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Labour markets and employment practices in the age of flexibility: A case study of Silicon Valley

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Labour markets in the United States and other advanced economies are going through important changes. Elsewhere we argue that flexible production is closely associated with the new competitive conditions in the global information economy and is marked by a *disaggregation* of labour (Carnoy and Castells, forthcoming). A fundamental feature of such labour disaggregation is a shift in the locus of work organization from permanent, stable collections of "jobs" to individualized, flexible employment defined by human capital portfolios. Individual "flexible" workers move between workplaces filling particular positions on demand, or are self-employed, providing labour services on demand.

Labour flexibility is now a major issue in all developed countries. Forty per cent of the labour force in Japan is self-employed, part-time or temporary, and the proportion is similar in the United Kingdom. Part-time employment has increased very rapidly since the early 1980s in France, Germany and the United Kingdom; in France temporary employment grew from 3 to 10 per cent of total employment in 1980-93.

Although in the United States employment is relatively "insecure" (as compared to Europe), in the sense that workers can be fired without major cost to the employer, the standard core employment relationship has, at least since the development of industrial mass-production enterprises, been characterized by full-time employment for an indefinite period, with a single employer who is primarily responsible for conditions of employment. This standard employment relationship certainly never characterized all jobs, but until recently it represented the dominant form of employment in mass production enterprises, communications, transportation, wholesale trade and service industries, such as insurance and banking, particularly for

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workers over 30 years old (see Hall, 1982). It is contended here that the shift toward "flexible" employment constitutes a distinct change in the conception of work and in the labour contract.

This article examines whether the labour market in Silicon Valley (California) displays these changes. Silicon Valley is a trendsetter, both for the United States and for the world – for two fundamental reasons. First, it is a new industrial region, formed entirely in the last half century, which has gone through successive adaptations to the waves of industrial and business reorganization that characterize the emergence of the Information Age. The newness of Silicon Valley's industrial structure makes especially visible the new patterns of work and labour-management relationships that supersede the classical forms of the industrial age. Second, Silicon Valley is well-known as a centre of innovation and production in global high-technology industries, both for manufacturing and services. These industries are characterized by the fact that they use their own products in production and management processes before those products are diffused onto world markets. Silicon Valley is thus the laboratory of a new technological paradigm that is spreading worldwide, with all due adaptations to specific institutional environments. Flexible work, new forms of networking and mobility, and contingent employment are among the most prominent features of the new industrial organization linked to new economic and technological processes.

One expects to find that new forms of employment and "internal" labour markets, especially temporary and subcontracted labour, are more widespread and growing faster in Silicon Valley than they are in the United States as a whole. This could be explained by the nature of the high-technology industries that dominate the area. Rapid changes in technology and products and highly competitive, globalized markets have pushed companies to place a premium on flexibility in an effort to stay competitive and innovative in this rapidly changing field. At the same time, as information technology and flexible production spread to the world economy as a whole, the changes observed in Silicon Valley could indicate the direction in which employment relationships will change elsewhere.

This case-study begins by examining the diverse forms of flexible employment that have expanded in Silicon Valley in the past 15 years. This includes a discussion of the various categories of flexible employment as well as an attempt to estimate their significance. This is followed by an analysis of in-depth interviews conducted in 1996 with leading electronics companies and temporary employment agencies. These interviews give a more detailed understanding of how firms view flexible labour markets and how these markets are organized. The article concludes with some reflections on the characteristics of a flexible workforce.

Flexible employment: A typology

To discuss flexible employment requires some clarification of terms and their implications. For many workers, the increasingly tenuous ties between

employers and employees may mean not only greater economic insecurity but also lower wages. Non-standard contracts tend to make workers more vulnerable to economic fluctuations. Yet, not all non-standard contract jobs are low paid or marked by poor working conditions. And some non-standard contracts, along with increased risk simultaneously provide new opportunities and improved working conditions, especially for people with the right skills and employment networks. In Silicon Valley a significant (though still small) minority of people thrive under such non-traditional labour contracts; indeed, they may even insist on them because of the flexibility they promise. For this minority, flexibility represents a new form of entrepreneurship in which the individual worker markets his or her human capital portfolio among various "buyers." On the one hand, such entrepreneurial activity entails greater risk than does standard employment but, on the other, it may provide higher returns. In a market where skills quickly become obsolete, it may also lower worker risk by taking skill formation out of the hands of the employer.

Contingency

Until now, the debate on non-standard employment relationships has been framed largely in terms of labour "contingency", since those relationships entail reduced, tenuous or indirect ties between the employee and the employer.[1] Polivka and Nardone (1989) argue for the narrowest definition of contingent employment, one based on two fundamental characteristics: the lack of expectation of continuing employment; and variability in hours worked, particularly in the sense that they are unpredictable. According to this definition, however, many part-time jobs would not be included in contingent employment because they are characterized by a stable number of hours worked per week and relatively long tenure. Similarly, business service and self-employed workers would not be part of the contingent workforce unless they meet the criterion of changing jobs (or business, if self-employed). This can be called the "job instability" definition of contingency.

Tilly (1996) tilts toward a "secondary" job definition of contingency. He focuses on part-time work and claims that part-time jobs, even if they do include stable hours and long tenure, should still be classified as contingent because of the character of the work associated with them. According to

[1] The phrase "contingent employment arrangements" was coined by Audrey Freedman, then of the Conference Board of New York, at a 1985 conference on employment security. It was used to "connote conditionality". She described such arrangements as "conditional and transitory employment relationships as initiated by a need for labor – usually, because a company has an increased demand for a particular service or product or technology, at a particular place at a specific time". However, the operational definition of contingent employment was subsequently expanded to include "any arrangement which differs from full-time, permanent, wage and salary employment" (see Polivka and Nardone, 1989, pp. 9-10). As formulated originally, the definition of contingency did not imply the negative connotation it has come to have in the 1990s.

Tilly, they require low levels of skill, training and responsibility; offer low pay and few benefits, if any; involve high rates of turnover; and tend to be both entry-level and dead-end jobs.

The broadest view of contingent labour is one of the earliest, namely, that formulated by Richard Belous (1989). His is a non-standard labour contract definition that includes temporary workers, part-time workers, the self-employed and workers employed in business services. He argues that by this definition, contingent employment accounted for 30 per cent of all employment in the United States in 1988, up from 26 per cent in 1980. Belous recognizes that this methodology may count some contingent employees twice (e.g. temporary workers may also be part-time workers). However, he defends it as a rough approximation, since it also under-counts some contingent employees, particularly people in manufacturing subcontracting relationships and those hired directly by firms on a temporary basis.

The difficulty with this debate is the term "contingency". Most categories of "contingent" employment are inherently controversial when the underlying definition implies that contingency asymmetrically benefits employers. Part-time jobs, for example, which make up the largest category of contingent employment, though typically low-paying and contingent in a contractual sense, are also often voluntary. Those who take part-time jobs may not want or be able to take a full-time job, making part-time work a very positive way to earn at least some income for those who desire that option. Conversely, in a small percentage of cases, as estimated by Tilly (1996), workers are *involuntarily full-time* – unable to convince reluctant employers to make their jobs part-time. Given this aspect of part-time work, it is a fair approximation to consider all *involuntary part-time* jobs as contingent. Most voluntary part-time jobs are also contingent in Tilly's secondary labour market sense and by a contractual definition, but they are *desirably contingent* from both employers' *and* workers' points of view. This gives their contingency a distinctly different meaning, more in the line of "flexibility" rather than being simply contingent. Besides, one should not identify all part-time jobs as low-skill jobs. While this is true for the majority of part-time jobs, some high-skill jobs are part time.

The characterization of subcontracted labour as contingent is also highly questionable. Contracted employees often perform jobs previously held by workers employed directly by the same firm. Manufacturing activity, for example, is increasingly farmed out to networks of relatively small outside contractors. This process involves shifting employment from the corporate core to peripheral contractor organizations. They, in turn, form part of a production network of firms dependent on the markets and technology controlled by the corporate core. Workers in these subcontracted industries do tend to be paid less than permanent workers; their employment is highly insecure; they have minimal access to fringe benefits; they are unlikely to stay with a particular firm for any significant duration; and they are almost never unionized. Additionally, other subcontracting arrangements concern individual consultants, and inter-corporate

networking. But it is often difficult to determine the extent to which the subcontracting firm is dependent on the client firm, and thus the extent to which the client firm actually controls conditions of employment. Holmes (1986) identifies three types of subcontracting arrangements – capacity subcontracting, specialization subcontracting and supplier contracting. The first two are much more likely to involve contingent employment than the third, which usually represents small firms operating in a market environment, with multiple clients and relative freedom of operation. If subcontracting firms have a large degree of independence, with multiple clients, and provide relatively secure, full-time employment to their employees, then they should not be included in a definition of contingent employment.

Should self-employed workers be included among contingent workers? A number of individuals are self-employed because they cannot find regular, full-time work. Others prefer to be independent and, despite the insecurity of self-employment, feel highly rewarded by a sense of self-reliance and achievement in not being in wage employment. As in the case of supplier contracting firms, those self-employed individuals do not serve as contingent labour in the same sense as those made to enter self-employment as a last-ditch alternative to unemployment. But no matter what the reason for self-employment, that category of work arrangement differs substantially from full-time wage employment. Self-employment may not be contingent in the sense that the individuals concerned cannot find a full-time job in a firm (a self-employed medical doctor or a consulting engineer, for example), but it is "flexible" and is not bound by the contractual arrangements of an employment contract.

Flexibility

A more accurate – and more useful – term for employment under non-standard contracts is *flexible,* and for the workers who are employed in this way (or self-employed), *flexible labour.* Nevertheless it is necessary to attempt to identify the types of flexible employment that tend to occur in the secondary labour market, creating especially difficult conditions for those workers who are denied access to the standard, or traditional, labour contract. Here the status is not desired, and such workers are therefore more appropriately defined as *contingent.* But flexible employment may also be voluntary, even in low-end jobs; or even if it is not entirely voluntary, it may potentially provide greater flexibility without the major social costs implied where workers are forced into highly unstable, low-paying secondary jobs, as contingent labour.

The primary forms of flexible employment adopted here are as follows:

- individuals hired through temporary employment agencies;
- individuals hired directly by firms on a temporary, contract, or project basis;
- part-time employees;

- certain categories of self-employed persons;
- individuals employed on an informal basis, such as day labourers or people doing home-based work; and
- certain categories of subcontracted labour whose conditions of employment are primarily controlled not by the direct employer (i.e. the subcontracted firm) but by the firm controlling the contracting.

These forms of flexible employment are then categorized according to different "theories" of contingency, namely the job stability (tenure) theory (how long a worker holds a particular job, regardless of the contractual conditions or wages/inherent stability characteristics of the job); the secondary labour market theory; and an original employer-employee separation (non-standard contract) theory.

Table 1 shows the six forms of employment defined above and the degree to which they fit the three theories. It indicates the complexity of defining contingent labour, showing the approximate proportion of workers in each category that would be considered "contingent" by each of the three definitions. Some of the proportions given are admittedly guesstimates, since no approximations seem to exist for, say, the percentage of self-employed or contract workers who have a high turnover rate, or that might fit a secondary labour market definition of contingency, or (in the case of workers who work for service subcontracting firms) who are on short-term contracts and/or without benefits.

The recent survey of contingent labour by the United States Bureau of Labor Statistics (1995) argues that if contingency means a high turnover rate, many part-time workers are not contingent. The same would be true of self-employed workers. Indeed, why would any self-employed workers be considered contingent under this definition, except those who leave self-employment for regular wage employment (or unemployment) in, say, less than four years. Under the secondary labour market definition, which can include work performed under direct supervision, no self-employed labour can be counted as contingent, since no self-employed worker could strictly be defined as "secondary labour".

Furthermore, particularly in the secondary labour market definition of contingency, the term has a largely negative meaning, explicitly conveying the idea that employers benefit from the contingency relationship but that workers do not. "Flexibility", as defined by an employment contract that departs from the traditional full-time, career job notion, implies a relationship that could be either detrimental (contingent) or not. It therefore has a broader meaning, yet it still captures the idea of labour employed under a contract that no longer provides full-time, long-term security and that seeks, instead, greater flexibility to move in and out of the employment relationship. This desire for flexibility is mainly, but not exclusively, the employer's. In the case of many self-employed and some part-time and temporary workers, flexibility is indeed desirable from the worker's standpoint.

Table 1. Extent of coincidence between categories of flexible labour and theories of contingency; approximations on a scale 0-4 (0-100%)

Category of flexible labour	Theory I: Contingency as job turnover	Theory II: Contingency as secondary labour	Theory III: Contingency as labour with non-traditional employment arrangements
Workers hired through temporary employment agencies	4	3	4
Direct hiring into temporary or project work	4	3	4
Part-time workers	1	3	4
Self-employed workers	1		4
Informally employed workers	4	4	4
Labour hired through subcontracted services	2	2	0-2

Sources: Theory I: Polivka and Nardone (1989). Theory II: Tilly (1996). Theory III. Modified Belous (1989).

In either case, contingent labour is "flexible" labour. The "flexible" contract definition overlaps substantially with other theories' definitions of contingency for four kinds of workers: the two types of temporary workers, informally employed workers, and labour subcontracted through service contracts (which includes some higher-paid professional workers and many workers who are fully employed by the subcontracting firms). The strongest disagreement occurs over the inclusion of self-employed workers and part-time workers, but there is little doubt from the "flexible" labour definition that these represent important forms of work that do not conform to the mid-twentieth century full-time, career job ideal.

Flexible employment in Silicon Valley: Statistical estimates

In this section a rough empirical estimate is made of the size of the flexible workforce (as defined by Theory III in table 1) and of the proportion of flexible to total employment in Silicon Valley, comparing it with the corresponding proportion for the whole of the United States. In categories where data are poor, an estimate is made on the basis of the best available data; alternatively, the existence of the category of flexible employment is simply noted, without attempting to make a numerical estimate.

Temporary help services (THS)

Temporary employment is the most obvious and visible form of flexible employment. Employment in temporary help service (THS) agencies has

grown dramatically in recent years.[2] In the United States, employment in THS agencies (SIC Code 7363) has grown by 48 per cent since 1989, as compared to growth of approximately 5 per cent in total non-farm employment in the same period (Bureau of Labor Statistics, 1995). Since 1982, employment in THS agencies has tripled, while total employment has grown by only 20 per cent. The Bureau of Labor Statistics (BLS) estimates that between 1975 and 1987, the number of THS companies in the United States grew from 3,133 to 10,611, an increase of 239 per cent.

In February 1995, there was a nationwide total of 1,181,000 workers in THS agencies, out of a total employment of 123.2 million. At any given time, THS employment thus accounts for approximately 1 per cent of total employment in the United States. However, this figure underestimates the total number of people who are affected by temporary employment during the year.

In Santa Clara County, the proportion of THS to total employment has grown even more dramatically than it has in the United States as a whole. Since 1984, employment in THS agencies has grown from a yearly average of 12,340 to 28,060, i.e. from 1.6 to 3.4 per cent of the county's total employment (table 2). This rate is roughly three times the national average. In the past 11 years, employment with THS agencies in the county has grown 127 per cent while total employment has only grown 7.5 per cent. Between 1990 and 1995 employment in THS agencies grew by 70 per cent while overall employment was stagnant.

Table 2. Temporary and total employment in Santa Clara County, 1984-95 (yearly averages)

Year	Temporary employment	Total employment	Temporary as % of total
1984	12 340	761 200	1.6
1985	12 450	764 200	1.6
1986	14 310	750 900	1.9
1987	16 920	770 700	2.2
1988	18 150	805 600	2.2
1989	17 020	815 000	2.1
1990	16 580	816 700	2.0
1991	14 720	790 800	1.9
1992	15 510	787 700	2.0
1993	17 370	794 200	2.2
1994	21 820	803 400	2.7
1995	28 060	818 100	3.4

Source: State of California, Economic Development Department, Labor Market Information Division.

[2] More commonly known outside the United States as temporary employment agencies or private employment agencies, THS companies or agencies are private businesses that recruit workers to perform a variety of tasks and then sell those workers' labour to client firms normally for a set fee. It is worth noting, however, that as employment arranged by "temporary" help services becomes more long-lasting, there is a growing tendency to call such agencies "staffing services" and to avoid using the word "temporary".

Temporary direct hiring

Many temporary workers are hired not through THS firms, but directly by employers. These include all people who are employed on a contract basis, or for particular project, or on a clearly identified temporary basis. Anecdotal evidence suggests their number is increasing, but no accurate figures exist on the size of this workforce.

Part-time work

Nationally, the number of part-time workers has grown from fewer than 12 million in 1970 to more than 20 million in 1993 and, as a percentage of total employment, from 15.6 per cent in 1972 to 17.5 per cent in 1993 (Tilly, 1996). The BLS classifies part-timers into two categories: voluntary and involuntary. The growth in part-time work since 1970 has been primarily due to growth in involuntary part-time employment (Tilly, 1996, table 2.3).

Obtaining estimates of part-time employment at county level is difficult, since no statistics are regularly kept at that level. The California Employment Development Department (EDD), however, has calculated part-time employment for California as a whole. It estimates that the number of people employed on a part-time basis increased from 1,639,000 in 1975 to 2,494,000 in 1993, with little change in the proportion of part-time to total employment. In 1993, the EDD estimated that regular part-time work accounted for 16.3 per cent of total employment, up from 14.9 per cent in 1990, but down from a high of 18.4 per cent in 1983 (see table 3). Involuntary part-time work rose significantly in the early 1990s, largely as a result of the recession. These figures are slightly below the national averages, but the pattern of growth and decline parallels the national figures closely.

Table 3. California: Part-time employment as a percentage of total employment, 1983-93 (yearly averages)

Year	Total part-time	Involuntary part-time	Voluntary part-time
1983	18.4	5.6	12.8
1984	17.8	5.1	12.7
1985	17.7	4.8	12.8
1986	17.0	4.6	12.3
1987	17.5	4.5	13.0
1988	17.4	4.6	12.8
1989	15.9	2.7	13.2
1990	14.9	2.5	12.4
1991	15.6	3.1	12.5
1992	15.7	3.8	11.9
1993	16.3	4.2	12.1

Source: State of California, Employment Development Department.

Self-employment

In the United States as a whole, self-employment rose slightly in the 1970s and 1980s to reach 7.7 per cent of total civilian employment in 1993. It is difficult to obtain regular information on self-employment at county level, again because statistics are not regularly kept at that level. According to the United States 1990 Census, however, 52,000 people in Santa Clara County were self-employed, accounting for approximately 6.5 per cent of the county's employment, up from 5.9 per cent in the 1980 census. According to projections made by Joint Venture Silicon Valley, the proportion of self-employment to total employment was over 7 per cent in 1995.[3] Another indicator of the steady rise in self-employment is the number of single-employee business operations in Silicon Valley communities. In the four largest towns in Silicon Valley, the number of single-employee business licenses increased by 44 per cent between 1989 and 1995, from 19,600 to 28,400.

Informal day labourers and home-based work

There are no reliable figures for the number of people employed in more informal arrangements, such as domestic workers or day labourers. Zlolniski (1994) provides anecdotal evidence of a rise in informal employment among janitors and their families in the 1980s in Silicon Valley, as a result of the increasing competition and decline of wages in subcontracted building service industries. Lozano (1989) and Hossfeld (1988) provide evidence of increasing home-based work in the electronics industry (see table 2). Though it is important to recognize these forms of informal labour as a significant part of the flexible workforce, there are no reasonable estimates of their numerical significance at present.

Subcontracting

It is also difficult to get an accurate measure of subcontracted employment. One "proxy" that has been used in various studies is employment in "business services". Under this label there is a diverse range of companies that provide a large number of subcontracting services, including advertising, computer and data-processing services, consumer credit reporting and collection, protective services, building services and personnel services. In Santa Clara County, employment in business services increased from 48,500 in 1984 (6.3 per cent of civilian employment) to 94,800 in 1995 (11.6 per cent) (see table 4). However, the use of business services as

[3] Joint Venture Silicon Valley is a regional collaborative network initiated by high-tech industries in the area to "bring people together from business, government, education and the community to act on regional issues affecting economic vitality and quality of life". The figure on self-employment given here is from its *1996 Index of Silicon Valley*, an annual publication that provides statistics on the region's economy and quality-of-life indicators (for further information see: www.jointventure.org).

Table 4. Employment in business services, Santa Clara County, 1984-95

Year	Total employment	Business services	
		Number of employees	Percentage of total
1984	764 400	48 500	6.3
1985	770 900	49 800	6.5
1986	761 500	50 200	6.6
1987	779 700	53 200	6.8
1988	808 900	56 700	7.0
1989	814 100	56 400	6.9
1990	819 500	58 000	7.1
1991	810 900	59 000	7.3
1992	797 200	65 500	8.2
1993	802 000	74 200	9.3
1994	797 900	79 000	9.9
1995	818 100	94 800	11.6

Source: State of California, Employment Development Department.

a proxy for subcontracted work produces a rough estimate at best. On the one hand, it undoubtedly double-counts many flexible workers, since the category also includes people employed in THS agencies (a subcategory of business services). On the other hand, it fails to count people employed in subcontracted manufacturing activities, which account for a large number of workers in the electronics industry in Silicon Valley.

Total flexible employment

Although many of the data needed to determine the size of the flexible workforce are not available, the following rough estimates can be made:

The estimates in table 5 show that between 219,600 and 325,660 people in Silicon Valley are engaged in some form of flexible employment. The upper number could be even higher if there were accurate data for people employed as direct temporary employees or employed in home-based work. If the upper boundary is correct:

- flexible employment accounted for about 40 per cent of total employment in Santa Clara County in 1995;
- flexible employment is growing five times as fast as overall employment;
- the growth of flexible employment exceeds total net job growth in the county.

If the lower boundary is more accurate:

- flexible employment accounted for about 27 per cent of total employment in Santa Clara County in 1995;
- flexible employment is growing two and a half times as fast as overall employment;

Table 5. The flexible workforce in Santa Clara County, 1984 and 1995

	Number of workers		Percentage change	Absolute increase
	1984	1995		
Temporary workers	12 340	28 060	127	15 720
Temporary direct hiring	n.a.	n.a.	n.a.	n.a.
Part-time workers	136 200	145 600	7	9 400
Business services	48 500	94 800	95	46 300
Self-employed	45 700	57 200	25	11 500
Informal employment	n.a.	n.a.	n.a.	n.a.
Upper estimate of size of flexible workforce	242 740	325 660	34	82 920
Lower estimate of size of flexible workforce	189 300	219 600	16	30 300
Total civilian	761 200	818 100	7.5	56 900

Source: Figures for temporary workers and business services come from the State of California Employment Development Department. Figures for self-employment are projections based on United States Census data. Figures for part-time employment are from the Bureau of Labor Statistics, and assume that Santa Clara County has the same percentage of part-time workers as the country as a whole. The lower estimate of the flexible workforce does not count business services at all and counts only 60 per cent of the temporary workers to offset double-counting since, according to Belous (1989), survey data suggest that 40 per cent of temporary workers are part-time workers.

– growth in flexible employment has accounted for approximately 55 per cent of the net job growth in the county in the past 10 years.

Regardless of where the true number of flexible workers falls within these upper and lower limits, flexible employment has been rising much faster than total employment. At the least, *more than half of all growth in employment in Santa Clara County in the past ten years can be accounted for by the rise in flexible employment.*

Temporary help service companies in Silicon Valley

The most detailed information on a subsector of the flexible workforce is that given by the various studies of wages and working conditions in temporary help service (THS). There are over 250 offices of THS agencies in broader Silicon Valley (including southern San Mateo and Alameda Counties).[4] They represent a wide range of companies from major

[4] Major THS companies operating in Silicon Valley include:

Manpower Temporary Services, currently the largest single employer in the United States, with over 800,000 workers, operates over 2,200 offices in 38 countries, with global sales in 1994 of over US$5 billion. The firm has a total of 15 offices in Silicon Valley, placing close to 5,000 employees per week. It has grown rapidly in recent years, with nationwide sales increasing by 22 per cent in 1994, following increases of 20 per cent in 1993 and 17 per cent in 1992.

multinationals, like Manpower Temporary Services, Kelly Services and Olsten, to small, individual- or family-run firms. The THS industry is highly competitive, with relatively low overhead costs and few barriers to entry.

Though THS agencies originally focused on clerical and light-industrial work, in the past 20 years they have increasingly moved into technical and managerial fields as well. According to Interim Personnel Services, "the time has long passed since the clerical/light industrial sector was considered 'the center of the universe' of the temporary help industry. Today, virtually any skill can be, and is, provided on a temporary basis" (Interim Personnel Services, 1994, p. 13).

Major THS firms are increasingly entering into long-term contracts with major corporations in the area, clearly signalling that employing temporary workers has become a permanent strategy for firms. The following quotation from the annual report of the Olsten Corporation summarized the trend well:

> By the end of 1994, we had extended our Partnership Program services to more than 180 major corporations including some of the world's best-known companies, and the list continues to grow. In many of these relationships, we place dedicated managers on site to supervise the partnerships and, in effect, become extensions of their corporate human resources departments. The benefits to corporations are many. At Lotus Development Corporation's North American manufacturing and distribution center near Boston, we provide up to 250 people, allowing Lotus to run this major operation with only six of its own employees ... At the end of 1994, these Partnership Program services accounted for about 20 per cent of our Staffing Services business. They have helped to give the business a solid foundation and make it less cyclical (Olsten Staffing Services, 1994, pp. 13-14).

Companies have also been developing "secondary sourcing" arrangements, where a THS agency enters into a long-term contract with a client. In this case the primary THS firm has a series of relationships with other THS agencies – usually smaller, more specialized companies – that can be called on to meet the demands of the contract when the primary firm is unable to do so itself. In such cases, workers might be formally employed by

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Interim Personnel Services places over 4,000 employees per week in Silicon Valley, working out of nine different offices. Headquartered in Fort Lauderdale, Florida, the company operates a total of 771 offices in 46 states, with an average employment of nearly 350,000. Its 1994 sales totalled US$634 million, up 23.2 per cent from 1993.

Adia Personnel Services places 3,750 employees per week, and operates eight offices in Silicon Valley. This is a multinational corporation, with headquarters in Switzerland, operating in 29 countries throughout the world. It specializes in accounting, information technologies, and nursing. Following its merger with Ecco Staffing Services as from 1 January 1997, the corporation has been renamed Adecco and become arguably the largest staffing services company in the world, surpassing Manpower.

Kelly Services places some 2,300 employees per week, with seven different offices in Silicon Valley. It also is a major multinational corporation, with 1994 sales of US$2.6 billion, up 21 per cent from 1993.

Olsten Corporation places 1,125 employees per week from six different offices in Silicon Valley. With 1,200 offices in North America and the United Kingdom, its total sales in 1994 were US$2.6 billion, representing an 8 per cent increase over 1993.

THS Firm B, which would place them with THS Firm A, which would then place them at the work site of Client Firm C, often doing work that was previously performed by direct employees of Client Firm C. The Chief Executive Officer of one THS firm in Silicon Valley that employs 500 people at a time estimated that 40 per cent of her business was in such secondary sourcing arrangements.

Occupational structure

The most recent figures on the occupational structure of temporary employment in Silicon Valley are for 1989 (see table 6). As might be expected, they show that temporary workers are most strongly present in clerical and administrative positions, which occupy 42 per cent of all temporary workers. Blue-collar positions, particularly operators, fabricators and labourers, are also important, with 22 per cent of temporary workers in those kinds of jobs. A full 13 per cent of temporary help service workers in 1989 were in technical and related occupations – nearly triple the rate for the United States as a whole. This category includes computer programmers, electrical and electronic technicians, as well as licensed nurses. Workers in professional speciality occupations – which include computer systems analysts, designers and engineers – accounted for 6 per cent of temporary workers, which is double the national average.

Table 6. Occupations of temporary help services workers, United States and Santa Clara County, Oct. 1989

Occupation	United States		San José	
	No. of workers	% of workers	No. of workers	% of workers
All help supply workers	*753 825*	*100*	*12 365*	*100*
Executive, administrative and managerial	5 551	1	82	1
Professional speciality occupations	26 108	3	739	6
Technical and related	39 817	5	1 591	13
Sales and marketing	25 166	3	193	2
Administrative and clerical support	342 448	45	5 222	42
Service [1]	40 924	5	129	1
Precision, production, craft and repair	14 814	2	856	7
Operators, fabricators, labourers	212 166	28	2 771	22
Other	46 831	6	782	6

[1] Includes guards, nursing and other health aides, janitors and cleaners, kitchen workers.
Source: Bureau of Labor Statistics.

Table 7. Employment of workers in temporary help services, by occupation, 1989 and 1994

Occupation	Number of workers		Percentage increase
	1989	1994	
All help supply workers	*753 825*	*1 122 165*	*48.9*
White-collar occupations	412 982	547 671	32.6
Professional speciality	26 108	33 236	27.3
Technical occupations	39 817	42 029	5.6
Executive, administrative and managerial occupations	5 551	9 124	64.4
Marketing and sales occupations	25 166	31 513	25.2
Clerical and administrative support	342 448	431 769	26.1
Blue-collar occupations	226 980	444 895	96.0
Precision production	14 814	47 895	223.3
Machine operators, assemblers and inspectors	64 144	111 593	74.0
Transportation and material movement	8 078	10 853	34.4
Handlers, equipment cleaners, helpers and labourers	139 944	275 095	96.6
Service occupations	40 924	56 624	38.4
Janitors and cleaners	7 751	10 220	31.9
Nursing aides	14 167	28 387	100.4

Source: Bureau of Labor Statistics.

Between 1989 and 1994, the occupational composition of THS employment changed significantly (see table 7). Unfortunately, only national data are available, since Santa Clara County was not included in the BLS's most recent survey, conducted in 1994. Nationally, there was a clear shift away from white-collar jobs to blue-collar jobs. In 1989, white-collar jobs accounted for 58 per cent of THS employment, and blue-collar jobs for 30 per cent. By 1994, white-collar employment had dropped to 49 per cent of the THS total, while blue-collar employment had risen to 40 per cent. Labourers comprised one of the fastest-growing occupational groups studied.

Industry composition

Companies in all industries use temporary workers. According to data developed by Michael Neidle at Optimal Management,[5] a management consulting firm in San Mateo, manufacturing companies and service sector

[5] The data were provided directly to the authors and are not available in published form.

Table 8. Estimated distribution of temporary help service placements, Santa Clara County and California, 1995 (%) [1]

	Mining & Const.	Manuf. Trans.	Utility/ sale	Whole	Retail	Finance	Service	Govern.	Total
Santa Clara	3.6	30.2	3.5	5.1	11.9	4.1	31.2	10.3	100.0
California	3.9	16.1	6.1	4.9	14.5	7.2	32.1	15.2	100.0

[1] Based on data supplied by Michael Neidle, Optimal Management, San Mateo, California.

companies account for 61.2 per cent of all billable hours of THS in Santa Clara County. Manufacturing alone accounts for 30.2 per cent of the THS market in Santa Clara County, a rate that is nearly twice the California-wide average (see table 8).

The employers' view

How do Silicon Valley employers view flexible labour and their own labour market strategies? To answer these questions five high-tech company human resource managers and five executives in THS agencies were interviewed.[6]

Human resource managers in high-tech companies

The high-tech company human resource managers interviewed were principally concerned with the high rate of turnover in their firms, especially among workers in highly skilled positions, and how to reduce it, although the concern varied considerably from firm to firm. Turnover rates were reported to be in the range of 15-25 per cent annually, suggesting that the norm in these high-tech companies is one where highly skilled people are expected to move from company to company. To illustrate:

> Twenty per cent of skills become obsolete every few years, so there is a lot of turnover. We give opportunities for retraining and try to re-engineer people to keep them aboard, but there is a lot of turnover ... I would characterize the trajectory of someone in the company as "Blows and goes fast".[7] Five years maybe in the company. Learn a lot, go out and get a great job somewhere else. (Company A)

> The job market for engineers is extremely volatile at the moment. People are moving from job to job, and can gain tremendous offerings from new places.

[6] The names of the companies and of the persons interviewed are omitted; but the companies are identified generically, as follows: A – major computer company; B – electronics manufacturer; C – major software company; D – major semiconductor company; E – computer company; F – large THS company; G – large THS company; H – medium-sized THS company; I – local THS company; J – local THS company.

[7] This expression is used to describe people who join a company, work very hard to make their contribution, and then leave to do the same thing in another company.

> The majority of our engineers have been with the company for two years or less. It was somewhat lower three years ago, but still high. (Company B)

> [We have] an increase in attrition ... People are getting a lot of offers from start-up companies ... [and] a lot of technically inclined individuals are really ready to roll the dice. We have a fairly young workforce, most of our fellow companies out here do. Lots of people are saying you got to take a shot at this kind of thing once in a life ... (Company C)

The high turnover in such highly skilled positions is driven primarily by the high demand for skilled people. Some people even prefer to work as independent contractors:

> We do have a large number of contractors, but that is mainly because they want to be independent, not because we want them to be. They have this idea, even if they work here for years, that they don't want to be an employee in a company. [These are] mostly system developers. (Company C)

From the standpoint of high-tech company managers, then, the main problem is an undesirably high rate of turnover among their most skilled (and valuable) employees rather than a sense that their labour force is not flexible enough. Three of the companies interviewed have been expanding their employment of skilled professionals rapidly for several years, so keeping employees is a more urgent problem than downsizing. Their human resource managers try to design compensation and training schemes that will reduce turnover – thus in effect trying to make the highly skilled labour force less flexible. For example, in the past three years, company C increased incentives for software development engineers to move into higher-paying managerial positions, thereby reducing turnover rates from 20 to 15 per cent annually over the past five years. Yet it is difficult to compete with the financial allure for young software engineers of getting in on the ground floor of a start-up.

A degree of acceptance of this kind of "blow and go fast" labour market was also noted on the part of the companies. Since the price of lowering turnover among the most creative employees may be very high given opportunities in start-ups, companies tend to spend more on recruitment than they do on retention, even developing pools of skilled labour overseas as a backup to local recruitment. Company C, for example, has a training centre in India and regularly brings system developers to Silicon Valley from its branches in Europe.

Because elite workers are highly mobile between firms, management perceives (probably correctly) that such workers want to be independent and have very little interest in job security. Management tends to focus on what it considers to be too much turnover. For employers, then, it seems "natural" to use temporary or contract labour for technical work, manufacturing, and business services. Because the culture of job tenure at the upper end of the hierarchy is implicitly organized around "temporary" and contract labour, management faces less of a schism than would otherwise be the case between the situation at the top of the job hierarchy and strategies of just-in-time labour in the middle and bottom of the hierarchy. Middle- and lower-end

labour may well want much *more* job security than these high-tech firms want to give, while highly-skilled workers want *less* job security than is optimal for the firms. Because of the high level of mobility at the upper end of the job hierarchy, however, management seems generally to feel more "comfortable" using a high proportion of temporary labour in the middle and bottom of the hierarchy.

All of the companies interviewed use temporary employees, both hired directly and hired through THS agencies. The human resource managers all reported that the number of temporary workers has increased in recent years. For instance, in one electronics manufacturing company, temporary employees account for approximately 20 per cent of the workforce, with the majority of them employed in the manufacturing division. They are hired through a THS company, which has an on-site agreement. A major semi-conductor manufacturer maintains its proportion of temporary employees at 15-20 per cent of its manufacturing workforce, in order to be able to respond to fluctuations in demand. A major software and business consulting company suggested that it has increased the use of temporary employees primarily in the hardware side of its business, but that temporary employment is much less common in software. Some of the temporary workers in that company are hired directly, and some through an agency. Others are hired as independent contractors.

It was also clear in the interviews conducted that companies make a substantial use of subcontractors and contract employees. A human resource manager at a major semi-conductor manufacturer for instance, said that the firm has the same number of contract employees as it does equivalent full-time staff. Thus a full 50 per cent of the people dependent on them for employment are either hired directly as contract employees or through subcontracting companies. The majority of these contract employees are in non-core activities, such as cafeteria services, building maintenance and cleaning, security and construction. One human resource manager said that in recent years his company had done "a lot more outsourcing of manufacturing [which has] enabled them to spend a lot more money on core technologies".

Not all the human resource managers, however, were in full agreement with such policies. One, for example, saw the possibility of large negative effects in adopting an overall culture of "temporariness", namely that a high turnover could also lead to unwanted insecurity of employment, even for many skilled employees.

> I'm concerned about the way that companies focus so much on short-term goals, needing to show a profit at the end of each quarter. This contributes to the rapid turnover in jobs and the lack of job security for a majority of the workforce. Within the company, people have lots of anxiety about how long their job will last, and where their next job will come from . . . We have an EAP – an Employee Assistance Program – for people who are going through personal problems, who need counseling and advice. A total of 10 per cent of our employees have used this service, but I think the number of people affected by insecurity is much higher, since it takes someone a lot to get to the point of seeing a counselor. (Company B)

Temporary help service firms

Another management view of the changing labour market comes from THS firms. These have been expanding rapidly in Silicon Valley, with at least 250 different offices currently in operation. The THS company executives interviewed agreed that the main reasons for the enormous expansion of temporary employment is a rapidly changing product market for the goods and services these firms produce and a high level of competition:

> Companies themselves are in such flux. They're trying to figure out their core competencies, and not wanting to commit to long-term employment. It's necessary to be agile in Silicon Valley. The ability to have skilled personnel while also hiring them on a temporary basis is a real pleasure zone for them. Also, in a manufacturing environment, there's the general cyclical nature of production – with the need to ramp up and ramp down in a cost-effective manner. (Company G)

> Companies have increased their use of temporary personnel because it allows them to respond to market opportunities without increasing head count. There is much more project-based work, and lots of people with really top skills are going through temporary agencies. (Company I)

> Two major events in Silicon Valley have led to the increase in staffing services. The first is increasing competition in the global economy. The second was the economic downturn of 1985, when many valley companies ... began laying people off. Companies re-evaluated and recognized the need to maintain flexibility to be competitive. Many companies are now keeping a 20-25 per cent buffer, some lower, some higher – so they can develop new products quicker, ramp-up for production at greater speed. (Company F)

THS agencies are increasingly entering into long-term contracts with their client firms. They are no longer seen as peripheral agencies, but are becoming central to the operations of the client firms. Contracts are not simply to provide temporary personnel but also to provide an array of human resource services, including on-site management, producing costs and quality reports, managing relations with subcontractors. Manpower, for instance, first entered into an on-site management agreement at Cignetics in 1984, and this kind of agreement has expanded greatly in recent years. One THS agency executive (Company F) likened the agency's role to being the human resource division of many of its clients: "We provide a specialized service, saving our clients money, and allowing them to concentrate on their key functions and to be able to respond quickly to new market opportunities".

There is both intense competition and cooperation between THS agencies. The competition can be intense because of the low capital investment needed to start an agency. This has led to a proliferation of different firms. In addition, client firms have relationships with many different THS agencies. The client firm may call two or three different THS firms to fill any single job, so competition is intense even for single jobs (Company H interview). However, the rise in contractual arrangements has also contributed to increased cooperation in particular areas. As mentioned above, many THS firms have developed secondary relations with other THS firms to enable them to fulfil their contractual obligations with client firms.

The detailed relations that develop are clearly demonstrated in this interview with a locally owned firm:

> We specialize in secretarial positions. We serve as a secondary source for some of the major temporary agencies who have entered into major contracts with their clients. We back up XXX at Intel, we back up YYY at Tandem Computers. We back up ZZZ at Novell. We back up G at Cisco, and F at Intel. The major companies call on us when they've guaranteed to provide a certain number of people and aren't able to provide them. For instance, the temp firms may be given 24-48 hours to fill a certain order – say a couple hundred people to do data processing – and if they can't find the people, they'll come to us for help. Approximately 40 per cent of our business now comes through these secondary source arrangements. (Company I)

The occupations of people who work in temporary positions have clearly changed in recent years as well. While clerical and light industrial occupations are still the largest groups, there has been a rapid expansion in the provision of technical and professional workers. Many THS firms (e.g. Manpower, Adia) are adding specialized technical placement divisions to their regular operations.

One of the key questions in an examination of temporary employment is the extent to which temporary positions lead to full-time work. Estimates given in company interviews ranged from 20 to 40 per cent. Interestingly, many of the higher-skilled positions that are filled through THS agencies apparently do not lead to full-time work.

> Most of the people in administrative positions, as well as assembly work, are looking for full-time work and have generally been unable to find it. We estimate that 25-40 per cent of people find full-time work through our placements. (Company G)

> The higher skills don't often lead to permanent positions for two reasons: first is that the companies are primarily hiring on just a project-by-project basis, and secondly because many of the people in these occupations prefer the flexibility of working only on a project basis. (Company G)

Another important question is that of joint-employers, particularly in regard to issues of safety and workers' compensation. As the legal employer, a THS agency must carry workers' compensation insurance and responsibility for any injury employees sustain on the job. However, it is the client firm that controls conditions of employment and the work environment. One couple interviewed had run a local agency since the early 1970s, but had eventually got out of the business in 1992 in part because of additional costs associated with workers' compensation. They found that a number of client firms in the area, instead of addressing unsafe practices, simply maintained unsafe work environments and switched to another agency if there were complaints. This causes THS agencies either to spend more on evaluating the safety conditions of potential client firms (difficult to do in a competitive environment) or to pay additional costs for workers' compensation insurance as their claims increase.

What does the Silicon Valley experience tell us about labour flexibility?

As hypothesized in the introduction, labour flexibility appears to be much more important in Silicon Valley than in the United States as a whole, with the greatest difference appearing in the temporary employment category. More significantly, the *increase* in flexible employment under "untraditional" contracts during the period 1984-95 represents 50 to 150 per cent of the absolute increase in total civilian employment in Santa Clara County.

There is also qualitative evidence that the Valley's "culture" of labour market flexibility is driven not only by the traditional explanations of rapidly changing product markets for the goods and services these firms produce and the intense competition between them, but also by high turnover rates and inter-firm mobility among high-tech firms' most skilled employees. Saxenian (1994) has demonstrated how flexible labour markets in Silicon Valley have contributed to the region's vitality and innovation. With extensive communication between firms, and engineers and programmers moving between firms, innovation rapidly diffuses through the regional economy, with bright career paths for many highly skilled people.

Thus, the benefits of flexible labour markets do not just accrue to employers, as is generally assumed in the literature. As far as management is concerned, turnover rates among highly skilled workers are higher than optimal. The ability to move easily between firms, using one firm to gain experience and then obtaining a higher salary by using that experience to gain employment in another firm, makes Silicon Valley an exciting place for high-tech professionals.

Yet, the high degree of "temporariness" among lower-skilled workers benefits firms much more than it does workers. For example, the situation of janitors in Silicon Valley provides a picture of the downside of such flexibility. Janitors rank eighth in terms of employment growth by occupational category, with more new positions than computer programmers and systems analysts, and nearly as many positions as electrical and electronic engineers. In the 1970s, a large number of janitors were employed "in-house", and the existence of unions assured that working conditions for contract janitors were also better. Beginning in the 1980s, however, in an effort to reduce costs, companies increasingly contracted out cleaning services and other maintenance operations.[8] In-house janitors were given early retirement, moved to other positions, or simply laid off. As a result, there has been a reduction in their wages and working conditions.

The success of individuals in these flexible labour markets obviously depends to a certain extent on their skill levels. But it depends even more on their networks of relationships and contacts outside their place of work. Kanter (1995), for instance, discusses career paths in computer programming

[8] For a specific examination of maintenance outsourcing, see John Benson and Nick Ieronimo: "Outsourcing decisions: Evidence from Australia-based enterprises", in *International Labour Review* (Geneva), Vol. 135 (1996), No. 1, pp. 59-73.

industries. She argues that people's *employability security* is based not just on their skills, but on their reputation and connections. Those who can make their abilities known through a network of firms are in a better position to find employment. With people moving from job to job, the ability to find new jobs is increasingly important. This lends new importance to Mark Granovetter's (1995) classic study *Getting a job: A study of contacts and careers*, in which he presents strong evidence correlating higher income levels with those who got new jobs through personal contacts rather than through formal mechanisms. A worker's social and business networks thus become crucial for job mobility. Even in low-skilled jobs, social networks beyond the place of work are becoming increasingly important in flexible labour markets. In the fastest-growing sector of unionization in Silicon Valley, for instance, janitors are organized primarily through social ties in immigrant Latino communities, with industry-wide organizing aimed at multi-employer bargaining agreements, rather than individual work-sites organizing. It seems that many people find their jobs through social ties, yet this is poorly understood.

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