Projekt

Regionale Erneuerung durch Multimedia?

Multimedia Networks, Globalization and Strategies of Innovation

The Case of the Silicon Alley

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Nr. 136/ Januar 1999

Arbeitsbericht

ISBN 3-932013-67-0

ISSN 0945-9553

Akademie für Technikfolgenabschätzung
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Summary

Globalization, multimedia networks, and strategies of innovation: The case of Silicon Alley

The report offers a sociological portrait of the structure and dynamics of „Silicon Alley“, an industry cluster of about a thousand new media firms that has emerged since the early 1990s. Situated in the context of New York’s development as a global city, Silicon Alley is part of the rise of advanced producer services and the dramatic growth of information and communications technology in an increasingly transnational economy. In analyzing the nature and importance of inter-firm networks among multimedia corporations, technical networks (e.g., the Internet) are distinguished from social networks as well as socio-technical networks (social ties emerging from or strategically produced by techno-social linkages such as web site visits or virtual communities). The content of inter-firm ties is associated with the interactive and negotiated quality of creative work relations in contemporary business services and knowledge-intensive service networks, mediated by advanced information technology. The cooperative competition and interpenetration between old media and new media firms are discussed. The paper concludes with an evaluation of the relevance of the non-institutional characteristics of social networks for strategies of organizational innovation.

Zusammenfassung

Globalisierung, Multimedia-Netzwerke und Innovationsstrategien: Der Fall Silicon Alley

Der Arbeitsbericht bietet eine soziologische Darstellung der Struktur und Dynamik von „Silicon Alley“, einem industriellen Komplex von etwa tausend neuen Medienfirmen, der sich seit den frühen 90er Jahren im Zuge der gegenwärtigen Globalisierungsphase entwickelt hat. Silicon Alley steht in engem Zusammenhang mit der Entwicklung New Yorks als Weltstadt und ist ein Teil des Aufstiegs der Wirtschaftsdienstleistungen und des schnellen Wachstums der Informations- und Kommunikationstechnik in der sich gegenwärtig ausdehnenden Weltwirtschaft. Als Teil der Analyse der Art und Bedeutung von zwischenbetrieblichen Netzwerken im Bereich der Neuen Medienfirmen werden technische Netzwerke (z.B. das Internet) unterschieden von sozialen und sozio-technischen Netzwerken (soziale Beziehungen, die sich zufällig oder strategisch aus technisch-sozialen Beziehungen wie Web-site-Besuchen oder virtuellen Gruppen ergeben). Der Inhalt zwischenbetrieblicher Netze hängt zusammen mit dem interaktiven und verhandelten Charakter kreativer Arbeitsbeziehungen in den modernen Wirtschaftsdienstleistungen und wissensintensiven Dienstleistungsnetzen und wird durch die vorangeschrittene Informationstechnik vermittelt. Der kooperative Wettbewerb und die gegenseitige Verflechtung zwischen alten und neuen Medienfirmen sowie die Bedeutung der nicht-institutionellen Merkmale sozialer Netzwerke für organisatorische Innovationsstrategien werden erörtert.

1 Introduction

This paper offers a sociological portrait of 'Silicon Alley', a highly dynamic metropolitan multimedia industry cluster of over one thousand firms that has emerged in lower Manhattan since the early 1990s. About half (48 percent) of the nearly five thousand multimedia firms in the entire New York area are relatively recently established corporations whose main business is either to create new media products and services or to use them in a novel manner. By definition, the concepts of new media or multimedia refer to products and services combining the video, audio, and print/graphic dimensions of computer technology, telecommunications, and content that can be used interactively by consumers and business users. The products and services of multimedia firms include content design and development; consulting in such areas as marketing, design, and technology; content packaging and marketing such as CD-ROM publishing and online/Internet services; content distribution, e.g. online/Internet; electronic commerce such as financial services; software development and 'generic' applications, e.g. information retrieval and management; and content creating tools such as audio recording, design and illustration.

The organizational dynamics of this new segment of advanced producer and business services are unusual, to say the least. About two thirds of the firms have been in business for three years or less, and about 30 percent have been newly established over a period of eighteen months from March 1996 to September 1997. During this last period, about one-sixth (17 percent) of the firms have dropped out as independent entities either by merger, relocation, or bankruptcy.

Besides providing a description of the structure and dynamics of this new segment of the post-industrial services sector, my purpose is to concentrate on the special affinity between innovative corporate strategies and certain structural characteristics of the new interfirm networks that are central to this dynamic process. I begin with a brief discussion of the current wave of economic globalization from a historical perspective to highlight the significance of the recent developments in telecommunications and information technology for the new multimedia culture industry. Following this, I focus on the expansion of the new media industry in Manhattan since 1992, its economic effects on the tri-state region, its internal structure, the typical organizational profile of its new innovative firms, and the emerging competitive effects of the new media on the old media. Finally, I offer an analysis of certain unique and generic characteristics of the new social networks such as privacy, legal immunity and non-accountability and their significance for innovative corporate strategies.

2 Three phases of economic globalization

The emergence of Silicon Alley during the last six years builds on the dramatic growth of information and communications technology since the late 1980s and is intimately related to the latest phase of economic globalization since 1992. It is, therefore, important to understand the historical and structural context of these dynamic developments.

Historically speaking, I argue that the global expansion of the modern economy has roughly three phases: 1. 1850 to 1913, the well known and widely documented financial, corporate, and market expansion from national to international levels as well as increasing corporate and economic concentration, setting the stage for anti-trust and other regulatory policies in the next phase (note that some observers, e.g.,Wallerstein, 1974, date the onset of globalization much earlier which depends partly on the definition of capitalism in terms of finance, production, or trade); 2. 1919 to 1989, a 70 year long suspension of the unfettered expansion of financial and productive capital as well as of international markets and trade due to a variety of factors, among them the financial crises in the aftermath of World War I, the establishment of state socialism, first in the Soviet Union, then (after 1949) regionally in the Far East and in the East Central European client states, the Great Depression, the rise of fascism and World War II, and the Cold War. The development of the various types of regulatory welfare states (Esping-Anderson 1990; 1996), the political institutionalization and de-radicalization of social democracy and other Western left parties, as well as many of the economic and political crises of this period can be seen as conseqences of this 70 year state of exception and intermittent economic stagnation; and 3., with the 1989/91 transition in Eastern Europe and the collapse of the Soviet empire, the resumption of financial expansion and trade on a global scale and the formation of new supra-national economic and political blocks and networks.

Some observers date the new global expansion to the late 1960s and early 1970s (e.g., Hobsbawm 1996). While this important historical turning point does indeed require special attention, it constitutes in my view merely the beginning of the last segment of the second phase of globalization. This 70-year long phase has, as I see it, four distinct historical segments, the last two of which are particularly relevant to the topic of this paper.

1. The first segment (1919-1929) was ushered in by the Russian Revolution and the conclusion of World War I and comes to an end with the onset of the Great Depression in 1929. 'Fordism', as the mechanized version of Taylorism, became a widely institutionalized form of mass production (Kumar 1995, Ch.3). It is not clear to what extent the Depression can be linked in its entirety to endogenous capitalist tendencies as well as market failure, or also, in part, to the psychological, political, and economic effects of the self-imposed restriction of the

relatively small Russian market. The Russian revolution certainly generated a good deal of apprehension among Western political and economic elites that lasted through the end of the Cold War.

2. The second segment (1930 -1945) is marked by a widening economic and financial crisis, the consolidation of Stalinist state socialism, the rise of European fascism and national socialism, the establishment of the American welfare state as part of the New Deal and, of course, World War II and the Holocaust. The crisis character of this period had obvious repercussions also for the legal and political institutions of Western liberal democracies. It certainly moved the role of state institutions center stage and prepared the way for post-liberal experimentation with new state-economy relations, notably the Keynesian regulatory and welfare state

3. The third segment (1946-1972) begins with the first phase of the Cold War, the expansion of the Soviet political orbit to Eastern Europe, China, and parts of the Third World, and the East-West arms race culminating in the Vietnam War. The 1944 Bretton Woods agreement on fixed currency exchanges that was in effect until 1971 was widely seen as a symbol of American hegemony in the post-war period ('Pax Americana'). The establishment of the International Monetary Fund, the World Bank, the General Agreement on Tariffs and Trade, and the United Nations constituted the new international institutional framework in the context of which European economic recovery and American economic expansion could take place.

4. The last segment (1973-1989) is characterized by a number of far-reaching economic and political developments as well as a series of discrete historical events. This segment appears, in hindsight, as a period that 'anticipates' the momentous changes occurring after 1989/90 without being fully identical with them. The segment is initially dominated by the economic 'stagflation' of the 1970s in the West and a continuation of economic reforms in many Soviet block countries, especially the state-capitalist turn of China under Deng Tsiao Peng.

The central economic and technological developments of this segment have been described as a renewed global expansion of finance capital from below 1913 levels (Bairoch 1993; 1996; Eichengreen 1996; Dunning 1983) under the impact of the revocation of Bretton Woods and the rise of neo-liberal, post-Keynesian economic policies. The industrial regime of 'Fordist' mass production was augmented by 'flexible specialization' (Piore and Sabel 1984), 'flexible accumulation' (Harvey 1989), and 'post-Fordism' (Amin 1994; Hirst and Zeitlin 1991). Finally, there was a related technical shift toward computer-aided and computer-integrated production, the dramatic growth of information and communications technology (Castells 1989; 1996), the transfer of the precursors of the Internet from military control to civilian and private auspices, and a further growth of business and producer services associated with the expansion of the 'post-industrial' service economy (Gershuny and Miles 1983; Singelmann 1978). All of these technical and economic developments can be seen as necessary preconditions

feeding directly into the emergence of new industrial clusters and districts in Western economies, in general, and into the phenomenal impact of new information and communication technologies.

But they were not sufficient to trigger an economic take-off comparable to 1992 and after. The economic liberalization of the 1970s was not matched by commensurate political changes. When considering the political and military context of that period, it appears that the continued (real or perceived) threat of nuclear war was sufficiently strong in this second phase of the Cold War not only to explain U.S. military expansion during the Reagan administration but, most importantly, to keep financial markets from fully exploiting those parts of the world market still nominally under state socialist control. Only Gorbachev's explicit announcement of a policy of non-intervention and the subsequent collapse of state socialism in the Soviet Union and East Central Europe made the resumption of unfettered economic expansion on a world scale sufficiently safe and feasible to set the third phase of globalization in motion.

3. The 'refolutions' of 1989/91 mark the beginning of the third phase of globalization. This historic transition essentially amounts to a full resumption of the secular trend of trans-national expansion and concentration of capital at roughly pre-1913 levels, but under technologically, communicatively, geo-politically, and ideologically greatly enhanced auspices. Economic globalization refers to a series of structural processes which entail the economic integration of financial activities, investment, production, markets, trade, and consumption on a world scale (Waters 1996; Arrighi 1994; Carnoy, Castells, Cohen, and Cardoso 1993; Dunning 1993; Dicken 1992; Drache and Gertler 1991; Reich 1991; Sklair 1991; Porter 1990). These processes include the global expansion and mobility of finance and productive capital, flexible accumulation by means of trans-national corporations and practices, the restructuring of global markets for capital, labor, producer and consumer goods, and the reduction of labor costs by means of new technical processes and organizational policies of lean production and management (Boyer 1991; Harrison 1994; Heydebrand 1989; but see Tomaney 1995; Wood 1989).

Of central importance is a cognitive paradigm shift from a still state-centered perspective of 'international relations' to a trans-national and global approach to conceptualizing the world system (Sklair 1993). In essence, the unit of analysis is no longer the nation-state and its 'relations', but a trans-national, global network with large supra-national sub-networks. As long as the sovereignty of nation-states could still be expressed in terms of its 'international relations', it was possible to relate the international political and economic challenges to national politics, especially that of the super powers. With the trans-national and global transcendence of national boundaries, the idea of national sovereignty becomes increasingly abstract (Sassen 1996). National sovereignty seems to retain concrete significance only in the cases of superpowers and core nations within regional power structures and networks. In other words, only the

major national economies comprising the 'triad' of Europe, the United States and NAFTA, and Japan and the newly industrializing countries (NIC's) around the Pacific Rim, including China, seem to be able to maintain some degree of national autonomy. Hence, the process of economic globalization is perceived and experienced differently depending on whether it is being observed from the core or the periphery of these networks. While core nations retain political and of course economic influence, the scope and capacity of the average nation state to act on its own socio-political and economic interests is reduced and subordinated to the imperatives of a more encompassing economic policy. The decisive critera of political and legal action become efficiency and cost-effectiveness in the context of global competition.

Globalization and regional development policies are mutually constitutive. While Europe and Japan were able to increase their competitive pressure, the United States continues to be the economic center of the 'new world order'. Most importantly for the present argument, deregulated transnational expansion from the early 1990s on facilitated the realization of pro-active (supply-oriented) regional economic and industrial policies of development, self-organization, and self-transformation. The re-emergence of the image of the independent 19th century self-activated entrepreneur paralleled the rediscovery of 'cooperation' and of the generative powers of the self-organizing small social network of formally free, equal, and independent actors. Corporate policies of adaptation through organizational learning and innovation, managerial restructuring and the reduction of production and transaction costs were complemented by selective ventures and strategic investments to reap the benefits of specialized niches, organizational 'learning regions' (Florida 1995) and territorial concepts of the creative and 'innovative milieu' (Maillat 1995). Thus, interfirm production and service networks and strategic alliances grew in step with the capacities of interactive technical networks and the needs of a process-, project-, and client-oriented organization of business and producer services (van Dinteren et al. 1994; Harrison 1994; Petrella 1996).

Given this brief, but indispensable structural pre-history to the dramatic economic take-off after 1992, let us now turn to the specific dynamics of the media industry in New York City.

3 The growth of 'Silicon Alley' before and after 1992

From the perspective of urban sociology, in general, and the theory of regional economic development and innovation, in particular, the case of New York City is rather atypical, if not unique. New York has been an economically thriving metropolis for a long time (the fiscal crises of 1975, 1987, and the early 90s notwithstanding). It is a

central site for a region already leading in the development of post-industrial and especially business services as well as communications and entertainment; and it has a highly concentrated clustering of multimedia (MM) firms whose development, while contributing to the regional economy, can be said to feed mainly on their own success, thus creating a highly dynamic and self-sustaining, almost autonomous development. The New York City MM industry participates actively in the process of globalization, i.e., it continues to attract investment from domestic and transnational financial centers, is an exporter of MM services, and thus benefits from a highly competitive-cooperative-integrative environment without as yet showing signs of being overly fragmented, over-integrated, or destroyed by these processes. During the 1990s, it is a case of growth feeding on growth. The central causal assumptions of the theory of industrial districts, viz. that production and service networks will generate innovative regional economic growth (Becattini 1990, Bergman et al. 1991, Camagni 1991, Amin and Thrift 1992) are therefore both supported from the start as well as somewhat tautological since in New York the process already occurs at a high level of 'institutional thickness' and sustained development rather than starting out from ground zero.

In the following, I will briefly highlight the importance of pre-1992 economic developments in New York as a 'global city', describe the explosive growth of MM services and their effects on the region since 1992, analyze the special features of multimedia firms and networks, and discuss some of the likely consequences of new media growth for the older media.

3.1 New York’s pre-1992 economic development in the context of a 'global city'

Like most major world cities, New York has experienced a disproportionate growth of the service sector (relative to manufacturing) since the early 1970s (Sassen 1991: 166; generally see Castells 1996: 201-33). Within that sector, business, commercial or producer services have been the fastest growing and transnationally most relevant component (Noyelle and Dutka 1988). The leading producer services are the FIRE services, i.e. financial (banking), insurance, and real estate, as well as accounting and consulting, advertising, and legal services. To these must be added communications and a host of other miscellaneous business services such as administration and management, research and development, personnel and security, not to mention maintenance, cleaning, and related 'personal' services.

Nationally, total employment in the United States grew from 77 million in 1970 to 117 million in 1991 or 52 percent, whereas producer services jumped from almost 6.3 million in 1970 to 16.35 million in 1991 or 160 percent (calculated from data provided

by Manuel Castells, as reported by Sassen 1994: 56-9; see also Castells 1996: 282, Table 4.1). Within the category of producer services, the two fastest growing items during this 20-year period were legal services (211 percent) and miscellaneous business services (314 percent). A persuasive case can be made that a significant part of this dramatic expansion of producer services is due to the concentration of transnational corporate headquarters in global cities like New York (Sassen 1994: 68-74).

As mentioned, the growth of the post-industrial urban service economy has not been one of unmitigated monotonic increases. In the mid seventies, New York city government experienced an unprecedented fiscal crisis which was 'solved' only by subordinating the 'sovereignty' of financial decisions on credits and expenditures to the Municipal Assistance Corporation, a financial control board constituted and heavily influenced by banks, investment houses, and other financial institutions. From 1977 to 1987, New York City's share in the national employment level in producer services declined slightly from 8.3 percent to 7.6 percent, due in part to the municipal fiscal crisis, in part to an increasing dispersion of such services regionally and nationwide. The ten-year decline varied slightly among services, e.g. from insurance (6.5 to 4.8 percent) and real estate (10.1 to 7.5 percent) to business services (8.4 to 6.2 percent) and legal services (9.4 to 8.2 percent). Only banking and finance remained stable at 11.7 percent during this period (Sassen 1991: 148-50, Table 6.15). It should be noted that in all of these figures, Manhattan always shows a higher concentration of services than New York City as a whole.

After the October 1987 stock market crisis, there was a sharp decline of jobs as well as considerable restructuring in the securities and banking industry, e.g. mergers among large domestic banks. Employment in banking fell from 169,000 in 1989 to 157,000 in 1991, a drop of 7.6 percent. Nevertheless, the growth of foreign investment and banking continued to ensure New York's role as a leading world financial center, and the city retained six of the world's top ten securities firms as of 1990 (Sassen 1994: 75), not to mention the continued importance of Wall Street, the New York and American Stock Exchanges, the Dow Jones Company (ranking as the world's fortieth largest media corporation which includes the Wall Street Journal), and numerous other business and financial service enterprises.

Thus, New York City was and is, of course, also the media capital of the United States, where some of the nation's largest publishing firms, television networks, and advertising agencies are located (see also Castells 1989). 'These corporations', as Moss and Ludwig (1991: 245) put it, 'produce the information and images that are communicated across the country and the world, in the form of newspapers, magazines, books, and radio and television programs. The presence of information-intensive firms in New York City contributes to the economic well-being of the city' and serves 'the larger metropolitan region surrounding the city itself'. As of 1988, the four major daily newspapers (Daily News, New York Newsday, New York Post, and New York Times)

had a total circulation of about 4.6 million (Moss and Ludwig 1991: 246). City residents can receive at least fifteen television stations without subscribing to cable TV, and there are fifteen AM and twenty-three FM radio stations. Moss and Ludwig (1991: 250) identified eighty foreign language newspapers serving the city's vast and growing immigrant population. Cable television has grown from two cable TV franchises for Manhattan in 1971 to four franchises serving all the boroughs since 1986.

Yet Moss and Ludwig (1991: 264-5) point out that the riches of media coverage in the city are double-edged: '...a small number of firms control the major television channels, radio syndicates, and major daily newspapers. On the other hand, a multiplicity of grassroots media outlets ...have emerged to counter the inadequate coverage and appeal of the mainstream, and often national, media'. Thus, there is a growing disparity between the traditional television and print media that serve the city and its surrounding area and the highly diverse ethnic and minority groups that make up the majority of the city's population. 'Moreover, there is growing bifurcation of the media, with the city-wide print and television increasingly serving the affluent middle class within the city and surrounding region, while radio and community newspapers serve specific ethnic and minority groups' (op. cit.: 265). It stands to reason that this social division will continue to be reflected in the bifurcation of old and new media consumers since educational differences as well as the costs of equipment and access are likely to restrict the new media market to those with adequate economic resources and cultural capital. Unfortunately, continued global economic expansion is likely to exacerbate the existing socio-economic inequality within cities as well as among them, not to mention the growing disparities in the stratification among sub-national, national, and transnational regions.

3.2 The growth of Silicon Alley since 1992

The traditional media have always been concentrated in urban areas and have played an important role in the economic and cultural life of cities like New York not only during the 1970s and 80s, but long before. The last few years, however, have witnessed the explosive growth of a qualitatively different symbiosis of information technologies, structural innovations, and cultural creativity which has come to be known as the 'new media', multimedia, or cyber-industry. To be sure, personal interaction and participation remain even more distant ideals in these new media, but they provide a new technical infrastructure in which interactive and response capacity is a central, built-in feature. One could view the electronic bulletin board and interpersonal e-mail as transitions to these new computer-integrated forms in which local area networks and finally 'The

Internet' and its subsets, e.g. the World Wide Web with its Websites, home pages, and voice-audio-video-graph-print combinations have become emblematic for a new interactive virtual reality and the notion of 'virtual communities' (Poster 1997; Roesler 1997). Multimedia products and services represent a new symbolic environment, a 'culture of real virtuality' (Castells 1996: 364-75). While there is plenty of myth making that surrounds the secrets of the Internet and the new media, there is a tangible and highly profitable infrastructure of producers and providers that constitute the core of this cyber-industry (Sassen 1997).

Multimedia firms, as described in the following account, include companies specializing in entertainment software, online/Internet services, CD-ROM title developers, Website designers and an assortment of related production and service networks connecting suppliers, producers, distributors, and consumers. Advertising, marketing, entertainment, education, publishing, and video-film production are the new media providers with core businesses outside the new media. It is useful to distinguish at least three layers of the New York cyber-industry: the corporate giants, the new media industry as a whole, and its most creative and volatile subset, Silicon Alley. In reality, these layers are, of course, interrelated.

The corporate giants. New York is home to seven of the world’s largest multimedia firms including Time Warner (rank 1), Viacom (4), Advance Publications (15), National Broadcasting Co. (NBC)(19), the Columbia Broadcasting System (CBS) (24), The Hearst Corporation (37), and Dow Jones & Co. (40) (see Hachmeister and Rager 1997). Each of these giant corporations consists of several subsidiaries, i.e. they are the result of multiple mergers and acquisitions and are continuously involved in processes of reorganization and restructuring. The world’s largest media firm, Time Warner for example, includes Turner Broadcasting (and the popular CNN) since 1995 and holds the Manhattan Cable TV franchise. Time Warner had a total of 72,500 employees, and a total media transaction volume of $25.37 billion (all figures for 1995). Significantly, due to a large volume of corporate debt, it had no net profit but rather a net loss of $124 million in 1995.

Viacom Inc., the fourth largest media corporation with a $17 billion transaction volume and 81,700 employees, had a net profit of $163 million for 1995. It controls a variety of subsidiaries, including Paramount Pictures, the Blockbuster Video chain since 1994 (film and video game rentals) and a host of cable TV networks (MTV, Showtime, Nickelodeon, Nick at Nite, and ten other channels, some of them joint ventures), film, multimedia, publishers, and entertainment park groups. In 1996 Viacom entered into a joint venture with the Kirch-Group in Germany. Should the Internet ever become accessible via home television, a corporation like Viacom would be well situated to reap enormous profits from its wide-ranging corporate network.

Still another well-known example is the Dow Jones & Co., the fortieth largest media firm world-wide. It includes The Wall Street Journal (WSJ), Business Information Services, the WSJ Television Group, the Dow Jones Investor Network, and the business journals Barron's and Smart Money. In 1995, it had 11,200 employees in over 100 countries and a transaction volume of $2.284 billion, with a net profit of $190 million.

It goes without saying that each of these corporate giants constitutes the core of a series of partly hierarchical, partly lateral interfirm production, service and supplier networks (Bagdikian 1987, see also Harrison [1994: 171] who speaks of 'production networks as an expression of concentration without centralization'). The New York Times, for example, is represented among Silicon Alley firms by its subsidiary 'The New York Times Electronic Media Company' which is headed by a content development specialist and has sixty employees (Silicon Alley Reporter 1998, 42; henceforth cited as S.A. Reporter). SONY, the sixth largest media concern world-wide, has an 'entertainment' subsidiary 'Sony Online Ventures Inc.' since 1995 (op.cit.).

Microsoft, finally, maintains three subsidiaries in Silicon Alley with an undisclosed number of employees (Microsoft Multimedia Productions, Microsoft Sidewalk.com, and Microsoft Developer Relations Group).

It is likely that the new media industry will increasingly be dominated by an ever smaller number of large, transnational enterprises. Despite a large number of new entries into the industry, many of the small multimedia firms to be described below will ultimately become integrated into the larger firms by joint ventures and strategic partnerships or develop into sizable corporations themselves through mergers and acquisitions (see Barnouw et al. 1997, Hazen and Winokur 1997). The New York area new media industry as a whole provided 105,771 full-time equivalent jobs in 1997, including 55,973 or 53 percent in New York City proper (Coopers & Lybrand 1997: 47-8). The eighteen months increase from the end of 1995 to mid-1997 alone amounts to 48 percent for the whole area and 105 percent for the city proper. The breakdown for the type of employment in 1997 was as follows: of the total of 105,771 employees, 56 percent are full-time, 21 percent part-time, and 23 percent freelancers. While the category of freelancers has remained stable, the proportion of part-time employees jumped from 12 to 21 percent in 18 months, whereas the proportion of full-time employees shrank from 64 percent to 56 percent (Coopers & Lybrand 1997: 5).

In April 1996, Coopers & Lybrand had estimated that new media area employment as a whole would increase by at least 100 percent by the end of 1998. So far, the increase has been 50 percent for about half of that three-year period and about 200 percent since 1992. Thus, despite criticisms of the big accounting and consulting firm's methods and projections as inflated and advocacy-oriented ('industry booster'), it is worth noting that most of the figures reported for 1997 have been remarkably close to the earlier projections and that the firm cannot be faulted for lack of accuracy.

The economic picture points to a success story as well. While a total of 4,259 area firms generated $3.8 billion in gross revenues in 1995 (these totals for the new media industry include related firms in New Jersey and Connecticut), the corresponding figure for 1997 is 4,881 firms generating $5.7 billion, a 50 percent increase. Manhattan alone, with 2,128 or 44 percent of all the new media enterprises, generates $2.8 billion or almost half of the area's gross revenues derived from new media products and services. This represents a 56 percent increase of revenues over 1995 for the Manhattan enterprises which tend to be larger than those located outside Manhattan and New York City.

However, there has been a significant structural change in the New York area industry in the last 18 months that signals a rapid increase in economic concentration. Significantly, '1996 was the year of the shakeout in Silicon Alley'; '1997 was ... the year of continued consolidation' (S.A.Reporter 1997: 3). For example, in 1995/96, the ratio of large multimedia firms with annual revenues of over $5 million to those under $5 million was .235 or 235 per thousand. In 1997, by contrast, this ratio had shrunk to .0526 or 53 per thousand. This amounts to a four-and-a-half-fold increase in corporate concentration in a year and a half. It means that while the 250 largest multimedia firms or business units make up only about 5 percent of all New York area firms, they account for 72 percent of the total revenues. Moreover, since the percentage of revenues spent outside the local economy increases with firm size, a growing portion of the $4.1 billion generated by the 250 largest multimedia corporations in 1997 was spent outside the New York economy (all figures calculated from data provided in Coopers & Lybrand 1996: 31, 1997: 9, 31-2). To be sure, the total number of firms increased during the period in question, but the size distribution has become more skewed.

Another type of concentration, this one related to the Internet itself, can be ascribed to the 'normally' high corporate density of metropolitan areas. Not surprisingly, therefore, Manhattan is also 'the hub for the Internet with almost 150,000 Internet hosts in New York County' (Moss 1996: 11). More importantly, in 1997 New York City had the largest Internet presence with 17,579 registered domains or 4.2 percent of the national total (Moss and Townsend 1997: 3). A domain represents a single organizational entity or naming authority such as 'nyu.edu' which is used by thousands of computer work stations and e-mail addresses at New York University alone (op.cit.). According to Moss and Townsend (1997: 5), 85 percent of the domain registrations are commercial domains that use the abbreviation '.com'. The remaining 15 percent are domains like '.org', '.gov', and ' .edu'. Manhattan alone had 15,139 or 86 percent of the area's registered domains. Given a population of over one and a half million, Manhattan had a 'domain density' of 9.9 (ibid.). Only San Francisco had a higher domain density of 10.2, although it has only half of the actual number of registered domains (7,518 to Manhattan's 15,139). Thus, the five American cities with the largest number of domains and the highest domain density are Manhattan, San Francisco, Seattle (4,080), Dallas (3,988), and Boston (3,981).

Silicon Alley. -The district that is most interesting and relevant for purposes of this paper is 'Silicon Alley' comprising the Southern third of Manhattan. It represents the area South of 41st street which is constituted by the 30st and 20st, the Flatiron District, Chelsea, Greenwich Village and the East Village, the Lower East Side, Soho, and Downtown which includes, of course, Wall Street, the New York and American Stock Exchanges, the World Trade Center, and the famous 55 Broad Street building with its broad bandwidth, high-speed wiring and home to many firms.

The 'institutional thickness' of this geographical area is proverbial and illustrates the embeddedness of Silicon Alley firms in a rich economic, social, and cultural environment. For example, many of Silicon Alley‘s multimedia service and training networks involve institutions of higher education such as New York University and its Tisch School of the Arts Center for Digital Multimedia, now the Center for Advanced Technology with its famous Interactive Telecommunications Program (ITP). Directed by Prof. Red Burns of NYU, the ITP has produced a number of top executives in Silicon Alley, such as Jaime Levy (Electronic Hollywood), Howard Greenstein (now director of the Microsoft Developer Relations Group), Rebecca Odes and Esther Drill of gURL, and Stacey Horn of Echo, a virtual community firm. Unlike the typical mid-90s Silicon Alley firm, Burns began her career in 1971 when she founded the Alternate Media Center at the Tisch School which is also nationally known for its outstanding film and video training programs.

Other examples are the NYU Taub Urban Research Center, the NYU Stern School of Business, and the Courant Institute of Mathematics with its computer facilities. In addition, there are various research institutes, colleges, business and law schools (some of them part of the City University system) as well as smaller educational establishments such as the Parsons School of Design (New School of Social Research), the Fashion Institute of Technology, and Pace University, to name just a few. Some of these institutions are themselves connected by network ties among teaching and research faculty, the supply of new student cohorts, and the placement of graduates. As mentioned before, publishing houses, advertising agencies, and a host of old media conglomerates complement this densely structured service environment. Many of these institutions pre-date the multimedia revolution, but there is no doubt that the new media industry and the highly saturated educational environment benefit from each other.

Silicon Alley comprises 1,106 new media establishments, which represent 52 percent of all new media businesses in Manhattan and generate $2.8 billion in gross revenues (Coopers & Lybrand 1997). An increasing portion of these firms provide specialized products and services. Thus, the average number of products and services provided in 1995/96 was 3.6, but dropped to 2.4 in 1997. 84 percent of the firms provide content design and development as a core product/service (Coopers & Lybrand 1997: 36). The other top six products and services provided by firms in descending order are consulting (37 percent), content packaging and marketing (34 percent), content distribution and

transport (22 percent), software development (20 percent), content creation tools (17 percent), and electronic commerce (16 percent).

In terms of their service relationship to various market segments, the firms in this area are most closely associated with advertising and marketing (59 percent), entertainment (37 percent), information/reference (43 percent), education (31 percent), financial services (28 percent), and others (Coopers & Lybrand 1997: 36). The largest business customer segments besides *publishing, advertising, *new media, and *information technology are entertainment, *financial services, *telecommunications, education, broadcasting, retailing and other business and commercial services (starred items saw the largest amounts of growth, between 14 percent and 48 percent, since 1995/96). The percent increase in the share of financial services (48 percent), new media (39 percent) and information technology (33 percent) sectors illustrates the tendency for Silicon Alley growth to feed on itself. Smaller customer industry segments such as health care, cultural, and government also experienced disproportionately large increases, e.g. government almost doubled its share from 8 to 15 percent.

3.2.1 A close-up view of Silicon Alley firms

Besides the many network ties, alliances, partnerships, and joint ventures that are characteristic of firms in the multimedia industry, there are also larger associational entities that reflect the phenomenal growth of the Silicon Alley cluster, for example, the more than 120 'associates' of the Flatiron Partners venture capital group, the over two thousand members of the New York New Media Association (NYNMA) located at 55 Broad Street, and the subscribers of the Silicon Alley Reporter itself, an industry journal that was established in late 1996 and published its tenth issue in the winter of 1997/98. In the following account, I am drawing on a number of these indigenous sources of information, given the absence of a comprehensive empirical study of Silicon Alley to date.

The latest membership directory of the NYNMA provides perhaps the best illustration of the great diversity of firms located in Silicon Alley. Of the 2,058 members listed for Fall 1997, 1,878 designate their primary business within one of sixty-five product and service categories. If this total of 1,878 corporate members is taken as a base (clearly non-random, but probably fairly representative), one arrives at the following distribution in declining order of frequency.

1. The largest category is constituted by a total of 573 Digital Media firms which represent 30.5 percent of the 1,878 firms. Of these 573 firms, almost one third (10 percent of the total) are in Web Services and Design, another third (9.2 percent) are in Online News and Information, almost 5 percent in CD-ROM Development, and almost 4 percent in Advertising Design.

2. Financial Services constitute the second largest group with 202 or 10.8 percent of the 1,878 firms. Banking, venture capital, and investment constitute the lion share of this category with 142 firms (70 percent), with accounting, financial management, and consulting coming in second with fifty-eight firms (29 percent).
3. A third major category is represented by a variety of professional services. By far the largest group here is legal services (132 firms or 7 percent of the total 1,878), followed by management consulting (84 firms or 4.5 percent), marketing and promotion (83 or 4.4 percent), 'recruitment' (76 or 4 percent, probably including the important networking activity of talent and head hunting) and, finally, advertising and sales (66 firms or 3.5 percent of the total 1,878). All other professional service firms account for 3.9 percent of the total.
4. The print media (newspaper, magazines, and book publishing) are represented by an astonishing 113 firms (6 percent). This suggests that old media corporations are likely to have new media subsidiaries and that there is a considerable degree of interpenetration of old and new media rather than outright competition. The additional 64 broadcast media firms, esp. radio and network and cable TV, could be seen as similarly bridging the old and new media sectors. The same is true of professional services like graphic design, photography, and writing.
5. Finally, there are 103 software development firms (5.5 percent of the total), a category that includes publication and distribution, interactive software, and contract consulting.

These groupings reflect the organizational and corporate diversity of Silicon Alley, not necessarily the shares in profits or total value added. But the diversity of products and services is obvious and is reflected in the sixty-five separate categories in terms of which the 1,878 firms are listed. Some industry clusters outside New York have a fairly high degree of area specialization as reported, for example, by Allen Scott (1995: 6, Table 2) for the San Francisco Bay Area in Northern California (business applications and information repositories) and the Los Angeles/Hollywood centered area in Southern California ('self-enhancement' products). Silicon Alley markets seem to combine and integrate both of these specialty areas and appear generally to be more highly diversified than either of the two California area clusters. Unfortunately, the product market categories represented by Scott’s 431 California firms are not commensurable with the categories used by the Coopers and Lybrand study or the NYNMA directory. Hence, there is no easy way to compare the findings of Scott’s meticulous study short of a systematic comparison and replication.

Another way of looking at the 'typical' Silicon Alley firm is made possible by a listing of 100 top multimedia executives and their firms published in the tenth issue of the S. A. Reporter (1997). This is by no means a random sample, but it does represent the range of both successful and struggling multimedia firms and provides a behind-the-scene look at the dynamics of this unusual industry cluster. I have selected forty firms from the 100 entries published and believe they can serve as a basis for constructing an 'ideal type' of sorts. Half of these 'typical' Silicon Alley firms are in the business of producing 'content' and thus represent the more creative aspect of multimedia service production.

The other half are in design, advertising and marketing, public relations and accounting, software, virtual communities and chat groups. Among these forty firms, the average number of employees is twenty-two, with a range from 2-55. The average age of the Chief Executive Officer is thirty-two years, with a range from 23-46. Finally, the average length of time the firms have been in business is twenty months or a little over a year and a half, with one firm being barely six months old.

Four companies out of the 100 listed and not included in the above ideal type profile are significantly larger (the average number of employees is 168). They are in accounting and financial services (*Coopers and Lybrand New Media Group*), Internet advertising (*DoubleClick*), commerce, content, and software (*N2K*), and 'online community' content (*ivillage*). They have been in business for an average of 2 1/2 years, with the average age of the executive being forty-eight years.

By contrast, the typical Silicon Alley firm is small and entrepreneurial, relatively young, and headed by a relatively young executive/owner. Most of these Silicon Alley firms, however, share the fact of extensive 'networking', be it in the form of mutual client and supplier relationships, subcontracting, joint ventures, partnerships, strategic alliances and, of course, informal cooperation.

It is worth noting that Coopers and Lybrand's demographic profile for 1997, based on all 4,881 multimedia firms in the New York area, is only marginally different from the above ideal type. Their 1997 report shows that 60 percent of all firms have their primary business in content design and development. These firms generate about 50 percent of the industry revenues. The average age of the new media top executive is 40 years. In addition, Coopers and Lybrand (1997: 30) emphasize the network structure of the industry in that new media firms show a 'high degree of reliance on suppliers and subcontractors'. New Media firms are also shown to be an industry with a relatively young workforce; 36 percent of the employees are under thirty years old and another 35 percent are between thirty and forty. Only 38 percent of the employees, however, are female (Coopers and Lybrand 1997: 41).

Finally, short of an in-depth empirical study of Silicon Alley, there is a gradual accumulation of a fund of knowledge and 'wisdom' by knowledgeable participants and observers. One of them is Thomas Hirschfeld (1997: 66-8), a journalist who provides an informative description of some of these firms. For example, *AdOne Classified Network* collects classified ads from hundreds of newspapers across the US and publishes them on a single Website. Users can search AdOne not only by category and region but much more narrowly by type of house, car, job, or other commodity. *Atnet* (Apparel and Textile Network) provides business-to-business communications. Through 'virtual showrooms' and company directories that can be searched by product and price, businesses in the fashion industry can locate suppliers and customers. *Data Downlink* is a service for business users. It aggregates quantitative information such as economic figures, industry statistics, company financial data, and market facts and makes it available to subscribers who can download the data directly from the Web. *Index Stock Photography* functions as an electronic photo-research center for advertising agencies,

publishers, and others. The 'Riddler' Website of *Interactive Imaginations* entertains visitors with trivia contests, crossword puzzles, and other games. Playing is free and real prizes are offered, but the games take players on tours of other Websites whose owners pay *Interactive Imaginations* for the traffic. According to Hirschfeld, the service is very popular and serves as a marketing tool for consumer-focused businesses.

iVillage was originally founded by a partnership of executives from the magazine industry, cable home shopping, and other services. It publishes 'magazines' on the Internet for sharply defined consumer groups one of which (Parent Soup), for example, gives parents medical advice, guidance from child-rearing experts, news, and other information. It organizes online 'chat groups' where parents can discuss particular issues with one another while being offered child-related merchandise for online sale. Founded in January 1996 with $14 million in venture capital, *ivillage* got into rough water within a few months and had another capital infusion of $21,5 million in June 1996. In November 1996, all of *ivillage's* sites were integrated at a separate site called *Life Soup* devoted to parenting, health, and work from a women's perspective. 'A convergence of message boards, chat areas, and 'advertorials', the sites are integrated with commerce zones and sold to advertisers on claims of 51 million page views per month' (S. A. Reporter 1997, 10: 14).

Juno provides almost a million consumers with free electronic mail services in return for showing them advertisements while they are writing or reading messages. *Medscape,* supported by advertising from pharmaceutical manufacturers and others, is an Internet site for doctors with some 200,000 members. For a fee, users can get important information, including journal articles and research abstracts. *N2K (Need to Know),* founded in 1995 and one of the other larger Silicon Alley firms mentioned above, operates some of the major music-related Websites where browsers can hear excerpts from new releases, learn what their favorite artists listen to, and buy from a vast assortment of CDs. Such new media services are highly competitive vis-a-vis the old media firms, as Hirschfeld points out; for example, traditional stores have begun to offer some of these services, but they can't match *N2K's* selection and convenience as well as the scale and scope of the Internet. Like *ivillage* and other firms, *N2K* encountered some rough going in the beginning, but seems to have recovered after 1996. It established sales alliances with America Online, Netscape, MTV, @Home, PointCast,, AT&T, and WebTV and added a software component with *e-mod (encoded music online delivery),* a technology that plays CD-quality music over the Net (S. A. Reporter 1997, 10: 20).

4 The nature and importance of multimedia networks (MMNW's)

In discussing the network structure of clusters like Silicon Alley, it is useful to distinguish analytically between the technical information infrastructure or technical networks, on the one hand, and social networks, on the other. **Technical networks** such as computer or telecommunications networks (e.g. local area nets and the Internet as a whole, as the net of nets) are 'technical' in the sense of requiring computers (hardware), the necessary programs (software), protocols (traffic rules), and electronic or optical telecommunications connections for purposes of access and use. One of the quantum differences of these networks from the one-to-one connection between users of a conventional telephone net lie in their one-to-infinitely-many simultaneous, multimedia, interactive capability. For the remainder of my discussion, I will treat these technical networks as given (for a useful overview, see Latzer 1997).

Social networks are the specific weblike patterns of informal social relationships among different nodes, as constituted by persons, firms, organizations, and other collective actors (agents, agencies) (Keupp and Röhrle 1987: 7; Knoke and Kuklinski 1982; Schenk 1984: 37; Wellman and Berkowitz 1988; Scott 1991). Among social networks, I want to further distinguish between **emergent** ('natural', expressive) and **instrumental** or **strategic networks** (formed for explicit purposes such as exchanging information, obtaining resources or solving problems) and concentrate mainly on the latter (see also Sydow 1993).

Interfirm production and service networks such as intercorporate and interorganizational networks among MM firms, their suppliers, distributors, and corporate customers are prime examples of consciously enacted strategic alliances and economic networks (Harrison 1994). While such networks could conceivably develop and function without the technical infrastructure discussed here, the scale and scope of their operations are vastly enhanced by the availability of the Internet. There are, of course, other important types of strategic networks, such as quasi-governmental and policy networks (Grimm 1994; Heritier 1993; Knoke 1990; Lauman and Knoke 1987; Marin and Mayntz 1991; Pappi 1993), and the clandestine networks of organizational, governmental, and elite corruption as well as organized crime (Shapiro 1984; Gambetta 1990; Simon and Eitzen 1990; Yeager 1991; Benz and Seibel 1992; Erman and Lundman 1992; Tonry and Reiss 1993). In all of these cases, there is likely to be an underlying 'milieu effect' which results from the embeddedness of actors in a common social environment or subculture ranging from simple and homogeneous to highly diverse and multiplex settings (Amin and Thrift 1992; Braczyk and Schienstock 1996; Castells and Hall 1994; Granovetter 1985; Grabher 1993; Harrison et al. 1996; Maillat 1991; Saxenian 1994; Schamp 1995).

A third, intermediate category of networks are either strategically produced by, or emerge more or less randomly from technical networks. As such, they can be said to be the social by-products, as it were, of techno-social linkages. I am calling such

technically based or net-induced social structures **sociotechnical networks.** They are characterized by a great variety of particular purposes, contents, themes, or orientations. Socio-technical networks are 'virtual communities' precisely in that dual sense of representing a community of interacting 'netizens' whose connection to each other is nevertheless based on mere cybernetic links (see also Iglhaut et al. 1996; Mitchell 1995). Thus, in talking about socio-technical networks, it seems important to analyze the origins and nature of the technical infrastructure of networks separately from their generative, productive, and innovative effects on organizational and social network formation, for example, the creation of specialized electronic markets, target groups, interest associations, and value-adding partnerships (Johnston and Lawrence 1988). Similarly, since the development of markets, hierarchies, groups, and associations from any kind of prior social network involves a process of formalization and institutionalization it, too, requires a separate logic of analysis (also see Powell 1990: 322; Benz 1993; Zintl 1993).

While technical, social (especially organizational and interorganizational), and socio-technical networks can be analytically distinguished, this is not quite as easy in actual practice. As Hoogvelt and Yuasa point out in a comparison of Japanese and Western conceptions of information technology, technical information networks cannot be easily separated from production and organizational technology. The authors argue that '...in the West, the absence of a psycho-cultural infrastructure comparable to that which enables Japanese network capitalism to operate, has resulted in the conviction that information technology is not primarily part of production technology, but mainly organizational technology. As organizational technology, it is designed to overcome the ‘precarious’ dependency which the new systems of production entail and which, in the Japanese context, as we have shown, are relatively unproblematic. The function of electronic data processing (EDP) and electronic data interchange (EDI) in particular is organizational: providing procedures, communication and memory patterns and ways of linking, controlling, and coordinating personnel and companies with one another and with machines. Emerging patterns of hierarchization of EDI flows are important determinants of future constructs of power and regulation' (Hoogvelt and Yuasa 1994: 299; also see Deutschmann 1996).

In sum, there are many types of techno-social linkages in the sense that the nature and capacities of computer networks have consequences (or create opportunities) for the formation, structure, and operation of social networks (on a 'sociology of the Internet', see Gräf and Krajewski 1997 especially the papers by Gräf 1997 and Schack 1997, also Jones 1995). It is in this latter capacity that the Internet and its constituent sub-nets can be seen as factors in the acceleration of competition and innovation insofar as self-reinforcing processes are set in motion in which competition leads to cooperation and further integrative social network formation which, in turn, may stimulate innovation and competition at a higher level. Something like this has undoubtedly animated the phenomenal growth of the new media industry in Silicon Alley in the last half decade.

The negotiated work agreements of multimedia networks. In the strategic social and socio-technical networks among the MM firms of Silicon Alley, we find all the well-known types of relationships characteristic of production and service networks ranging from the relatively open and informal cooperative arrangements among producers, service providers, or suppliers (see e.g. Richardson 1972; Mariti and Smiley 1983) to strategic alliances and joint ventures and, finally, to the more formal and long-term aspects of relational contracting (Macneil 1978, 1985) and the bi-lateral agreements of quasi-firms (Eccles 1981). The mixed and often contradictory nature of some of these relationships in terms of formal-informal, contractual-noncontractual, managerial-competitive or cooperative-competitive elements is indicated in such terms as managed competition, managed trade and negotiated market relations, mutual advantage and profit sharing, mutual transparency, and joint target costing (Weber 1995; Schmidt 1996).

Relational business practices, however, have a tendency to marginalize or bypass formal contractual ties, seeking to get a maximum of cooperation, effort, and response out of interactive episodes or partnerships with a minimum of formal commitments, institutional obligations, or legal consequences (Macauley 1963; Kaufman Winn 1994). Yet interactive and relational practices in service settings, in general and in knowledge-intensive services, in particular, have a much broader significance which is relevant to social network formation involving co-producers, service providers, clients, consultants, and related expert services. Insofar as the participants and members of such interactive network-based practices develop and share a common definition of the situation, i.e. the terms and conditions, expectations and rules, definitions and standards, rights and obligations which make these practices possible, they can be said to have a **negotiated work agreement** that tacitly governs their interactions and relations (see Steinert’s [1984, 1994] 'Arbeitsbündnis' or 'Interaktionsbündnis'); see also the notions of the 'definition of the situation' and 'negotiated order' from symbolic interactionist theory and 'making sense together' from ethnomethodology).

It is these more or less implicit work agreements that are the core of MM networks. In contrast to the analytical separation between process and product in manufacturing, the product of human services inheres in the process of providing the service itself. The quality of the customized performance is constituted in part by the nature and quality of a human relationship. This process typically involves a kind of co-production based on intensive symbolic interaction and negotiation between two or more people, e.g. between the service provider and the client. Human professional services, from medicine and law to teaching and consulting have always been based on this model of more or less cooperative interpersonal negotiation in a somewhat ambiguous, indeterminate, non-routine situation. In such settings, it is understood that experts, due to their technical know-how (one could also say: 'professionals' due to their 'technical autonomy' and their monopoly over skill and knowledge), exercise a certain degree of influence over clients which hovers between persuasion, charisma, and the substantive rationality of professional authority.

As the vast literature on the professions and professional practice shows, however, social expectations, negotiated agreements, and implicit contracts can also be disrupted or negated by asymmetrical power relationships or more precisely, by the conversion of knowledge into power. In fact, misunderstandings and distortions based on unequal power relationships may already be present at the time so-called 'agreements' and 'contracts' are negotiated, or they may develop later during the course of the 'consummation' of the negotiated relationship. It goes without saying that asymmetry and inequality of resources and power underlie most problems of the 'fulfillment' of contracts, an endemic modern condition that tends to surface also in other fairly institutionalized relationships such as employment and marriage contracts. Formal legal definitions and contractual arrangements were historically designed to stabilize such problems.

In the knowledge-intensive settings of contemporary high-tech production and service systems, the work of 'symbolic analysts' (Reich 1991) is frequently evaluated in terms of the specific interpersonal skills and performance they exhibit in the process of providing a service (see Seron 1996 on the social dimensions of solo and small-firm legal services). As Powell (1990: 300) puts it with respect to network forms of work, 'certain forms of exchange are more social - that is, more dependent on relationship, mutual interest, and reputation - as well as less guided by a formal structure of authority'. While trust plays an important part in such settings, the partly cooperative, partly competitive situation is often sufficiently ambiguous to warrant a more or less rational recourse to the terms and conditions of the work agreement. In other words, strategic social networks do not and probably cannot operate completely on 'blind trust', but are contingent and conditional on some reflexive evaluation of the 'performance' in and of the service relationship (see also Bradach and Eccles 1989, and Gambetta 1990 whose performance-based concept of trust has a similar kind of rational twist). This is likely to be even more true of socio-technical networks and virtual communities in which the anonymous and liberating nature of the virtual reality produced may also generate a degree of social distance, if not estrangement. Let me illustrate these considerations with some examples of typical service network structures that one is likely to encounter both within and among firms in the MM industry.

Project networks in advertising and consulting. In a typical advertising or consulting agency, a given project is organized around both business and management functions centered in a client consultant and his or her account as well as an associated technical and creative organizational unit consisting of a technical or art director, a copy writer, and a creative director. Contact with the client is maintained by the consultant who brings the client’s viewpoints and wishes into the agency and provides the project team with the appropriate conceptual and technical specifications. Since teams are sometimes working on different projects and accounts at the same time, there is a good deal of ongoing restructuring and rotation in the division of labor. The agency may resemble a loosely coupled network of activities or 'adhocracy' rather than a professional bureaucracy with its hierarchy of specialists. Occasionally, in-house teams are asked to compete against each other, especially when customized campaigns are developed to

attract a new client. An ad agency may either provide (make) or outsource (buy) needed support services such as print, film and video, interactive online computer screen design, EDP, and direct dialogue marketing. There may be independent management consultants and trend researchers who specialize in certain markets or 'future trends' and who mediate between client firms and ad agencies. Short-term technical services may be provided by freelancers who often develop personal relationships with creative personnel in a multitude of different agencies and who constitute a crucial resource in local MM markets. In many of these cases, the project teams must contact and activate these external service providers and develop social networking skills to use them effectively. Thus, the external relationship between agency and market is constantly pulled into the agency itself; economic principles of competition and the control of transaction costs may assume the function of internal organizational direction and control, especially when agencies are dependent on powerful clients.

The network form of organization also governs the constitution of more external 'core teams' or 'integrated communication networks' among firms. A powerful client, in consultation with an ad agency, may initiate and finance the development of an ad hoc project network pulling together various firms for the production of ad campaigns involving music, film, or other performance media, promotion, and public relations. Different networks may be put together for different purposes. Clearly, it is in the agency’s interest to be able to have a number of such multimedia service suppliers available at short notice and to develop long-term relationships with them. But shifts in market trends, clients, and the constant need to weigh make-or-buy decisions also generate a degree of rotation, turbulence, and change. Project networks and core teams, therefore, do not necessarily exist for long periods of time or have a determinate structure and stability. Indeed, the term 'core team' has sometimes been viewed as too static and may give way to terms like 'integrated communication agencies' or 'integrated communication networks'.

In advertising, project networks within and between agencies and clients are usually connected by local area computer networks where they parallel or supersede the traditional connections by telephone. An agency may have 'internal' computer networks ('Intranets') both for in-house staff located in its various branches as well as for its clients, although cross access may be limited. Usually, both staff and client networks are of course also connected to the Internet.

Other knowledge-intensive service networks. It should be clear that the kinds of service and project networks described above are not simply an added element of traditional organizational forms in knowledge-intensive and MM services. Service and project networks constitute the core structure of a new type of organization of work in which cooperation across institutional boundaries becomes a new force of production, creativity, and innovation. This understanding informs research on a variety of advanced producer and business services and their interfirm networks such as management consulting, corporate auditing, and tax, legal, and marketing consultation; computers and EDP, software development, communication, and marketing services, as well as

advertising in a number of different countries (see van Dinteren et al. 1994; especially Howells 1990; Gentle and Howells 1994; Monnoyer-Longe and Mayere 1994; Powell, Koput and Smith-Doerr 1996; Strambach 1993, 1994, 1997; Starbuck 1992: 730-3). The work organization of services in these areas is characterized, according to Strambach (1993: 36), by an intensive process of cooperative interaction and exchange of information between service provider and client which derives from the client's need for explanation, clarification, interpretation and detailed instructions for application. Clients in this service sector demand a highly particularized and individualized 'product' which results, in part, from the cognitive nature of the tasks to be processed and the non-routine problems to be 'solved', in part from the very availability and increased use of new information and communication technologies themselves. Such highly specialized products-as-processes can, in turn, often be provided only by a cooperative arrangement between service provider and one or several suppliers. The service process has to be adapted to the specific needs and circumstances of the corporate client. 'Only then can a qualitatively optimal problem solution be achieved from the perspective of the client. From the perspective of the service provider, on the other hand, a high degree of adaptation and flexibility is required' (Strambach 1993: 36; see also Davidow und Malone 1993; Fagerberg 1995).

Based on a creative research design, Strambach (1993: 40-6) analyzes the frequency of three types of network relations for firms in the areas of business services, technical services, advertising, and EDP. She finds that inter-firm cooperation occurs regularly or frequently in 45% of all the 340 firms investigated, 'never' in only 30%. Advertising (73%) and business services (48%) have the highest rate of high-frequency cooperation, and only about 7% of the advertising agencies say they 'never' cooperate (which may simply mean that they are the largest ones and provide all services in-house). **A crucial aspect of these cooperative inter-firm relations is that most of them (about 80%) are not regulated by formal legal contracts.** Cooperative inter-firm relations are not necessarily conceived as stable and permanent at their onset, although they may be durable in case they prove to be successful.

A second type of network relationship in Strambach's study is reconstructed from a comparison of full-time employees and freelancers. Again, advertising provides the biggest contrast with only 6% full-time employees, but 28% freelancers. On average, avertising firms have twice as many freelancers as FT employees. For business services, the figures are 30 % FT employees and 49% freelancers.

The externalization of services is a third measure of inter-firm network relations and shows that almost two-thirds of the firms analyzed augment their intra-firm resources by buying additional inter-firm services. Marketing and advertising services are bought externally in about 35% of the cases, but these are surpassed by the external acquisition of tax (75%), legal (67%), accounting (48%) and EDP (45%) services. Significantly, only 20% of the firms have locally oriented relations of cooperation, even though the exchange between interfirm partners requires face-to-face contact, suggesting that social

network relations have a greater impact on interaction than spatial propinquity. Strambach (1993: 46-9) concludes that knowledge-intensive firms use network structures in order to respond effectively to complex and dynamic work situations and to adapt to rapidly changing external environments. By using combined network strategies (e.g. cooperation and externalization) flexibly, they prove to have a competitive advantage over those firms that do not use network structures.

These conclusions agree broadly (i.e., provided production and service networks are analytically distinguished from marketing networks) with those of other students of interorganizational networks such as Berkowitz (1988), Faulkner and Anderson (1987), and Perrow (1992, for useful reviews, see Mizruchi and Galaskiewicz1994, and van Dinteren 1994). A particularly interesting formulation of a typology of **social networks in marketing** comes up with the concept of 'stakeholders' (other than consumers') networks not under the control of the firm' (Arabie and Wind 1994: 258). The authors state that 'companies are adopting the concept of the hollow corporation [citing Wilson and Dobrzynski 1986] which suggests that, through strategic alliances and outsourcing, the firm can obtain many of the functions it requires without having to perform all of them internally, and there is increased interest in (...) the management of a network of organizations' (Arabie and Wind, op.cit.). Obviously, there are analytical parallels between the notions of the 'hollow corporation', the highly networked Type I service network (Strambach 1993) the 'borderless enterprise' (Picot et al. 1996), the 'virtual enterprise' (Davidow and Malone 1993) and the 'lean supplier system' (Weber 1995), even though one could quibble over the analytical differences between 'system' and 'network'.

Thus, the process of learning, adaptation and managerial transformation with respect to networking appears to complement the population-ecological process of selection of those organizational forms that opt for network-based innovations (see also Picot et al. 1989, 1996, and Meckl and Rosenberg 1995). Moreover, the social nature of networks, in addition to their technical or socio-technical nature, appears to have the particularly innovative potential that renders multimedia networks phenomena of more than technical interest (Ortmann 1990; Feldhoff et al. 1994; Weltz and Ortmann 1992). One aspect of this development is the strategic significance that Peter Drucker and others (e.g. Hamel and Prahalad 1994; Reich 1991) have ascribed to knowledge-intensive human capital, a type of capital vastly enhanced in the context of social and socio-technical networks. Another aspect is the blurring of boundaries among firms and between them and their environments, a theme developed by neo-institutionalist orgnization theory (Powell and DiMaggio 1991) but not yet fully articulated with the theory of social networks except for Powell's (1990, 1994, 1996) seminal contributions. Finally, there is the question of the spatial/global and longitudinal/historical dimensions of interorganizational network formation and development, especially when viewed in terms of the transitions from interfirm competition to possible later stages of

cooperative, exchange and oligopolistic or neo-corporatist networks, and ultimately hierarchical or transnational integration (Galbraith 1971; Friedmann 1988; Harrison 1994). Much of this work - in tandem with the object it describes - finds itself *in statu nascendi* insofar as the intimate connection between economic globalization and the emergence of strategic alliances and networks is just now evolving, but is barely studied or understood (but see Petrella 1996, and Harrison 1994, for analyses of global network relations).

5 The competition between old and new media firms in Silicon Alley

The putative competitive advantage of MM firms in Silicon Alley is a particularly fascinating issue when it is viewed through the Schumpeterian lens of 'creative destruction' (Garud and Lant 1996). There seems to be little doubt among the 'new media partisans...not just the militantly non-conformist employees of the start-up companies themselves but their whole support network of venture capitalists, lawyers, landlords, consultants, accountants...that new media are destined to triumph over old media' (Hirschfeld 1997: 68). Hirschfeld adduces five basic reasons for this scenario.

1. Since Internet users spend forty to forty-five hours per month online (Coopers & Lybrand 1996), they tend to cut back on the most time-consuming old media activity: television viewing.
2. Television and other ad-supported old media will lose advertising dollars as their mass audiences are replaced by the new media's ability to offer advertisers 'narrowcasting', the capacity to reach carefully targeted audiences through sociotechnical networks. Through a kind of 'informating' process, i.e. the possibility of collecting background information on Internet users through user search practices (e.g., while clicking on an advertisement on the Web), firms can build up invaluable data sets on specific target groups.
3. New capabilities such as 3-D simulations or cheap, high-quality video-conferencing (already used for pornographic purposes) promise to be expanded for business- and family-oriented mass market applications.
4. Although the old media conglomerates own large sets of valuable content (e.g. the Hollywood film files originally brought to Time Warner Inc. by Warner Bros. and Ted Turner), these assets are not easily turned into a competitive advantage since re-tailoring or translation of old content for new media use appears to be dragging. Hirschfeld (1997) observes that 'video games based on movies usually fail, and Websites created by old magazines...(cannot compete against new)... start-ups'. New media, in turn, can create 'brave new worlds of content' and can 'customize content for individual users in a way that no old-media company can'. 'Above all', Hirschfeld (1997: 69) continues, 'the new media allow subscribers to create their

own content, to build the sense of ‘electronic community’ that many customers want. In thousands of so-called ‘chat rooms’, the content consists of never-ending conversations... about everything from car repair to knitting to politics, offering far more variety and personal contact than a conglomerate’s polished product. These ‘rooms’ make money by charging chatters per minute or by displaying print ads. The king of such communal, subscriber-created content is America Online (AOL) which...is like a digital bartender, bringing like-minded people together and collecting more money the longer they schmooze.' It is estimated that by the end of 1997, AOL had more subscribers in Manhattan than Manhattan Cable and more New York subscribers than the New York Times. Clearly, newspapers and other local media are beginning to see the writing on the wall.

5. The old media conglomerates, finally, may find it difficult to change their corporate cultures and transform their corporate structures. They have large operating units and multilevel hierarchies that obstruct the flow of information, resist the processes of constant reorganization and restructuring so typical of the new networked corporate entities, and are ill-adapted to start new programs and projects on short notice.

Hirschfeld (1997: 69) points out, however, that the sheer money and power invested in the old media conglomerates may prove to be a formidable source of resistance for some time to come. Old media revenues have still been growing even as some giants like Time Warner, who is participating simultaneously in both old and new media markets, operate in the red (due largely to a huge debt service). The traditional entertainment industry is 'an export powerhouse, second only to aerospace' (op.cit.). Advertising itself is a potent factor in the relatively low cost of using television and radio as compared to start-up costs of the (ever-changing) computers and the new media subscription fees, and established big media firms may still have the advantage of name recognition, large mass audiences, and huge advertising budgets. Some difficulties may also face the new media in terms of the undue cost and amount of time spent individually on the Internet as well as some degree of cultural resistance to becoming a 'netizen' in a virtual community, factors that appear to be even stronger in Europe than America. Old media corporations may, however, seek to conquer the new rivals by integration, as has already been suggested by the extent to which large corporations like the New York Times, Sony, Time Warner and the big national TV networks have managed to put their foot in the door and begun to operate simultaneously in old and new media markets.

Nevertheless, the 'war between old media and new will be fought in every segment of the industry', according to Hirschfeld (1997: 70), and estimates as to the likely outcome require a differentiated analysis. All print media are most vulnerable to the competition from the new media because computerized texts offer new possibilities as compared to paper. Searchability by subject, author, date, or specific publication and capabilities like alphabetization, archiving, filtering, and electronic cutting and pasting are powerful alternatives to traditional modes of using print media. Newspaper advertising and, hence, newspaper circulation, stand to lose the most in comparison to the ad-listings-cum-pictures and other information offered by the WWW.

Magazines, however, may be better prepared for the threat from the interactive periodicals called 'zines' because they have their own Websites and can meet the competition on its own turf, for the time being. For example, Time Warner's Pathfinder 'allows visitors to chat on topics related to Time Inc.'s various magazines, to communicate directly with reporters and photographers on key stories, and even to play games related to the subject matter' (Hirschfeld 1997: 71). Here, for example, the new vs. old media competition takes place within the belly of the beast itself.

In the case of the book market, the verdict is mixed. The book industry, currently growing at 5 percent annually, also partakes of both old and new media advantages. Books are still easier to read the old-fashioned way as compared to consuming them on the computer, but they can be marketed and bought more easily via the new media, for example, through the one million title 'virtual inventory' of Amazon.com in Seattle. As a result, large publishers and distributors profit from the Internet as compared to ordinary bookstores.

In contrast to newspapers, magazines, and books, however, business information services are among the most profitable segments of the new media industry and generate $31 billion in annual revenues for companies in the New York metropolitan area (Hirschfeld 1997: 72). 'Business information naturally lends itself to on-line delivery' (op.cit.) which, due to lower cost, benefits the owners of content such as McGraw Hill, Dun and Bradstreet, Dow Jones, and Thompson Business Services.

As to the film, music, TV, and radio industries, Hirschfeld believes that they 'will feel the new media's effects later than the print industries, but they will feel them even more profoundly, for reasons that Thomas Edison would find very familiar' (1997: 72). Clearly, the new technologies need a while to be perfected and to catch on, but once they do, technological 'breakthroughs such as high-speed connections over cable TV lines, TV sets with built-in Web software, and 'hybrid' CD-ROMs that combine copious data with online updates' (op.cit.) will sweep the field mainly due to lower costs. This is particularly significant in the area of film, where 'Hollywood studios (most owned by New York-based conglomerates) now routinely use supercomputers to generate special effects' (op.cit.: 72), making previous techniques and practices of the film industry obsolete. In the recorded-music industry, the new media effects derive from distribution and marketing, not production (similar to the book industry). Since 'music is already in digital form thanks to compact disk technology, customers will soon be able to download entire albums directly onto their hard drives over the Internet (something they will eventually be able to do with movies too)' (op.cit.: 72-3).

Broadcast television and cable TV will be affected by the new media, but in opposite directions. Hirschfeld (1997: 73) reports that 'in 1995, Americans spent slightly more buying PCs than TVs, and TV usage fell 40 percent on average after the purchase of a household's first PC', a fact likely to impact the country's four major New York-based

TV networks. Cable TV networks, on the other hand, will benefit from the broadband data lines into homes, ultimately capable of delivering data a 1000 times faster than a fast telephone modem. 'Speed matters', argues Hirschfeld (op.cit.), 'not only because consumers get responses more quickly but also because multimedia content containing too much information to download effectively over phone lines will soon be available'.

Radio is the only old medium likely to continue to serve the same audiences that have always been listening: the millions who drive to work and those like low income and minority groups, as Moss and Ludwig (1991) point out, whose access to other media, especially expensive new media, is limited or non-existent.

In sum, the competition between old and new media may enhance rather than destroy the field, partly because it may be occurring more and more within rather than between media conglomerates like Time Warner Inc. As Hirschfeld's informative analysis suggests, the Internet provides for cheaper and more effective marketing and distribution at the expense of newspapers and broadcast television. At the same time, however, the Internet will increase the value of ideas and thus enhance the cultural significance and economic scope of the multimedia industry as a whole.

5.1 Interim Conclusion on MMNW's

The multimedia networks of Silicon Alley are, to some extent, spin-offs from the producer services sector and information technologies that developed since the 1970s and contributed to the spectacular global expansion since 1992. Multimedia networks are, of course, not the only factor in the process of economic and financial globalization, but they are a significant and indicative part of it and have grown at the same dramatic pace in the last few years. Yet this is not all. Multimedia networks in global nodes such as New York City are themselves centers of self-activity, organizational learning, and high-density interaction with other units. It would, therefore, be too simple to describe them as merely a link in a one-dimensional, mono-causal, or uni-directional chain of 'value creation' (Fuchs and Wolf 1997: 32) in which they are seen to influence the creation, diffusion, and adoption of technical and social innovations, or to determine regional economic development. They are, rather, part of a process of mutual causation, i.e. self-organizing core structures in a series of relationships of partly competitive, partly cooperative interactivity with other production and service networks. As members of networks in a transitional phase between competition and integration, actors in MM-networks may indeed perceive greater benefit from temporary cooperation rather than single-minded competition and conflict (see slogans like 'everybody benefits', 'rising water lifts all boats', 'increasing the size of the pie as a collective strategy is more important than competition for the pieces'). In a period of global block formation, such

arguments are particularly persuasive. Given the central location of Silicon Alley in one of the world's major urban places, the various multiplier effects and synergies of such a combination of cultural and economic density tend to translate into the kind of positive feedback loop I mentioned before.

The multimedia industry, by its very nature, tends to contribute to a new culture industry which is in the business of providing new images, interpretations, and meanings of what is happening globally at the same time that it offers redefinitions of changing cultural traditions and practices at the national, regional and local level. Thus, the new multimedia-based culture industry benefits from the very social and economic reality it helps to describe and define in the virtual reality of cyberspace.

6 The innovative significance of new strategic social networks

Strategic social networks are important 'social innovations' that - like the new information technology of the Internet - appear to be related to the paradigm shifts in economic policy (from Keynesianism to neo-liberalism) and in political-cultural ideology (from modernism to post-modernism) as well as to the 'real' social and political changes occurring in the wake of the Cold War and economic globalization. A good deal of technological determinism is, of course, implied by terms like 'the informational society', 'post-industrialism', 'post-Fordism', or 'Toyotism', terms that refer to social formations as if exclusively shaped by technical changes in the mode of production and communication. But the 'new social networks' also appear to represent an independent development in their own right, because they reveal something about contemporary social processes such as individualization and atomization as well as of dedifferentiation, de-formalization, even de-institutionalization of social structure, more generally.

The presumed novelty of strategic networking raises a number of questions: exactly in what sense is the term 'network' used? Why are strategic social networks emerging just now and in so many different areas (economy - politics - governance - crime)? In what way might they be different from networks in previous historical periods? How are experimentation, innovation and creativity related to deconstruction, deviance, and indeterminacy? Why has the theory of social networks lagged behind the technical methods of network analysis? It is not my purpose to write extensively and systematically about these questions in the context of this paper, but I would like to indulge in just a few speculative comments.

6.1 The theoretical tension between network analysis and the content of network ties

When talking about networks, there is often a problem of terminology even before analytical distinctions are made between technical, socio-technical, and social networks (see section II.3 above). The terms 'network' or 'system' can be used in a general, colloquial, non-technical sense, referring to a heterogeneous collection of interconnected elements. An organization, for example, can be viewed as a 'system' or 'network' of relationships regardless of the analytical nature or formal properties of these relationships. But once an organization is analyzed as a social system in the technical language of systems theory, much more specific assumptions and restrictive analytical concepts come into play. Similarly, there is a loose, colloquial meaning of 'network' which refers to reciprocal patterns of communication and exchange such as in 'personal support networks', 'old boys networks', or 'organizational networks'.

This colloquial usage ceases to be appropriate when networks are analytically distinguished from other types of social structure. For example, networks, in Powell's (1990) well-known negative definition, are 'neither markets nor hierarchies'. Nor are they, of course, political parties and interest associations (Streeck and Schmitter 1985) or 'constitutional orders' (Sabel 1993). Most importantly, social networks are not legally constituted (formal, contractual, public, authoritative or elected) governments, associations, organizations or institutionalized social structures, because that would make them by definition something other than networks. Powell's (1990: 295; 301) 'positive' definition refers to 'networks forms of organization' as 'typified by reciprocal patterns of communication and exchange' that '...entail indefinite, sequential transactions within the context of a general pattern of interaction; ... sanctions are typically normative rather than legal'. One could argue that this definition, while including the important 'structural' property of 'indefinite, sequential transactions', nevertheless draws attention mainly to the more enduring general, organizational, and 'cultural' patterns of interaction, especially since the fine distinction between 'normative' and 'legal' sanctions signals differences *within* institutional patterns of communication and exchange rather than *between* institutional and non-institutional patterns.

In the following discussion, I will stress the uniquely 'structural' and non-institutional nature of social networks even though it is clear that the 'content' of network relations can vary broadly and posits a major challenge to a purely structural network analysis. I define social networks as unique and generic social structures insofar as they are private, self-organizing, non-institutional, undifferentiated, and extra-legal as well as small, provisional, fluid, flexible, informal, temporary and transitional phenomena. In this respect, networks share much with anarchist and libertarian social relations and partially federated organizational structures and can be understood, in part, by political theories of federation or anarchist organizational theory (Cohen et al 1972; Ehrlich 1977; Hayek

1991: 293 who emphasizes 'spontaneous order'). Yet network analysis and anarchist or libertarian organizational theory have to my knowledge not been well articulated up to now.

It is clearly easier to distinguish networks from organiztional hierarchies than from markets and interest associations. In many technical discussions of social networks, there is usually a recognition of the non-hierarchical, non-authoritative, non-formal character of the relationships, less often a distinction between contractual and non-contractual ties. Powell (1990), for example, puts much emphasis on the socially embedded and 'relational', even quasi-institutional qualities of networks. This emphasis suggests the need for a whole range of comparative historical distinctions between such notions, for example, as (1) quasi-feudal Japanese extended networks and relational (or 'obligational') contracts (Dore 1986; D. Friedman 1988), (2) Macneil's notion of 'relational contract law', a form of modern (post-neo-classical and post-formal) substantive law which, while involving significant changes by virtue of being highly embedded, contextual and self-organizing in case of conflict, nevertheless 'remains theoretically structured on the discrete and classical models' of contract law (Macneil 1978: 854, at 900), and (3) Powell's use of the notion of 'relational' communication and exchanges (1990: 300) which points to certain modern **legal-contractual forms**, yet also seems to hark back to pre-modern, implicit **social-contractual forms** of mutual obligation, trust and long-term commitment. Other observers, e.g. Monnoyer-Longe and Mayere (1994: 304, italics added) state that 'the concept of network becomes meaningful (*whatever its legal nature*) when the relationships among members reach a certain density, thereby ensuring minimum cohesion'.

Legal/non-legal boundaries, however, need not be, and are not always, blurred. For example, when Macaulay (1963) analyzes certain network relations between automobile manufacturers and dealers, he explicitly uses the term 'non-contractual relations' to emphasize the extra-legal character of these business relationships. To be sure, Powell (1990: 301) talks in theory about situations where 'there is no common ownership or legal framework' and the fact that 'sanctions are typically normative rather than legal' (ibid.). Yet in his discussion of such diverse forms as 'joint ventures, strategic alliances, equity partnerships, collaborative research pacts..., reciprocity deals, and satellite organizations', he himself notes 'there is no clear cut relationship between the legal form of cooperative relationships and the purposes they are intended to achieve' (Powell 1990: 315).

Powell's is clearly a highly neo-institutionalist reading of networks in two respects. First, intentional, activist elements of social structures are uncoupled from their legal or institutional form, i.e. networks, agency, and culture are treated in terms of separate levels of analysis (see Emirbayer and Goodwin 1994 for a critique of the one-sided nature of much network analysis in terms of one or the other of these levels). Second, there is a tacit assumption that social networks are institutional or quasi-institutional

social structures, that their formal properties and content are shaped by the cultural environment in which they are embedded, or that they prefiguratively contain the seeds of their eventual institutionalization. Similarly, in the extensive empirical literature cited by Powell, the constant interpenetration of contractual and non-contractual elements of network relationships is either not noted or it is simply taken for granted. Networks, in short, may in these views be seen as less institutionalized than either markets and hierarchies rather than as hybrid forms located in between these institutional forms. But they are still implicitly treated as having a mixed character and being situated somewhere on a scale of institutionalization, even if opposite from the fully institutional pole of that scale (see also the conceptualization of networks as 'hybrid' in an earlier paper, Powell 1987; and Powell, Koput, and Smith-Doerr's 1996: 120 observation that 'beneath most formal ties...lies a sea of informal relations').

The definition proposed here, by contrast, places networks outside the institutional continuum altogether. It treats networks as social structures that differ categorically from legal and other normative institutions, even though processes of network formation, institutionalization, and de-institutionalization may, of course, empirically interact with each other. I conclude that the tension between formal analysis and substantive content of networks, or between generic structural characteristics and culturally or institutionally variable contents remains unresolved and awaits a more comprehensive theoretical construction.

6.2 Networks and the contemporary phase of unregulated globalization

The importance of defining social and strategic networks as non-institutional and extra-legal may be crucial for understanding why the topic of networks seems to emerge just at this point in history and why strategic networks enter into the limelight of a variety of academic and practical discourses in areas such as strategic management, policymaking and implementation, organized crime and, of course, the informal economy (Portes et al.,1989; on the organization of work, see also Sassen 1994: 100-115). To repeat the obvious, small social networks in economy and society are seen as models of private self-organization, i.e. as particularly efficient and cost-effective structures of communication, decision making, transaction and concerted action because they are informal, flexible, efficient, secret, adaptive, and innovative especially under conditions of ambiguity, complexity, turbulence, uncertainty, and unpredictability. In that sense, they are conceptual (albeit collective, holistic) extensions of the neo-liberal image of the independent, rational and creative individual entrepreneur who is a master of self-activity, self-determination, and self-responsibility. In exchange networks, participants are motivated by 'the reduction of uncertainty, fast access to information, reliability, and

responsiveness' (Powell 1990: 323), in addition to a rational interest in low transaction costs, speed, and the transfer of tacit knowledge and know-how (Powell 1990: 324). Favorable elements are asset specificity (incl. 'local knowledge'), trust (low opportunism), high exchange frequency, stability through mutual adaptation, flexibility through redundancy (overdetermination), small size, and the strength of weak ties (Grabher 1989). Amplifying on the work of Sabel et al.(1989) and Miles and Snow (1986), Grabher (1989: 18) shows that redundancy in network relationships 'will secure access to complementary resources', reduces or eliminates the 'cost of searching for new exchange partners and of passing through new processes of mutual adaptation', and will 'create opportunities for sharing the learning experiences of exchange partners resulting from their exchange relations with third parties', thus producing virtual 'learning systems', joint problem-solving, and high-trust relations (Sabel et al. 1987: 48). These conditions minimize transaction costs '*by freeing the parties from the impossible task of precisely specifying their respective rights and responsibilities through elaborate contracts*..' (ibid., italics added). This is, of course, the stuff of Macneil's 'relational contracts', but there is still a difference between relational or elaborate contracts and no contracts, between 'limited reliance on contracts and the legal system' (Powell 1990: 328) and no such reliance. What then, exactly, is it beyond lower transaction costs (which according to Coase and Williamson were supposed to render perfect markets superior to other forms, absent rising transaction costs) that gives contemporary strategic networks their edge not just in economics, but in politics and crime as well?

From a neo-liberal and libertarian perspective, networks represent the quintessential minimalist form of free association among equal and autonomous actors, maximizing individual self-interest and minimizing social ('extra-individual' rather than 'internalized'), public, normative or coercive control. Based on the ideals of voluntary association, informed consent, the utilitarian maximization of individual preferences, and self-interested, rational choice, strategic networks are the very opposite of traditional communities, of the communitarian balance between moral order and individualism, and of public democratic consensus, let alone markets and hierarchies.

My point is, in short, that - in an age of invigorated, but unregulated globalization - it is the non-accountability and legal immunity implied by the non-institutional, extra-legal nature of private network relations that is of paramount interest to transnational businesses, governments, and organized crime alike, in addition to all the other advantages mentioned above. This does not mean, of course, that what happens in networks is necessarily illegal or immoral; nor does it imply that contemporary governments and transnational corporations have not learned to operate perfectly well within and around most existing legal, contractual, and political obligations. What it does mean is that it is precisely because networks are not legally constituted, formally regulated, or publicly accountable nor authoritatively established or democratically elected that they can offer some of the highly attractive and useful structural features

such as flexibility, informalism, organizational learning, secrecy, fluidity, impermanence, and creative innovation, in short, **ties that do not bind**.

All other forms of social association, including the 'social networks' based on trust, normative reciprocity, mutual obligation, loyalty, long-term ties etc. touted in the literature as representing the hidden strengths of networks are really not networks at all, but either pre-modern small communities, modern local neighborhood, family, and friendship groups, democratically constituted voluntary associations, morally, politically, or ideologically integrated communitarian entities, or the many local, regional, or national groupings based on socially constructed, categorical (ethnic, racial, religious, age and gender-specific, or 'cultural') characteristics and 'bonds'. While spontaneous social networks may and often do emerge from many of these compositional and structural pre-conditions, they are not to be confused with them. Nor do the new economic exchange and strategic action networks have all the desirable characteristics like mutual trust and long-term reciprocity so often ascribed to them. Their 'dark side' (Harrison 1994: 189) is that they are capable of optimizing temporary advantages like economic concentration, oligarchy, oligopoly, and cultural capital without having to account to any moral or political 'authority' inside or outside the network – and certainly not even the 'discipline of the market'. Such networks do not operate under universalistic subjective rights or enforceable normative rules, but under their own private and 'voluntary' controls such as 'rules of the game', a tacit consensus about inclusion/exclusion of participants or new members, particularistic local understandings, and ad hoc, substantively irrational, case-based 'procedures' ('the way things are done') which under the best-case scenario approximate a set of pragmatic and empirical rules of thumb.

One may certainly agree with Powell (1990: 323) that there is no simple or single explanation that integrates all the cases under one theoretical roof, i.e. one comprehensive 'etiology of network forms'. Indeed, his own examples are nominally limited to economic exchange networks. Moreover, the boundaries between legal and non-legal relations may themselves become increasingly blurred in these post-modern times requiring, in turn, an explanation of the erosion of the rule of law and making it extremely difficult to apply legal criteria to networks, as lawyers and judges are well aware of. Thus, even if strategic alliances and similar network relations were formally contractual, their implementation or enforcement in case of non-performance would be accomplished more likely by negotiation or under a regime of arbitration rather than through conventional adjudication (Horning 1998; Dezalay and Garth 1996; Sinclair 1994).

It is, therefore, useful to examine the proliferation of networks and of network analysis in the last twenty years contextually and to clearly distinguish strategic social networks from other organizational forms in terms of their legal, public, and institutional character. Such an approach may in fact reveal that the great appeal of networks lies

precisely in the absence of formal rules, regulatory restrictions, reporting requirements and publication, supervision, audit, and review, as well as their independence of the oversight and control of performance-evaluating bodies, courts, and electoral constituencies. Creativity, innovation, and entrepreneurial risk-taking benefit today just as much from such non-bureaucratic, post-regulatory, and extra-legal conditions as oligopolies, neo-corporatist bodies, endemic institutional corruption, and organized crime.

Theoretically, then, it can be argued that creativity, experimentation and innovation are one side of a coin, the other side of which are deconstruction, deviance, and indeterminacy. It is possible to see the commonality of the two sides in terms of a cognitive Gestalt switch between figure and ground or between illegitimate means (norms) and legitimate ends (or values), i.e. as functional equivalents or alternatives as Merton (1968) in his paper on 'Social Structure and Anomie', following Durkheim, has suggested. Using illegitimate means to achieve legitimate ends may, sociologically speaking, be both criminal and creative since both deviance and innovation can be defined as constituting (negative or positive) forms of deviation from some normative baseline.

It is also possible and conceptually less forced, however, to posit a dialectical relationship between destruction and creativity, such as Schumpeter, following Marx, has suggested. It is likely that social networks, due to their very openness and loosely coupled structure, permit and even optimize the simultaneous production of destructive and constructive, deviant and creative processes. They can certainly choose to operate right at the thin and notoriously permeable line between still permissible and already corrupt practices, much like the ingenious and ever creative use of tax loopholes, money laundering by banks, investment schemes, or covert intelligence operations by governments. Who would have thought that it is precisely the pre-existing network structure of the old state-socialist elites that since the early 1990s has lent itself to both privatization and organized crime at the same time? That, under the right conditions, de-industrialization may destroy industrial 'rust belts', yet also spawn new creative production and service networks? In short, it is the open-ended relational and structural ('neutral') characteristics of networks (here esp. their capacity for facilitating joint risk-taking, gambling, entrepreneurship and power plays) that distinguishes them not just from markets and hierarchies, but from all legal and institutional structures. Social and especially strategic networks are strongest and most robust where the formation and exercise of extra-institutional social, economic, and political power is at stake. These characteristics, therefore, may also enable policy and decision networks to function as structures of governance and as engines of institutional change. Such strategic tasks may include, for example, efforts to bypass, transform, or abolish rigid legal and regulatory arrangements because this is precisely what conventional legal and institutional structures cannot do on their own beyond 'reforming' themselves.

6.3 Social networks and institutional de-differentiation

An as yet to be formulated theory of social networks might generally be framed in terms of developmental and deconstructive processes relating the formation of networks to organizational transformation, i.e., specifying the conditions of emergence, formation, and transformation of both social networks and organizations. The emergence of social networks could be hypothesized as standing in a relation of mutual causation with organizational and institutional de-differentiation, just as the processes of vertical integration and concentration could be seen as limiting the relatively unstable, transitional nature of networks. Long-term, stable networks would be hypothesized as determined by exceptional circumstances that would require special structural and historical explanation.

The analytical emphasis would be on the processes of formation (the incidence and etiology) as well as the transformation of social networks, in addition to the question of their structural forms that figures so prominently in contemporary technical network analysis. Since networks would be conceptualized as social structures sui generis that differ analytically from organizations and institutions, including the contractual basis of markets, it follows that one would need to examine comparatively the relative propensity of historical and (non-) institutional contexts to generate network-like structures.

One starting point, for example, might be a theory of structural/functional dedifferentiation, i.e. the identification of the conditions under which established ('differentiated') institutions (law, government, institutions of civil society, a 'formal' economy etc.) break down and give rise either to 'alternative' (substitute, equivalent) ways of performing these functions or else, regroup or become restructured at lower levels of complexity and integration. Dedifferentiation here might refer to both deconstruction of institutional structures themselves (e.g. the replacement of the regulatory state by neo-corporatist or supra-national policymaking, see e.g. Schmidt 1997) or to the intermittent, even recurrent interpenetration between institutional spheres (e.g. the re-integration of state, law, and economy in state-socialist economies, the 'dual state', the 'dual economy', or the 'competitive state' under conditions of globalization, Hirsch 1995). For example, differentiated institutional structures may be unable to deal with crisis, overload, or shock and reorganize at a lower level of complexity or integration (Gouldner 1959). This theoretical perspective, of course, has the disadvantage of ultimately retaining the functionalist and systems-theoretical assumptions of the theory of social differentiation. Hence, it is limited by its own analytical horizon and would not necessarily be able to account for non-evolutionary, historical change or admit non-differentiated networks as legitimate alternatives to social institutions.

Other more historical approaches could be drawn upon to distinguish between revolutionary and evolutionary institutional change (Göhler 1997) and the institutionalization and de-institutionalization of criteria of rationality (Lepsius 1997), or to explore critically the consequences of a neo-liberal economic institutionalism for a theory of socio-economic change or dissolution (Weinert 1997; North 1990; Alston, Eggertsson and North 1996). Theories of legal deformalization (e.g. the growing use of general clauses, indeterminate legal concepts, ad hoc substantive law, and informal procedures) or of the decline of the nation state and national sovereignty might conceptualize the possibility of de-institutionalization at the level of legal and political culture (Heydebrand 1997). Needless to say, there is as yet little if any articulation between these theories of institutional dedifferentiation and the theory of social networks, notwithstanding the suggestive work of such authors as Castells (1996) and Messner (1995). Such an articulation would, as a minimum, have to theorize the role and relative usefulness of (undifferentiated) networks as non-accountable, non-legal, non- contractual, informal, flexible, extra-institutional structures and channels of communication and decision making precisely at the point when national economies and the nation state are in disarray. The current strategic importance of networks lies in the fact that they emerge and flourish outside the institutional hierarchies of law and the state, indeed, outside all social institutions that might exercise some kind of legitimate authority, whether traditional or rational, but that are for highly specific historical reasons increasingly unable to do so at the present time.

6.4 The structural context of network formation and the issues of size and duration

Among the many questions that remain to be addressed by a more comprehensive theoretical formulation, two or three might be mentioned provisionally: the comparative historical and structural context of network formation, the issue of permanence or duration, and the importance of network size.

If it is true that social networks are fundamental, generic social structures, they should appear as frequently throughout human history as institutions, if not more frequently, and they should be relatively small to withstand the pressure toward structural-functional differentiation. This might, in fact be the case, except that most sociological theories have tended to focus on the problem of institutional order and social reproduction rather than on the problems of transformation, innovation, or liberation, i.e. on social movements, social networks, and social change. Suffice it to say that in the context of the process of globalization since about 1850, formal legal and political institutions have played a generative and protective role in relation to economic development mainly in the initial phase of globalization, as the work of Max Weber

amply demonstrates. While formal law itself flourished in the second half of the 19th century, culminating in the continental 'legal state' or the American 'national administrative state' at the turn of the century, state-centered institutions based on substantive law dominated much of the 2oth century, exercising significant regulatory control over the private economy from the 1920‘s up to at least 1971. There is no doubt that network-like structures emerged intermittently during this period, especially during the Cold War between 1949 and 1989. It is also clear, however, that the regulatory state based on substantive law and policy making produced a great deal of institutionalized control which has been effectively neutralized only relatively recently. It is, in my view, not accidental that both strategic (economic and political) networks and academic network analysis have boomed during the last 20 years, a development that has by no means been adequately integrated into social theory via a relevant sociology of knowledge analysis (for a recent general attempt at theoretical integration, see e.g. Emirbayer and Goodwin 1994).

A second set of questions has to do with the durability and possible life-cycles of networks. Powell and others (e.g., Johanson and Mattson 1987) have generally emphasized the long-term aspects of networks that are based on the development of trust as well as technical, planning, knowledge, socioeconomic and legal bonds between firms. Yet Powell (1990: 327) points out that network-like alliances may have special relevance in the 'youthful stage of an industry’s life cycle' and that 'the need to acquire resources may lead to network arrangements that are an interim step, either a half way point between market procurement and outright merger or a transitional move until internal capability is built up'. 'Tacit knowledge', Powell continues, 'is inherently difficult to exchange; it may well lead to repeated, reciprocal interactions, transforming what was initially a relationship approached with some caution or fear into one that is institutionalized and enduring'.

These considerations suggest that social networks may be, indeed, provisional, temporary, and transitional as a rule, i.e., that they may have longer temporal trajectories only rarely, depending on different types of internal ties and external institutional and cultural contexts that need special attention and explanation. Obviously, the issue of durability or stability says nothing about the extraordinary potential productivity, creativity, or generativity of strategic networks as long as they operate qua networks, i.e., in a phase preceding potential dissolution or routinization, crystallization, and institutionalization.

This view has been the fundamental assumption that has guided my analysis of multimedia networks in Silicon Alley. Thus, a working hypothesis can be formulated to the effect that the larger social networks become, the longer they exist, and the greater their use for legitimate instrumental and strategic purposes, the greater the likelihood of their formalization and institutionalization. At that point, however, networks analytically cease to operate as networks and turn into something else. A corollary working

hypothesis is that under the current conditions of global expansion and concentration of finance capital as well as the sectoral growth of advanced producer services, strategic and socio-technical networks are of relatively short duration, say, a decade or less. The reason is that strategic inter-firm networks seem to have a life-cycle moving from a competitive phase to cooperation and exchange (networking), and from there either to 'restructuring', or else to dissolution by virtue of formalization, vertical integration, and decentralization (Galbraith 1956). In fact, a theoretical convergence between the historical work of Chandler, Galbraith, Harrison, Williamson and others, on the one hand, and the population ecology or industry-wide analyses of organizations (e.g., of the computer industry or cultural industry systems) might suggest the same for small firms, generally. Small innovative firms and networks may be 'selected' in the early phases of variation, but they may either tend to become formalized and institutionalized over time, especially through growth in size or integration into hierarchical or oligopolistc structures; or else dissolve and disintegrate into still smaller networks, or divide into institutional and non-institutional structures (for relevant observations from the culture industry of popular music, see Hirsch 1972; Peterson and Berger 1975).

These considerations suggest that strategic networks may be able to maintain a relatively long-term balance between dissolution and institutionalization only under exceptional conditions, to be identified by further theorizing and research. In their relative instability, therefore, networks resemble federations and anarchist social structures which also tend toward either centralization or dissolution. From the point of view of single actors, of course, the 'temporary' character of membership in networks may look much like a continuous game of poker in which new players enter periodically as others drop out.

The most compelling evidence on the transitional and temporary nature of the new production and service networks that sprang up as a result of the 'second industrial divide' comes from the analysis of some of the very 'neo-Marshallian nodes' that served as hallmark cases: the northern Italian industrial districts, Silicon Valley, and Route 128 around Boston. One of Harrison‘s (1994: 183) main points is that small firms and small production networks typically do not and cannot sustain a long-term viability, in part because of the competitive advantages of large transnational firms, in part because of the short-term time planning horizon of (especially American) managers. It is perhaps impossible to say whether the 'devolution' of these districts is a direct result of the process of globalization in which they may have become caught up, or whether they would eventually have met the fate of vertical integration or dissolution regardless of this specific historical process. It is also too early to say whether Silicon Alley will meet with a similar fate – at this point, the case of the multimedia networks of Manhattan is just a little over half a decade old and, according to Hirschfeld (1997), Pavlik (1997), Coopers and Lybrand (1997) and other observers, shows no signs of being other than exceedingly robust, provided one interprets the 'shakeout' of 1996 as a normal, even

'healthy' developmental phase. But, as a more long-term perspective might suggest, 'all that is solid melts into air' or conversely (if networks tend to move from their transient, innovative role to becoming solidly integrated into economic governance structures themselves), all that is lofty network interaction crystallizes into change-resisting power relations. In the context of the current phase of globalization, this means that large, transnational firms are ultimately likely to supersede and absorb small firms and their networks, leaving network-like structures intact only insofar as they remain dependent or useful as early pioneers, suppliers or distributors, or play a strictly symbiotic role as in Japanese keiretsu governance, or allow themselves to be coopted into public-private partnerships as in many European cases, e.g. Airbus Industries.

7 Discussion and conclusion

The short historical trajectory of New York's Silicon Alley shows the tremendous potential for sustained economic development of production and service networks, in general, and of multimedia networks, in particular. The new production and service networks, whether in Europe, Japan, or the United States, exemplify the dual role of being part of economic globalization and at the same time constituting the backbone of reactive regional development strategies in the face of global competition. In this dual role, they are supported and their effects augmented by the new media industry. The special nature of interactive virtual communication makes multimedia networks into something more than a sub-category of service networks. Because of their technical capabilities and socio-technical convertibility as well as their strategic significance in the new culture industry, multimedia networks provide an additional level of communicative capacity and cultural sophistication. They are the networks of networks. As such, their effect seems to reach beyond the conventional advantages of agglomeration because they are in the business of self-enhancement and creative self-representation.

Moreover, they may harbor the key not only to self-transformation, but to local/institutional and regional/ socio-economic transformation. While network formation normally benefits from cultural homogeneity and other categorical similarities among actors as well as homophily in their choices, multimedia networks appear to thrive on diversity and difference, thus encouraging collective learning and experimentation as well as creativity and innovation under conditions of freedom of speech and self-expression. If their accessibility were not so frequently limited by virtue of unequal resources, education, and other restrictions of cultural capital, they could become the medium of a liberal-democratic culture par excellence.

The case of Silicon Alley, however, is also difficult to separate from other aspects of the unique context in which it is embedded. New York's conditions of organizational density are hard to duplicate full-blown in regional clusters that find themselves in the incipient stages of economic development. The experience of Silicon Alley points to the kinds of potential synergies that emanate from a diversified economic and cultural context. Even a limited constellation such as a mid-sized urban environment with two or three institutions of higher education, research and development, and creative-technical training (art, computers, design, film, music), one or two major employers sponsoring a series of production, supplier, and service networks, and a few networks of multimedia firms self-sufficient enough to constitute a relatively autonomous, but attractive basis for further development would be a viable baseline for any regional cluster. Examples from the American heartland are the 'Research Triangle' of North Carolina or the urban-regional high-tech clusters around Ann Arbor, Atlanta, Austin, Baltimore, Bloomington, Boston, Houston, Ithaca, Madison, New Haven, Princeton, San Francisco, Seattle and Washington. None of these cities are particularly large or even comparable to New York, but they all have either a major research university, or a state government or major employer large enough to anchor some other knowledge-intensive service network or multimedia venture. The crucial factor seems to be the avoidance of a highly specialized or homogeneous, single-industry base which might be internally networked, but not sufficiently diversified.

All of these cases also benefit from the active participation and encouragement of local, state, and sometimes interstate or regional economic development agencies and policies. For the State of New York, these roles are performed by the Office of Economic Development in the NY State Office of Management and Budget, Albany, N.Y.; the New York City Mayor's office of economic development which is highly pro-active in attracting out-of-state and foreign venture capital and arranging for tax credits and tax abatements; and the Port Authority traditionally active in planning tri-state infrastructure and advanced economic development.

In addition, a multicultural and multiethnic urban environment always seems to have an edge over culturally and ethnically homogeneous settings if only because the latter tend to be boring, offer a limited quality of life in terms of choices of entertainment and life-styles, and are often artistically, culturally, and intellectually impoverished. Multicultural university towns, by contrast, have often proved sufficiently attractive for young urban professionals to provide the right kind of dynamic, liberal, youthful, future-oriented milieu. If this sounds like an advertisement from a local chamber of commerce or from a regional economic development corporation, it is perhaps not so far from the mark because these characteristics also figure in the 'quality-of-life' ratings of cities, their demographic composition, and their economic growth rate. All told, the new multilayered types of social and sociotechnical networks discussed here seem to fit well with this larger sociocultural diversity. Multimedia networks tend to spring up and

develop in a relation of mutual causation and transformation with the rich, image-laden and meaning-producing texture of cities and thus also help to create and reflect the current dynamics of global change.

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