump these propositions into facts in different ways. Thus, $f_R(w)$ and $f_R(w)$ nevertheless distinguish between two different situations relative to which an utterance of "R but S"is interpreted.

(7) *An appropriate partition $f_S(w)$ for the second counterfactuals of* (a) *and* (b) *(see scheme* 6.1*), with ϕ_R and ϕ_S as in* (6)*:*
$f_S(w) = \{\{\phi_R \cap \phi_S \cap \ldots\}; \ldots\}$.

When partitioning the background of "R but S" like this, the utterance of S will discard ϕ_R too. All possible premises of the consequent have to be compatible with the opposite of ϕ_S, as well as with the opposite of ϕ_R. And so the second counterfactual makes a statement about certain $\neg\phi_R\&\neg\phi_S$-worlds only: In all of these worlds the questioner does not (yet) decide the issue (by ψ_R). Note that the considered $\neg\phi_R\&\neg\phi_S$-worlds might be restricted further by lumping even other propositions to form the set $\{\phi_S \cap \phi_R \cap \ldots\}$, which is the fact that will be discarded through the utterance of S. What other propositions can constitute the fact $\{\phi_R \cap \phi_S \cap \ldots\}$? This may depend on the considered context that is subject to the partitions $f_R(w)$ and $f_S(w)$: If the common context is compatible only with what the law provides, with what rational behaviour of the participants predicts, etc., then certain possibilities might be excluded from the outset. So, a participant might not be allowed to act in a certain way μ any more knowing that ρ or that σ. Then the possibility of μ must be discarded together with ϕ_R or ϕ_S. In other words: If a participant knows that ρ or that σ, then he necessarily does not act in the way μ. (Viz. the various modal bases for the necessity / possibility operator).

[47] That is, irrespective of his knowledge of ρ, the questioner would *not* decide the issue by choosing ψ_R.

What is more, there is no conflict between this second counterfactual (relative to $f_S(w)$) and the preceding one (relative to $f_R(w)$): By interpreting these subjunctive counterfactual conditionals relative to different but related partitions, the counterfactuals can both be true; thereby the contextual felicity conditions for *"R but S"* can be met.

6.2.1.2 The 'Perspective'

When providing the quantifier domain of a wh-phrase, we saw that *a perspective disambiguates* a reply *"R but S"* by specifying its context: in terms of the class of questions that *R* is meant to address or, in particular, is not meant to address (see 4.2). Involved in the shift of the perspective by "but *S*" is a comment on the appropriateness or inappropriateness of the reply as a direct answer in different contexts (which the answerer considers possible). The possible contexts differ with regard to the question domain that is taken to be at stake in the utterance situation of *"R but S"*.

Turning to issues now, possible utterance contexts can differ with regard to the set of those propositions which constitute the single fact that is taken to be connected with the answer: What does the fact that is taken to be discarded due to *the utterance of* the answer look like? In (6) and (6) we saw that scheme 6.1 requires specific partitions for an utterance of *R* and of *S* . How can we relate the term 'perspective' to these partitions? A perspective is a contextual parameter which for any world in the context determines the appropriateness in that world of a given reply. And the issue-related appropriateness of a reply for a world depends on whether the contextual conditions of scheme 6.1 hold in it. So we can say that an issue-related perspective is given in terms of a contextually available issue, modelled according to this scheme. Therefore the different partitions $f_R(w)$ and $f_S(w)$ play a crucial role. Note that, however, the crucial point is that the partition function *values* for *R* and *S* differ; it does not seem to be essential that these values are due to two different partition functions f_R and f_S .

The definition of the term 'perspective' in (47), p 115, was not limited to domains of potential question satisfiers only. So we can adopt this definition as it is, repeated in (8) . Taking a specific issue-related perspective means to lump a specific set of propositions so that this set is considered a fact. In any world for which such a lumped set of propositions is considered a fact, this fact describes something that is the case in this world actually—and not just a possibility. A unique perspective can be assigned to each possible world:

(8) A *perspective* $\chi\Phi$ is the choice function that chooses a domain Φ from a contextually given set of possible domains.

But what is more important now: What does it mean to take a perspective relative to a context set of worlds? Taking a perspective $\chi\Phi$ for some context *C* means: $(\forall w_0, w \in C)\,(\,'\chi\Phi \text{ in } w_0' = '\chi\Phi \text{ in } w'\,)$; to every world in *C* the same perspective is assigned. And since a perspective describes a set of lumped propositions, it makes up a *fact* of a partition. Nota bene, a perspective does not

totally specify a partition. It just specifies a single fact of it; that is, a perspective specifies that class of partition functions which all have the perspective's fact in common. Furthermore, we must determine what it means with regard to the corresponding class of partition functions if a perspective $\chi\Phi$ is taken for a comprehensive set C of possible worlds. It means that any partition function f considered for C must be such that $(\forall w \in C)(\chi\Phi \in f(w))$: For every world from C, the partition determines the perspective $\chi\Phi$ as a fact. This implies two consequences:

1. A perspective taken for a world w can only contain propositions true in w.
2. The partition of worlds from C may differ in some or even all other facts but the perspective's fact.

And note that changing the perspective does not mean to also change the set of worlds considered possible; it just means that there is at least one proposition that is assigned to some other fact in all of the worlds considered. And again, a perspective can be conceived of as an *index parameter* (see p 116): Determining a partition function, a perspective is relevant to the meaning of any subjunctive counterfactual conditional if its consequent takes part in the perspective. The counterfactual's meaning in a world w cannot be determined without knowing the fact that includes the consequent's proposition in w (see Kratzer (1981a)). The value of this index parameter 'perspective' depends on the utterance situation of a counterfactual like "If the questioner were to know whether . . . , then he would . . . ". But what else can we say about the perspective's content in the present case?

What about the possible domains, i.e. the possible facts of a perspective? The partitions (i.e. the partition function values) '$f_R(w)$' and '$f_S(w)$' differ in particular in the one fact which lumps the proposition that the questioner does not know that ρ. As for '$f_R(w)$', ϕ_S is not entailed by the fact so described; but as for '$f_S(w)$', ϕ_S belongs to it: ϕ_S and ϕ_R (and possibly other propositions as well) form one fact in this partition. Because (i) the totality of all facts of any partition $f(w)$ (in any world w) entails those propositions which are true in w, $\bigcap f(w) = \{w\}$, and (ii) any partition associated with R or with S serves to interpret a counterfactual (of scheme 6.1) relative to the factual background of the utterance "R but S", all the partitions playing a role here can consist only of those propositions which are considered possible in the utterance situation "R but S". Thus, any partition function that might be involved in a specific issue taken for granted, as for instance by the utterance of "R but S", must partition worlds of the set of worlds still considered possible in this situation.

Let us now take a look at the utterance situation of "R but S". To be able to give an appropriate issue-related answer it might be important to know a particular property of the actual context, or at least—in case this property is not known—to indicate to the questioner which kind of context the answer is appropriate for. By providing a distinct partition for each world, a partition function can distinguish e.g. between those two classes of worlds here: between worlds from the context set in which the questioner decides an issue by ψ_R (knowing that ρ) and those worlds in which the questioner does not do so

(knowing that both ρ and σ hold). In every world of the former class the partition function would yield a partition s.t. ϕ_R and ϕ_S are *not* lumped together, whereas in a partition for a world of the latter class ϕ_R and ϕ_S do constitute a single fact—see the partitions '$f_R(w)$' and '$f_S(w)$' in (6) and (7).

Now we can say that a chosen domain Φ of perspective $\chi\Phi$ correlates with a particular sort of partition of the context set of "*R* but *S*". As with any fact in some world w, the fact that is represented by the perspective is composed of propositions true in w. Because propositions which constitute one fact "stand or fall together", a fact can for our purposes be represented as the intersection of its propositions (these being sets of possible worlds) or, equivalently, as their conjunction; see Kratzer (1981a, pp 208f).[48] According to the first counterfactuals in (a) and (b) of scheme 6.1, it is necessary that the fact provided by the perspective lumps the proposition ϕ_R. And according to what the antecedents of the second counterfactuals tell us, the perspective must entail the proposition ϕ_S as well; see '$f_R(w)$' and '$f_S(w)$'.

We can thus conceive of a perspective as a set of sets of worlds or as one set of worlds: By "lumping" the propositions of a collection $\Phi = \{\phi_1; \phi_2; \ldots\}$, we arrive at its representation as a single fact $Fact_\Phi$: $Fact_\Phi = \bigcap\Phi$. Note that by extending a perspective $\chi\Phi$ (by adding other propositions) we *expand* its propositional representation Φ *but reduce* the set $Fact_\Phi$.

Analoguous to the adequacy of a perspective of possible question satisfiers (cf. (48), p 116), we can determine what an '*adequate issue-related perspective*' is. To do so, we generalise from the counterfactual conditionals of scheme 6.1, which represent an issue. For these counterfactuals to be used appropriately, their partitions must account for the fact that the content of the replying utterance is not yet known to the questioner. If we want to define an adequate perspective to be a fact of this sort, then there are three aspects of the context which must be taken into consideration: the issue, the factual/epistemic background of the answerer, and the conversational effect of the answer.

(9) *Adequate Perspective $\chi\Phi$:*

The fact $\bigcap\Phi$ of an *adequate perspective* $\chi\Phi$ taken for a directly answering declarative A (in an issue context) entails: The questioner does *not* know whether α.[49]

This component of any adequate issue-related perspective for A (that "the questioner does not know whether A") is also a felicity condition for the utterance of A as a direct answer (see (33), p 105). Furthermore, are all possible

[48] I assume here that nothing hinges on the issue of what *atomic* facts are. Atomic facts would be facts which are not be decomposable any more; cf. Kratzer's discussion on atomic facts (1981a, p 203). Nevertheless, one can argue that the propositions which play a role in the meaning conditions of counterfactuals are s.t. they are "graspable by humans" (Kratzer 1989, p 635). I will not go into this here; so no such appropriate fact-constituting propositions are distinguished from inappropriate ones, although the property 'being graspable by humans' seems to be essential for propositions which distinguish partitions and which in turn determine the distinct *meanings* of counterfactuals.

[49] α is the proposition conveyed by means of A; both participants agree on that propositional content of A. So by means of A, α is added to the common ground, thus it is part of both C and C'. (C is the questioner's conception of the common ground, whereas C' is the answerer's conception of it.)

perspectives made up of assumptions about the beliefs of the questioner? As long as the underlying issue depends only on the questioner's current beliefs, an adequate issue-related perspective must take these into account: for some factual state of affairs cannot have any influence on the questioner's decision-making unless it is known to him. This is a consequence of the issue model in scheme 6.1 . The scheme follows from the specific conversational setting: The questioner is in charge of a decision based on the information he has, whereas it is the answerer who has control over an update of the common ground—at least so far as the question's subject-matter is concerned.

6.2.2 Issue-related Inconsistency

To derive 'issue-related inconsistency', let us first consider a pair of a wh-question and a direct answer without the supplement with "but S". A counterfactual then models the contextual conditions that an issue-related answer has to meet in order to be appropriate; e.g.: If the questioner were to know that ρ then he would decide the issue by committing himself to some specific ψ_R . The counterfactual represents a possible issue in those contexts where R answers a given question. How must R be related to ρ in order to be a felicitous answer? Scheme 6.1 merely states that ρ is the proposition conveyed through R . But there is more to say about this, since the interpretation ρ of R is relevant to the distinction 'issue-related inconsistency' vs. exhaustivity-related inconsistency. To see why, consider the mismatch hierarchy (4), p 133, according to which it is a wrong belief that causes a wrong decision; a wrong belief can be caused by a domain mismatch. That is, a wrong decision is caused by B's misconception of the question and, in turn, by A's misconception of the reply. However, I will not label this consequence of a domain mismatch 'issue-related inconsistency': The aim is to describe 'issue-related inconsistency' independently of a question domain mismatch. Recall that this aim is justified e.g. due to the fact that the use of but in examples like (18), p 157, cannot be explained by means of exhaustivity-related inconsistency; and it is justified because there have been doubts as to whether the causal chain in (4), p 133, is adequate, see p 159 . Therefore it will now be taken for granted at the outset that the answerer understands the question and knows the question domain. But as we will see, this does not exclude the possibility of a different kind of misconception of the answer, leading to a wrong belief, a defective common ground, and possibly a wrong decision. So what does it mean for an answer to address a contextual issue properly, and how can 'inconsistency' w.r.t. the issue be modelled separately from exhaustivity-related inconsistency?

Because it already turned out that an exhaustivity-related inconsistency can cause some wrong decision due to a wrong belief, let us see what it takes for an issue-related interpretation to lead to a wrong decision. Therefore the following working assumption is justified: First, we exclude the familiar misconception of the question domain by assuming that both participants interpret R in the same way: Both parties' interpretations of R entail ρ . The answerer

ensures that by R all question satisfiers of the domain D are covered, i.e., his exhaustivity-related perspective is consistent with the question Q_D intended by the questioner (see (5), p 137). The questioner then interprets R as exhaustive answer to his question Q_D, relative to his question domain D. In short, from hearing R the questioner knows the (exhaustive) answer to Q_D, which is ρ. Having uttered R, the answerer's as well as the questioner's conception of the common ground (C' and C) entails ρ. In this respect, C' and C are non-defective.[50]

Next, the common question context is supplemented with an issue. Whereas both participants presuppose the same question (when giving the answer or interpreting it), the *issues* they presuppose *might differ*. So both participants relate the answer to the issue that they presuppose respectively. While sticking to the role of ρ in scheme 6.1, there are two possibilities for ρ to address the questioner's issue, e.g.: If the questioner were to know whether ρ, then he would decide the issue by committing himself to some specific ψ_R.[51] We said before that the answerer's perspective taken for R includes one fact that entails the proposition "the questioner does not know whether ρ". But moreover, to address the issue adequately the answerer must take care to consider all the premises lumped together with "the questioner does not know whether ρ": Does knowing ρ make the counterfactual above true under the current circumstances? What other propositions are lumped with "the questioner does not know whether ρ", according to the questioner's original issue? Finding an appropriate perspective amounts to *disambiguating* the counterfactual above: Which partition function does the questioner's intended issue ascribe to the counterfactual above?

But knowing the partition function for the counterfactual implies the knowledge of a lot of facts: The answerer then needs to know *everything* that the questioner believes to be the case in the actual situation, i.e., he needs to know what the questioner takes to be the factual background. However: (i) This is not possible actually. (ii) If the answerer were to know all this, he would probably be in a position to know the issue too. Thus it is reasonable to suppose that the answerer takes the following to hold:[52] Any proposition that is entailed by the perspective he considers is consistent with the questioner's factual background. This prerequisite provides a particular discourse setting: The relevant factual background considered by the questioner and the answerer for their issue respectively are not controversial nor "at issue"; nor is there any misconception about this background.

So for now, the answerer only faces the problem of properly choosing all those propositions from his own factual background which will then serve as his perspective; his concern is not whether these propositions are indeed true according to the questioner's factual background. Furthermore,

[50] Similarly, σ is the proposition conveyed through S (in *"R but S"*): S has been intended to convey σ and—by the utterance of S—C does in fact entail σ; so does C'.

[51] The second way for ρ to relate to the issue is given in case (b) of scheme 6.1: The questioner might not (yet) decide the issue, given just ρ.

[52] The following supposition is reasonable because more often than not an issue behind a question is to some extent comprehensible to the answerer—although the answerer might not *fully* comprehend the factual background which the questioner takes for granted.

another important preliminary assumption is that the lumped propositions the answerer chooses are true and that all propositions of this fact do truthfully fall if the questioner learns the answer:[53] As to the dependent circumstances of "the questioner does not yet know whether ρ", the answerer is in authority.[54] To say more about the alignment of this perspective held by the answerer with the questioner's perspective and his intended issue, let us label the *answerer's perspective* $\chi\Phi$; then the questioner's set of propositions which are relevant to his decision on the grounds of ρ is F.[55]

Similar to the discussion of the various possible inclusion relations between the domains δ and D (see chapter 5 and fig. 5.1, p 129), let us see what it means if there are propositions which are considered either only by the questioner or only by the answerer.[56] (The context sets C and C' of the questioner and the answerer are taken to be consistent at least.) In the first case, the questioner's perspective χF contains propositions beyond Φ, $F\backslash\Phi \neq \varnothing$; in the other case, the answerer considers propositions not in F, $\Phi\backslash F \neq \varnothing$. Let us analyse both cases separately:[57]

a) ($p \in F\backslash\Phi$.) Here it is questioner A whose perspective takes propositions into account which the answerer ($\chi\Phi$) does not. That is, there are propositions which are, according to the questioner, dependent on "I do not yet know the answer" but, according to what the answerer rightly thinks, these propositions are not dependent on it: Either C' does not entail p or it is entailed by C' but not correlated with telling the answer. Now, according to A, the answer makes those propositions in $F\backslash\Phi$ falling, while they might still be true according to the background of the answerer. Here the questioner's reading of the answer can lead to a belief that is inconsistent with B's background. But, what is more, mistaken propositions take part in the questioner's issue: According to the counterfactual representing the questioner's intended issue and his conception of the answer as solving it, his updated context C of possible worlds is s.t. the counterfactual's consequent must hold. That is, having learned the answer the questioner thinks that the decision given by the counterfactual's consequent is in any case justified by B's answer.

   If p is not entailed by C', both participants' contexts can still be consistent with each other and so can χF: If there is no $p \in F\backslash\Phi$ that holds in the actual

[53] Note that this corresponds with an assumption in our previous account of exhaustivity-related inconsistency: No matter what domain the answerer chooses and considers, the (exhaustive) interpretation of his reply under this perspective results in a proposition that is true according to the current state of affairs, cf. e.g. p 136.

[54] This is a strong assumption. However, it does not mean that the questioner is forced to adopt this perspective. If he intentionally keeps up the original issue's perspective, then the questioner and the answerer may end up with contradicting contexts.

[55] Accordingly, the *questioner's perspective* χF is that fact from his partitioned factual background which entails "he (the questioner) does not yet know whether ρ".

[56] If a proposition p under consideration is element of F and also of Φ, then there is no problem whatsoever: Both participants take p to be the case now and also to fall when the questioner learns the answer (and rightly so).

[57] Note that both cases do not exclude each other. In a question-answering situation there can be propositions considered only by the answerer and at the same time propositions considered only by the questioner; also cf. the corresponding case (d), p 132.

world, then the interpretation of R relative to χF cannot result in a wrong belief. Note that this implies that before A learned (his interpretation of) the answer—and not noticed by B — A has been believing something that has been false. We add the consistency conditions of this case, too.

So, if $\chi\Phi$ is consistent then it either holds that $F\backslash\Phi = \varnothing$ or of all $p \in F\backslash\Phi$ it holds that they are not entailed by C' and that they are false in w_0 and $\mathfrak{Bel}(\mathsf{B}, w_0)$.

b) ($p \in \Phi\backslash F$.) With his answer B considers some propositions p which, according to the questioner's background, are not together with "knowing the answer" lumped in one fact, $p \in \Phi\backslash F$. Does this configuration do any harm? According to answerer B's perspective that he has chosen by assuming a specific issue, all propositions in Φ fall as soon as the questioner learns the answer. And so the answerer's own background will not be compatible with the fact $\bigcap\Phi$ any more, because he knows that the questioner now knows the answer. According to questioner A's epistemic background and its partition, however, propositions which do not take part in his perspective χF are not touched by "I learn the answer to my question". Now the questioner might mistakenly believe something that is not the case any more. Under which circumstances does it happen? And does it matter then?

It happens if p follows from A's background, i.e., if the questioner believes beforehand that p. Then p is part of a fact that is *independent* of "I do not yet know whether ρ". But since such a $p \in \Phi\backslash F$ actually[58] depends on the fact that "the questioner does not yet know whether ρ", the questioner's belief that p still holds is wrong. On the other hand, if the questioner's background is s.t. p is just a possibility, then p is still possible after having learned the answer. In this case according to A's partition, p is not independent of but rather totally *unrelated* to learning the answer: A p like this does not take part in any fact of A's partition. And so, *no* such p can cause the questioner's background to become inconsistent with the actual state of affairs—whereas a p that (still) follows from the questioner's background means inconsistency with the actual state of affairs. Do propositions p which are, according to the questioner's perspective, *independent* or *unrelated* matter as to the issue?

This abstract analysis should be supplemented with a real-life example:

(10) A: Do the border guards change their posts?
B: Yes. Once a day, tomorrow at three o'clock.

Is B's truthful answer useful in the sense that A now knows how to decide his issue—and would this decision correspond to his intention? The situation matters: It is A's plan to use the information gathered to escape

[58] Recall that we take the answerer to be competent in compiling facts: Any proposition taking part in his perspective $\chi\Phi$ is truthfully correlated with the fact that "the questioner does not yet know whether ρ".

from, say, a country. Let us take it that the answerer apprehends the questioner's issue so far. He wants to be co-operative, too. Furthermore, B knows that a third party, a secret informant, is listening to their conversation; this is not noticed by A . Does the answer, under these circumstances, fit A's purposes? Would A use the answer to decide on the time and place of his escape if he also knew that a secret informant is listening to them? Being a rational agent and pursuing his goal, A should for instance take for granted that "no informant knows whether I know of an opportunity to escape" is *independent* of "I do not yet know of an opportunity to escape". And a co-operative answerer must take care of this serious misconception about the actual question–answer situation. "No informant knows whether A knows of an opportunity to escape" and "A does not yet know of an opportunity to escape" are *not* independent facts but do both fall when the answer is given in the situation of (10) at stake: As soon as A knows the answer, also the listening informant knows that A knows of an opportunity to escape. In short, the answer (10)B is not useful, because the questioner would make a different decision on the details of his escape if he also knew that a secret informant is listening. And note that the answer is not useful either if A considers "no informant knows whether I know of an opportunity to escape" to be actually *unrelated* to his issue: Any proposition that B lumps with this fact does indeed fall when A learns the answer.[59] However, under severe circumstances like these (where p reasonably seems to play a decisive role in the questioner's decision-making), a rational questioner must be taken to believe such a p to hold. Then the questioner's fatal mistake w.r.t. the issue can be not to regard p as an actually dependent circumstance of not knowing the answer.

But note that not all propositions $p \in \Phi\backslash F$ necessarily affect the questioner's decision-making. Although the example (10) is very clear in this respect, a more concise perspective, supplemented with further dependencies, may include information that the questioner does not want to take into account. So, the effect of $p \in \Phi\backslash F$ on the decision-making is not due to logical reasons but due to the questioner's private judgement. Nevertheless, a co-operative answerer, who apprehends the primary purpose of the question, must take care of this: There can be dependencies p s.t., in order to be co-operative, B is obliged to point out p's existence or dependence—otherwise he would act carelessly. But to take care of this, the answerer has to apprehend the primary purpose of the question and has to have sufficient reasoning capabilities and world knowledge to un-

[59] In the example (10) at hand, the questioner would make an unintended decision due to a *lack of knowledge*—he does not know that a secret informant is listening. But being a rational agent, he is taken to (mistakenly) believe or assume that no informant knows that he knows of an opportunity to escape. But there is still another reason why an unintended decision might be made: The questioner might be ignorant about related facts at all—facts which should *reasonably* be lumped with "the questioner does not yet know the answer to his question" in a given question–answer situation. Then, according to the questioner's background, these propositions are just a possibility and he does not see that these are not possible any more once he learned the answer.

derstand the intended decision-making of his interlocutor. To conclude, by considering propositions $p \in \Phi\backslash F$, the answerer can address the *issue* in this way: *Does the questioner take enough circumstances of learning the answer into account and does he know of them at all?* And so, by making the perspective more concise, the answerer can offer a refinement of the antecedent of the questioner's issue. Some refinements may be more serious than others, see (10), and some may be needless at all. But generally, the answerer must care about situations where propositions $p \in \Phi\backslash F$ are believed by the questioner to be independent facts.

How to deal with this situation? The consistency of $\chi\Phi$ seems to depend not only on A's F, but also on whether A believes the propositions $p \in \Phi\backslash F$ to be the case.

Now we can say what a *consistent perspective* of the answerer in an issue context is. In (b), the questioner might not consider enough circumstances that actually depend on giving the answer: The situation becomes critical if there are dependent circumstances of which the questioner thinks that they are independent. Then he would believe in something that is wrong and would not make the decision he had in mind under the current circumstances. And the discussion of (a) revealed that the situation also becomes critical if there is an actually independent proposition of which the questioner thinks that it is a circumstance depending on learning the answer.

(11) *Consistent Perspective $\chi\Phi$:*

An adequate *perspective* $\chi\Phi$ taken for answer A *is consistent* in an issue context represented by a counterfactual (whose partition contains $\bigcap F$ as a fact) and reference worlds W_{ref} iff

a) $F\backslash\Phi = \varnothing$ or
$(\forall p \in F\backslash\Phi)\,(p \cap W_{ref} = \varnothing)$ [60]

and

b) $(\forall p \in \Phi\backslash F)\,(\mathfrak{Bel}(\mathsf{A}, w_0) \not\models p)$. [61]

The set W_{ref} consists of B's factual background of the counterfactual that represents the issue at stake, so W_{ref} will usually be the actual answerer's belief $\mathfrak{Bel}(\mathsf{B}, w_0)$. The condition (11)(a) is quite parallel to the conditions of (5), p 137. There is the additional condition (11)(b), however. This condition is necessary because all dependencies the answerer considers with the fact $\bigcap\Phi$ are taken to actually apply. And since this fact falls, it must be ensured that circumstances considered only by the answerer do not result in a wrong belief of the questioner. This is exactly what (b) requires.

[60] Additionally, no p may be entailed by C' in order for C and C' to be consistent with each other.

[61] As to (b), $\chi\Phi$ is inconsistent if it does not correspond with the originally intended issue of the questioner. But note that the answerer may intentionally take a perspective $\chi\Phi$ that is inconsistent due to condition (b).

6.3 Conclusion

6.3.1 The Inconsistency Condition

In what way does the use of but in an answer of the form *"R* but *S"* relate to the consistency property of (11)? We have seen that a perspective taken by the answerer is inconsistent if

- the answerer considers just not enough propositional premises or,
- in case he does, the propositions which he additionally considers in his perspective are true according to the questioner's intended factual base of the issue, i.e. according to the factual background of the counterfactual representing the questioner's intended issue.

Again, the immediate goal of a co-operative answerer will be to prevent a misconception of his answer with regard to the intended issue.[62] In other words, he will try to take a consistent perspective. Or, not knowing which fact $\bigcap F$ does apply in a given question-answering situation, he can indicate what sort of perspective associated with R he would consider inconsistent. To do so, the perspective associated with "but S" must be such that it is inconsistent when associated with R, according to (11).

Parallel to the method described in chapter 5, the answerer can extend the perspective by "but S" in a particular way. Note that 12 does not relate $\chi\Phi$ and $\chi\Phi'$ with particular backgrounds. 12 just implies that the speaker of *"R* but *S"* presupposes perspectives with those properties.

(12) *Conditions for the use of but:*

But is felicitously used in an utterance of the form *"R* but *S"* in an issue context represented by a counterfactual with a factual background W_{ref} iff

a) there are (adequate) perspectives $\chi\Phi$, $\chi\Phi'$ associated with R and S respectively s.t. $\Phi \neq \Phi'$ and

b) whereas R (i.e. ρ) decides the issue whose antecedent corresponds to $\bigcap\Phi$, perspective $\chi\Phi'$—although adequate for R too—is *not consistent* with R:

Deciding the issue on the grounds of R relative to a partition that supplies $\bigcap\Phi'$ as a fact contradicts the reference worlds. [63]

For any extension of the current perspective by "but S" this means: A perspective $\chi\Phi$ that is adequate for R contains the proposition that the questioner does not know whether ρ, but it does *not* contain "the questioner does not know whether σ". — Whereas a perspective $\chi\Phi'$ adequate for S has to include "the questioner does not know whether σ"; since $\chi\Phi'$ is also adequate for R,

[62] However, an answerer who wants to be helpful might also propose a refinement of the original issue, see (b), pp 195ff.

[63] To be more precise, a contradiction arises by assuming that R solves the issue that is represented by the corresponding counterfactual with antecedent $\bigcap\Phi$. In other words, a contradiction arises by assuming that the corresponding counterfactual with antecedent $\bigcap\Phi$ holds true in all worlds still considered possible.

it rather includes "the questioner neither knows whether ρ nor does he know whether σ".

Inconsistency of $\chi\Phi'$—if associated with R—comes about in case R is interpreted against the background that the questioner knows neither ρ nor σ: Under this perspective, the questioner's knowledge of ρ (due to R) also causes "the questioner does not know whether σ" to fall. But according to W_{ref}, it is still true that the hearer does not know whether σ. The hearer, on the other hand, would think that he himself does know.

How is this analysis related to the exhaustivity-based approach? It can be expected that the inconsistency condition defined in (12) is *more general* than the exhaustivity-based one. For this reason, (12) should apply in any case where (9), p 140, does. In what way is the former condition met through the latter one? Let us go straight to an example ((20) of page 158 is repeated here as (13)) that has been problematic, since the use of but could not be explained by way of the exhaustivity-based account here:

(13) B: Richard is going, but Susan isn't.

R = "Richard is going"

δ = {Richard}

D = {Richard; Susan}

$Exh(R, D) \models_C [\![$"Susan is not going"$]\!]$

$\models_{w_0} [\![$"Susan is not going"$]\!]$

$\Longrightarrow$ Due to $Exh(R, D)$, A would decide not to go to the cinema.

S = "Susan isn't"

$\Longrightarrow$ A decides not to go to the cinema.

Although this is a felicitous reply, it does not meet the exhaustivity-based inconsistency condition (9), p 140. We face this problem with any phrase "but S" that mentions non-satisfiers in a question-answering situation. However, the use of "but Susan isn't" can be explained if an issue is assumed which motivates the following perspectives associated with R and S respectively:

Φ = { the questioner does not know whether ρ; ...} [64]

Φ' = { the questioner does not know whether ρ, nor whether σ; ...}

Inconsistency in (13) then comes about if R is regarded as a solution to an issue that is defined as a counterfactual with a fact $\bigcap\Phi'$ in its partition. By "but S", the answerer *extends* his perspective $\chi\Phi$ associated with R. $\chi\Phi$ is consistent for R because an issue that is indifferent as to whether Susan is going or not would be properly solved with R. Not so an issue with a fact $\bigcap\Phi'$ in its partition.

It should be noted that the inconsistency condition (12) and the discussion of the issue-related account that led us there, are based primarily on

[64] Φ does not contain "the questioner does not know whether σ", which is independent of this fact $\bigcap\Phi$.

the subcase (a) of the issue-related context scheme 6.1, p 181 . However, the discussion equivalently applies to subcase (b) as well.

Because this issue-related approach turned out to be more general than the account that merely takes the exhaustive interpretation of a reply into account, in many if not all uses of but some kind of issue must be presupposed. What is more, in many cases—in particular in those cases where exhaustivity-related inconsistency cannot be derived—issue-related inconsistency does not correlate with exhaustivity-related inconsistency. That is, both kinds of inconsistency are independent of each other. However, it turned out that issue-related inconsistency is the more fundamental form and that exhaustivity-related inconsistency seems but an epiphenomenon: It is the primary goal of solving an issue that might require an exhaustive interpretation relative to some specific domain.

6.3.2 Postscript: The Argumentative Use

The setting applied in this chapter does not allow to relate the inconsistency condition to argumentative uses of but straight away. With these uses, different preconditions have to be taken into account. What is different there?

- The issue must be provided contextually. It is not covert.
- One participant prefers a specific decision, but his opponent does not: either because he prefers a decision that excludes the other decision; or because he does not prefer any decision on the issue (by now).
- The decision space at stake is a background shared by both participants.

The aim of arguing is not to leave the decision to the participant, but to *convince* him to adopt one's own specific preferred decision. However, an argument is convincing only if the opponent accepts an assertion as an argument for this preferred decision. Therefore, a speaker will choose an argument that is per se uncontroversional. Furthermore, a good argument will be a lumped part of a fact which consists of lots of other appropriate propositions out of the assumed factual background *of the opponent*: Once the argument is accepted by the hearer and thus known to him, those propositions which are lumped with "the hearer does not know the argument" will be given up, too. The criterion for a good argument is to choose an assertion s.t. its acceptance forces the hearer to abandon / to accept such other propositions—in the end accepting even the decision that is preferred by the speaker.

An important common feature of the discussed question-answering situations and an argumentative setting seems to be that the (answering or arguing) speaker tries to *adopt a perspective that is in accordance with the factual background of his dialogue partner*. Whether the speaker tries to reach a specific decision or not then distinguishes between these two uses.

Note that this use is similar to (10), discussed in (b), p 195 . With "but *S*" the speaker mentions circumstances which will result in a perspective inconsistent

for R. In case S is just a proposal, the speaker supposes that the dialogue partner regards these circumstances as independent of the fact associated with "not knowing whether R" and he also supposes that inconsistency results—whereas a speaker who pushes forward an argument should be sure of this inconsistency.

In both cases, however, the issue considered by the other participant (i.e. the hearer) will be modified by supplementing its antecedent with further dependent circumstances. In other words, the speaker of "but S" tries to make the hearer aware of circumstances which he (i.e. the hearer) thinks are independent of the fact associated with "not knowing whether R" or which are just open possibilities to him. This may affect the hearer's decision-making. However, the argumentative use presupposes a previous assertion R by the hearer, because R is conceded; whereas in a question-answering context, R is an answer. So, in order to deal with the argumentative use in the proposed framework, we must pretend that a question-answering situation applies where the speaker of "R but S" is in authority to push forward an answer to a given question.

Chapter 7

Concluding Remarks

Concluding now, let me resume some central aspects of the approach proposed in this thesis.

The approach to but that has been followed in this thesis stresses one aspect: There are particular utterance situations which aim at the exhaustivity of utterances in some form. The focused aspect is whether utterances in these situations *completely* satisfy specific informational needs, which may be laid down in a question or in an issue plus the questioner's criteria for deciding it. At stake in a given situation then is: Does an utterance satisfy these needs completely? Such needs define a shared goal in a discourse. In the settings of chapters 5 and 6, the goal is already established by the counterpart of the interlocutor who utilises but; the speaker just adopts the goal that his counterpart established. In other settings this might be different, though.

Turning to the interpretation of an answer, it is important to note that in the end the hearer decides on the relevance of *S* in "but *S*". The hearer determines what the informational needs behind his question are; and he decides whether *S* touches his criteria for deciding the issue. The requirements for a framework to deal with controversial issues are different. It has to be reconsidered which parameters (hidden in the many assumptions which have been made here) must be set differently. E.g., the issue has to be known to both participants.

At last, let us list some of the more interesting results and conclusions of the thesis.

a) For a 'perspective' to meet the inconsistency condition of but in question-answering contexts, we must presuppose an issue at stake that the utterance context provides. This issue represents the primary goal behind the question. The general purpose of a question can also be conceived of as a decision problem. A perspective for this purpose consists of propositions.

b) By utilising counterfactuals, the description of this kind of perspective makes use of an apparatus that had been developed for the analysis of

modality. "Accessibility" and "lumping of propositions" can be based on various modes of human cognition.[1] From a hearer's point of view, the perspective taken by the speaker is vague. On the other hand, perspectives can be highly contingent s.t. a specific perspective can only be associated with an individual participant relative to the index of a given utterance situation.

c) In any case, but indicates a variability in the perspective associated with the current utterance situation. The perspective might not be fixed for several reasons:

d) The case mainly considered in this thesis concerns the speaker's uncertainty w.r.t. the perspective. But can be used if the perspective (as introduced e.g. through the hearer's previous utterance) is not definitely known. This scenario also implies that the speaker does not insist on his own perspective and its consequences. In this scenario, the speaker of but can prevent misconceptions which might arise from his answer. (Or it is indicated that he has a wrong understanding of the question or of the issue behind it.) The speaker just tries to resume the very perspective that is associated with the preceding question.

e) The discussion of issue-related inconsistency revealed another possible reason why a perspective may vary: The speaker may give further information. This corresponds to a shift in perspective—from the perspective that is supposed to be the original questioner's perspective to an extended one. This use also amounts to a proposal for considering a modification of the originally intended issue. With the scenario in (d) and in this case, a possibly unintended decision by the questioner is addressed that could be caused by a wrong belief that is due to a mistaken answer.

f) The third reason why a perspective may vary is related to (e). In the argumentative use of but , the extended perspective is not just proposed. Therefore the issue must be mutually known. The new perspective is associated with the speaker. Thus there is the tendency that the speaker insists on the consequences, i.e. on the fallen fact that corresponds to his perspective. This use affects a background that both dialogue partners share, e.g. the common ground. Moreover, this use does not require a question context but rather a context that supplies a preceding assertion by the other participant. That is, the framework proposed in this thesis cannot be applied to the argumentative use until further modifications and assumptions will be made.

Furthermore, we have seen that the analysis of language strongly depends on many assumptions about human behaviour. Let us close with an outlook. We said that a perspective can be conceived of as a kind of index parameter. It would also be worthwhile to ask whether there are other index parameters which can be similarly shifted by way of but .

[1] See Kratzer (1981a).

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