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PRESENT

**Southern
California
in the
Information
Age**

BY JOEL KOTKIN

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Southern California in the Information Age

Executive Summary

In the remaining years of the twentieth century, the most critical challenge facing Southern California and other key metropolitan regions will be to secure a major role in the emerging information-driven industries. These sectors—which include high-technology manufacturing, software design, professional services, entertainment, and multimedia—represent the fast-growth, high-wage arenas that will define the nation's economic future.

In 1995, nationwide software companies alone boosted their employment by an average of 34 percent.¹ Between 1994 and 2005, demand for computer scientists is expected to grow 91 percent, creating 750,000 new jobs.² Similarly, entertainment-related jobs are projected to keep expanding, and the ranks of producers, directors, actors, and entertainers will likely increase 54 percent by the year 2005.³ These fields boast among the highest professional wage rates in the nation.⁴

No region is better positioned to garner a larger portion of this surging, high-wage employment than Southern California. Not only does the five-county Los Angeles area possess one of the world's largest concentrations of scientists, engineers, and high-technology industries, but it has established a predominant presence in global culture-related industries such as movies, television, multimedia, virtual reality, and craft-based lifestyle products.

Despite these impressive advantages, Southern California's future leadership in the information age is severely threatened by external competitors and internal weaknesses. The Los Angeles area is plagued by an often dystopic image—frequently promoted by national and local media as well as by much of the local academic establishment—that serves to discourage both capital investment and the movement of skilled labor. Additionally, as the nation's most ethnically diverse region, Southern California faces enormous challenges in maintaining the educational standards essential to an efficient information-age economy.

Nevertheless, this region's ability not only to participate in but also to lead the global information economy remains largely in the hands of its economic, political, and media leadership. With a coordinated, well-focused emphasis on economic development and regional marketing, with better networking between the region's diverse information-age industries, and with greater stress on educational achievement, Southern California could emerge as the preeminent, cutting-edge economy of the next century.

The Onset of the Information Economy

The shift of the economies in advanced nations, particularly in the United States, to a new epoch dominated by science and engineering became evident by the early 1960s. Observing the ascendancy of great American technology-based corporations such as IBM and General Electric, economist John Kenneth Galbraith envisioned a big business-dominated "technostructure" as the defining element of contemporary capitalism. Declaring the entrepreneurial ethos essentially passé, Galbraith foresaw an economy dominated by complex organizations with vast research and development capabilities.⁷

The specific term "post-industrial," or information-based, society was popularized in the writings of sociologist Daniel Bell. Like Galbraith, Bell described the emergence of a high-tech society where information supplants energy and conventional manufacturing as the most important sources of wealth and national advantage. "After the Second World War," Bell noted, "the scientific capacity of a country became a determinant of its potential and power, and research and development (R and D) has replaced steel as a comparative measure of the strengths of the [world's leading] powers."⁸

Unlike Galbraith, who emphasized the primacy of the corporate bureaucracy, Bell believed that the critical leadership would fall largely to the most highly educated sectors of society. "In the post-industrial society, the chief problem is the organization of science," he wrote, suggesting that universities and think tanks, along with government bureaucracies, would assume the decisive roles in the new political economy.⁹

Both Galbraith and Bell identified the post-industrial, information-age economy with the prevailing dominant organizations of their times—mega-universities, governmental bureaucracies, aerospace conglomerates, massive mainframe and minicomputer manufacturers, and pharmaceutical giants. This phase of "post-industrialism" focused largely on the rising influence of quantifiable "hard sciences" such as physics, chemistry, and electrical and mechanical engineering; consequently, in the realm of management and strategic issues, "scientific" methods of statistical analysis secured the preeminent role.

In the late 1970s, futurists Alvin and Heidi Toffler offered a startlingly different analysis of post-industrial trends.¹⁰ In *The Third Wave*, the Tofflers identified technology and science not as agents of standardization and bureaucracy—which they identified with the industrial "second wave"—but with the emergence of a new economy characterized by customized production and organizational flexibility. The acceleration of information flows, they surmised, worked naturally to break down, rather than bolster, established oligarchies, whether cultural, corporate, or technological:

This speed up of image processing in our culture means that images become more and more temporary. Throwaway art, one-shot sit-coms, Polaroid snapshots, Xerox copies, and disposable graphics pop up and vanish. Ideas, beliefs, and attitudes sky rocket into consciousness, are challenged, defied and suddenly fade into nowhere-ness. Scientific and psychological theories are overthrown and superseded daily.¹¹

In contrast to Galbraith and Bell, the Tofflers examined the economic implications of the "information age" not only in relation to its "hard" side, with its rationalistic and quantifiable characteristics, but also with respect to its "soft" side—which includes such fundamentally subjective fields as entertainment, fashion, media, and leisure industries. For the purposes of this paper, both the "soft" and the more traditional "hard" industries are considered integral parts of the emerging information-age economy, as are those increasingly critical areas where the two converge.

But with the onset of the Second World War, the industry expanded dramatically, transforming the region's economy—formerly based on agriculture, oil, and the movie business—into one deeply reliant on science and technology-based industry.

After the war ended, many cynics—both on the East Coast and locally—believed that grass would soon grow on the streets around the testing fields and factories of Culver City. But in reality, the aircraft industry in greater Los Angeles had only begun its decades-long expansion. The role of entrepreneurs in this post-war growth was crucial. At a time when most East Coast companies were content to return to the traditional production of consumer goods, visionaries like Hughes and Douglas focused instead on emerging high-tech fields such as avionics. Establishing one of the world's first think tanks, Hughes pushed the envelope of technology and was instrumental in the early development of the first air-to-air guided missile and operational laser. By 1948, Southern California accounted for 55 percent of all Pentagon aircraft and avionics contracts; between 1947 and 1957, this single industry accounted for roughly half of the region's entire growth.¹⁵

Importantly, many of the technologies initially developed for defense proved useful within the civilian sector. "Technologies exploded," recalled Charles "Tex" Thornton, a former top Hughes lieutenant who in 1953 founded Litton Industries. "Technologies that first went to the military would then spill over into new products like computers, calculators, and other devices."

Over the ensuing decades, this technological carryover from aircraft, aerospace, and other industries was often overlooked amidst the massive expansion of military-based production, first for the Korean conflict, then for the Vietnam War, and finally for the Carter-Reagan defense buildup. Yet each expansion was succeeded by a nearly catastrophic decline in military-related production. In the last downturn at the end of the Cold War, the Los Angeles region lost nearly half its 330,000 jobs in aerospace, shipbuilding, and other defense-related fields¹⁶ (see figure #1).

Without the stimulus provided by military expenditures, many economists and academic observers in the early 1990s predicted the region would spiral downward into a sinkhole of slow growth and low-wage employment. One long-term journalistic observer, writing in the *Los Angeles Times*, saw the fading of the defense era as heralding the end of the region's "golden way of life." Agencies such as the Southern California Association of Governments predicted the region's unemployment rate would remain near double digits until the end of the decade.¹⁸

These grim predictions, fortunately, were badly mistaken. Unemployment rates dropped well below 10 percent by 1995, fell to 7 percent by early 1997 in Los Angeles County, and descended further still in surrounding counties. Yet the devastation wrought by the defense build-down did leave a lasting impression in many minds—both outside and inside the region—that Southern California had become a technological laggard, not only when measured against Northern California's Silicon Valley, but even when compared to such smaller regions as Austin, Raleigh-Durham, and Utah. "When you think of LA, you don't tend to think of high tech," Neal Bradshear of Campbell Advisors Inc., a New York investment consultancy, told the *Los Angeles Business Journal* last November.¹⁹

Yet in reality, Southern California remains one of the world's premier technology centers. Today, even after the defense downsizing, the five-county region boasts more technically trained personnel than anywhere else in the country, and far more than in such key competitor states as New York and Texas, despite their much larger populations (see figure #2). Los Angeles County alone, according to estimates by RFA Associates, ranks among the top five metro areas—along with San Jose, Chicago, Boston, and Washington, D.C.—providing one-fourth of the nation's high-tech employment. Moreover, adjacent Orange County offers far more high-tech employment than some of the much ballyhooed "new Silicon Valleys" such as Raleigh-Durham, Austin, and Denver.²⁰ Although on a per capita basis, the huge, highly diverse, Los Angeles-area economy may not be as technology intensive as the one in Silicon Valley or on Route 128, its aggregate high-tech base appears far larger than is commonly assumed by the media, investment community, or most academics.

Figure 1 LA Basin Economic Base in Transition

Source: Center for Continuing Study of the California Economy, "California Economic Growth," 1996/97

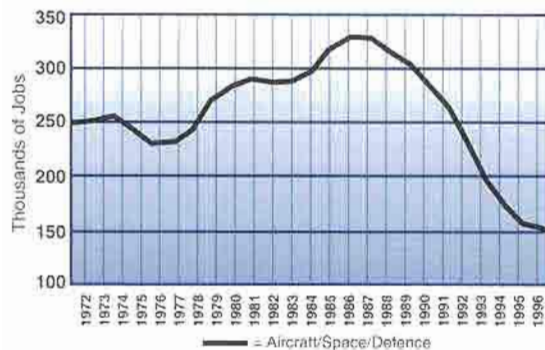


Figure 2 Number of Scientists and Engineers "Technical Brainpower"

Source: Bureau of Census, U.S. Department of Commerce, Los Angeles Regional Technology Alliance, 1997

| Area/Category | Engineers | Math Comp Sci Nat Sci | Combined |
|----------------|-----------|-----------------------------|----------|
| California | 280,465 | 194,990 | 475,455 |
| Massachusetts | 60,707 | 52,788 | 113,495 |
| New York | 102,971 | 94,882 | 197,853 |
| Texas | 122,289 | 89,305 | 211,594 |
| Los Angeles | 75,934 | 45,784 | 122,718 |
| Orange | 36,997 | 18,308 | 55,305 |
| Riverside | 5,421 | 3,392 | 9,813 |
| San Bernardino | 8,572 | 4,094 | 12,766 |
| Ventura | 9,515 | 4,739 | 14,254 |
| San Diego | 23,597 | 19,327 | 42,924 |
| LA 5-County | 138,539 | 76,317 | 214,858 |
| So. California | 182,136 | 95,644 | 257,780 |

Nor can Southern California's large technology base be ascribed merely to inertia from the aerospace defense era. CorpTech, a Massachusetts-based consulting firm, estimates that Southern California has more people working in emerging technology firms than do such prime competitors as Northern California, New England, the New York metropolitan area, and the entire Pacific Northwest²¹ (see figure #3). Much of this employment comes from nondefense sectors such as biotechnology, where employment in public companies more than doubled between 1994 and 1996.²²

At the same time, the region's still large aerospace industry appears to have stopped contracting²³ and may experience a modest upturn in the remaining years of this decade, largely on the back of increased commercial aircraft orders and some new defense projects.²⁴ Significantly, this expansion has focused increasingly on advanced technology development—as epitomized by the Lockheed Skunk Works—rather than simply the basic “metal bending” involved in routine aircraft production.²⁵

As has occurred repeatedly since the Second World War, defense-developed technology is seeping into other portions of the region's economy as well. Many companies with aerospace legacies, including giants such as Hughes and entrepreneurial firms like Research and Development Labs in Culver City, have employed defense technologies to become global leaders in fields such as telecommunications.²⁶ Others such as Modacad, a West Los Angeles firm specializing in design-related software, base their products on technology originally developed at NASA.

Figure 3 Employment at Emerging Technology Firms

Source: Corp. Tech. Information Services, 1997

| Employment at Emerging Companies | |
|----------------------------------|------------------|
| New England | 260,895 |
| New York Metro | 206,340 |
| New Jersey & Delaware Valley | 219,223 |
| Mid-Atlantic | 157,753 |
| Southeast U.S. | 275,835 |
| Mid-West U.S. | 200,113 |
| Great Lakes | 309,839 |
| Eastern Lakes | 177,205 |
| Central U.S. | 221,114 |
| Northwest U.S. | 86,927 |
| Northern California | 208,079 |
| Southern California | 262,222 |
| Southwest U.S. | 286,352 |
| TOTAL | 2,871,897 |

Increasingly, this aerospace-bred technology is finding application in such unlikely fields as multimedia and entertainment. “The aerospace industry, in my opinion, has been doing hotter graphic design work than anything that has come out of Northern California,” observes Scott Moody, former chief operating officer for Time Warner Interactive, “and they’ve been doing it for twenty-five years.”²⁷

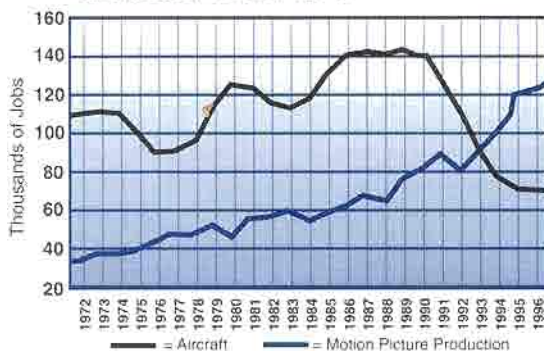
Firms such as Westlake Village-based Illusion Inc. and Perceptronic in Woodland Hills, for example, have taken “virtual reality” imaging technology initially developed for the military and employed it in fields such as entertainment, theme park development, and worker training. “What you are seeing now is the emergence of a defense-entertainment establishment,” jokes Illusion's executive vice-president, Matt Walton, whose firm is completing a line of “virtual” Indy cars for the Sahara casino in Las Vegas. “It's a classic Southern California marriage.”

The Rise of the “Soft” Side: The Hollywood Edge

Although Southern California's prominence on the “hard side” of the information-age equation has been underappreciated, its preeminent role on the “soft,” culturally-oriented side is undeniable. Today, for the first time since the end of the Second World War, the region's entertainment industries employ more people than the aerospace complex (see figure #4).

Figure 4 LA Basin Economic Base in Transition

Source: Center for Continuing Study of the California Economy, “California Economic Growth,” 1996/97



Southern California's preeminence in entertainment, as with the early evolution of aerospace, resulted largely from the activities of visionary entrepreneurs. Even more than the aerospace pioneers, the early creators of the mass entertainment industry came to Southern California as entrepreneurial parvenus, many of them Jewish immigrants who were less than fully welcome among the heavily Protestant, Middle Western elite of early twentieth century Los Angeles.

Those who worked for the early moguls—actors, workers on the sets, writers—generally had it worse, and were often forced to live in tents and on improvised sets in the middle of fields. “Over no decent threshold were they allowed to step,” wrote one observer at the time. “They were unfit to mingle with respectable citizens. On some boarding houses a sign was hung: ‘No dogs or actors allowed.’”²⁸

Yet within two decades, entertainment emerged along with agribusiness and the burgeoning oil industry as one of the primary engines powering the Los Angeles economy. By the 1930s movie box office receipts were already more than a half-billion dollars, and production budgets reached the \$80 million mark. Neither the Depression nor war did much to slow Hollywood's advance as the preeminent mythmaker, not only for America, but for the world.²⁹

By the 1940s, Hollywood's elite had risen from marginal players to a new kind of celluloid aristocracy, more compelling and real to the mass public than the far more powerful East Coast industrial and social elites. As author Leo Rosten noted:

Men have always loved the Cinderella story and have always dreamed of magical success. Hollywood is the very embodiment of these The public never sees Morgan making money or Ford making cars, but it does see Robert Taylor making faces. The visual evidence of the films offers the waitress a chance to compare herself to a movie queen; it gives the shoe clerk a chance to match himself against the movie idols. It provokes the thought, "Hey, I could do that . . .".³⁰

By the 1950s, however, Los Angeles' supremacy in mass culture was being threatened by new competitive forces, including the New York-based television industry. But the Los Angeles-based studios responded by packaging what once would have been considered "B-movies" into television series such as "Cheyenne," "Gunsmoke," and "Wagon Train."

At the core of Hollywood's success lay two factors: its uncompromising willingness to pander to mass tastes and its sheer capacity to create vast quantities of product. "When television came out here in the 1950s, everyone had a TV. You had to put out a lot of garbage," recalled one veteran Hollywood observer. "You went from the excellent drama of the New York days to cranking out B-movies for television. That's what television really is, a bunch of B-movies, something only the studios can make in large quantities."

By 1980, Hollywood had reestablished its total dominance, not only of television and movies, but of the music business as well, with nearly 63 percent of all entertainment industry personnel in the nation residing in Los Angeles County.³¹ Since then, there have been challenges to the region's national and international dominance from places as diverse as North Carolina, Florida, and New York City. Yet the region continues to house the lion's share of entertainment-related employment and payroll (see figures #5 and #6).

Indeed, throughout the early 1990s recession, the industry continued to expand by an average of 10 to 12 percent annually,³² with more than 40,000 jobs added since 1992, and with 1997 expected to see the addition of 14,000 new positions.³³ Despite efforts by numerous states, Canadian provinces, and countries overseas to capture more of the production dollars, Los Angeles remains home to more than 82 percent of all prime television shows on the four major networks (CBS, NBC, ABC, and Fox). New York, which often promotes itself as a serious competitor, ranks a distant second, with less than 9 percent.³⁴

Similarly, the region dominates feature film production starts, beating second-place New York by a margin of seven to one, and the total of all the other states' production by better than three to one.³⁵ The trend is particularly marked in big budget films grossing more than \$100 million. Of the 14 films in this category released in 1996, 12 were, at least in part, produced in Los Angeles.³⁶ In fact, despite extensive reporting in the New York media about a massive thespian hegira to Gotham, Hollywood's share of Screen Actor's Guild earnings actually increased from 55 percent in 1985 to more than 59 percent a decade later.³⁷

Far from declining, overall spending on film, TV, and commercial production in Los Angeles County has continued to grow rapidly, from \$15.9 billion in 1992 to \$21.48 billion last year, when production days rose 29 percent.³⁸ Much of this expansion has been fueled by a rapid growth in overseas markets. Barely 30 percent of film revenues in 1980, foreign sales now account for roughly half of Hollywood's business.³⁹

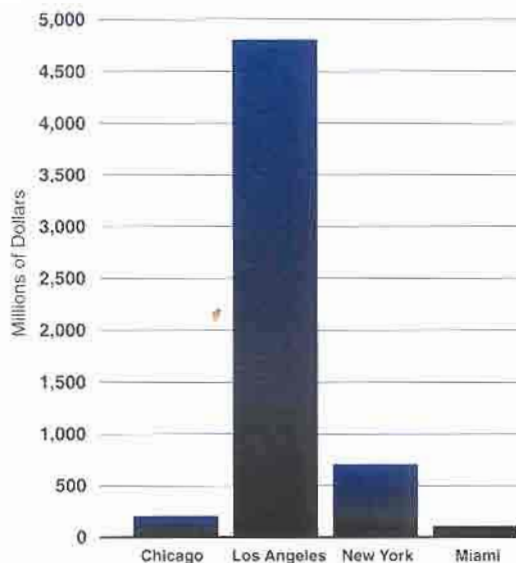
Figure 5 Total Film & Television Employees (Change Over 10 Years)

Source: City Film Commissioners, prepared by the Entertainment Industry Development Corporation, 1997

| Total Film and Television Employees | |
|-------------------------------------|-----------|
| CITY | Year 1996 |
| Toronto | 28,800 |
| Chicago | 25,000 |
| Los Angeles | 224,300 |
| New York | 43,900 |

Figure 6 Motion Picture Production and Services: Payroll

Source: U.S. Census Bureau, 1996.



Indeed, despite probable reductions in the number of new releases by major studios,⁴⁰ a continued expansion of new entertainment-related businesses is expected to last into the next century, with growth rates averaging roughly 7 percent, well above the probable rate of GDP growth.⁴¹ To meet this growing demand, new construction is being planned, with more than \$1 billion in new facilities slated by the large studios alone.⁴² In addition, other new expansions—including Roy Disney's new production facilities in Manhattan Beach and the proposed Dreamworks complex—are also in development, all but insuring that Southern California's huge entertainment infrastructure will increase its sizable lead on all competitors (see figure #7).

The Evolution of Southern California's Cultural-Industrial Complex

Figure 7 Sound Stage Space

Source: Entertainment Industry Development Corporation, 1996

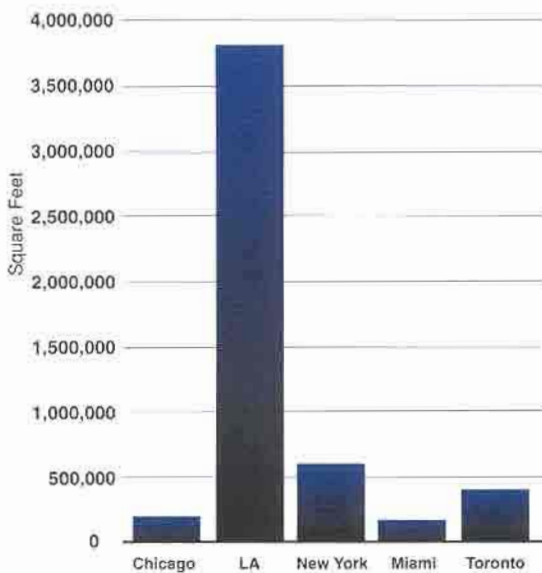
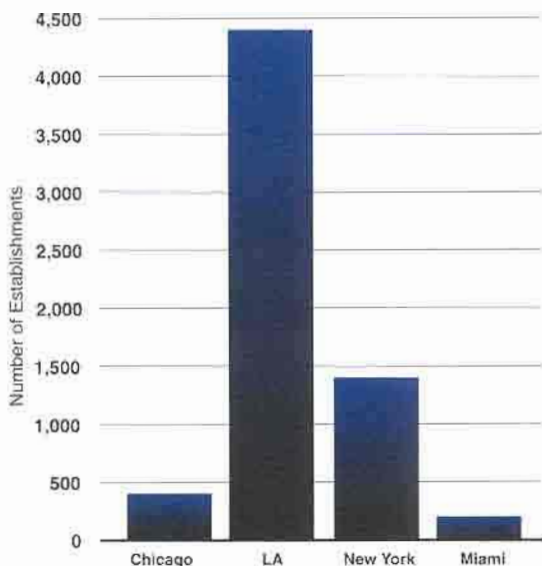


Figure 8 Motion Picture Production/Services: Establishments

Source: Entertainment Industry Development Corporation, 1996



Southern California has retained its preeminent position in entertainment largely by adapting to "information-age" industrial patterns. As the Tofflers envisioned in *The Third Wave*, successful companies in the new economy reduce "the scale of operation" while maintaining the highest production values. "Today," the Tofflers observe, "we are beginning to realize that neither big nor small is beautiful, but that appropriate meshing of both big *and* small is most beautiful of all."⁴³

This new economic paradigm has been described by MIT economists Michael Priore and Charles Sabel as "flexible specialization." In this system, various players within an industry cooperate across size and areas of competency in order to produce highly specialized, even customized goods, usually at the upper end of the market.⁴⁴ "Flexible specialization" has been used to explain intra-industrial patterns in much of Silicon Valley and may have much to do with that area's preeminence in many technology-based industries.⁴⁵

In Hollywood, "flexible specialization" involves the increasing collaboration between the major studios and a host of smaller, often quite specialized, independent entertainment companies. The studios provide the necessary marketing, along with the financial and technical infrastructure, while helping to coordinate the varied inputs of the smaller companies. Most of the creative input—the direction, look, design, and conceptualization—comes from smaller independent firms and freelancers.

This represents a massive change from the traditional studio system—where virtually everything was developed within a vast vertical structure—that originated in the 1920s and continued, largely unchanged, for decades. In 1960, for example, only 28 percent of all U.S. films were independently produced; by 1991 that number had risen to well over 60 percent. In addition, since the late 1970s, the number of new entertainment-related specialty firms—with unique competencies in such things as lighting, set production, special effects, post-production, model-making, even accounting and catering—has more than tripled.⁴⁶ Today there are more than 4,400 motion picture-related service establishments in Los Angeles County, which is three times more than the combined totals of New York, Chicago, and Miami⁴⁷ (see figure #8). In addition, nearly 100,000 freelancers now labor in the local industry.⁴⁸

This flexible and decentralized structure provides enormous benefits for the regional industry. Often working with tight deadlines, crews of specialists can transform the varied locales of Los Angeles into a set that can duplicate a New York City subway,⁴⁹ a small town in Iowa, a Chicago suburb, or a twenty-third century dystopia.⁵⁰ "Most people in the film business are organized on specific projects and you can't do that in Orlando or Chicago," observes Jonathan Katz, founder of Cinnabar, one of Hollywood's premier prop makers. "We start a film on Friday and have a team on Monday. You have to have the resources available."

As independent units, firms such as Cinnabar also have been free to take their Hollywood-honed skills into a whole series of other endeavors. Today, the Los Angeles entertainment complex sprawls well beyond movies and television to a host of other disciplines, such as theme park development and commercial production. As in the case of film or video entertainment, these "knowledge value" industries depend greatly on the array of specialized skills that exists in depth only in the Southern California region.

One key growth area has been the making of commercials for television. In a “knowledge value” economy, notes Taichi Sakaiya, advertising must serve the changing demands of more sophisticated and fragmented consumer markets. Advertising, he argues, must now do more than increase volume sales; it must also “make the inhabitants of a certain social setting value more highly (both socially and financially) the product in question.”⁵¹ As advertisers focus on such qualitative concerns, they naturally seek ways to improve the images that convey their message. This has helped turn the Los Angeles area—the worldwide specialist in image creation—from a relatively marginal player in the television commercial business into the dominant force. Today, Southern California is home to roughly 60 percent of television commercial production, compared to 35 percent for the traditional commercial-making capital, New York. In 1996 alone, production days for commercials in Los Angeles grew from 4,800 to more than 5,600.⁵²

LA’s appeal to the commercial industry stems largely from the region’s superior production facilities, its cadre of skilled craftspeople, and its varied locales and weather—all of which allow advertisers to create products as breathtaking and technically flawless as those seen in cinemas and primetime television. Observes Meiert Avis, co-founder of Windmill Productions, a Santa Monica production company that has made ads for, among others, Buick, MCI, and Coca-Cola: “The definition between a film and a commercial is getting increasingly blurred.”⁵³

A similar “blurring” can also be seen in the links between traditional movie and television work and “themed entertainment,” a burgeoning field that employs everything from Hollywood scenery makers to the creators of virtual reality. Once dominated by a handful of firms, themed entertainment has become a full-scale industry, with a 360-member trade association, up from 180 members just two years ago. Sixty percent of these are located close to Hollywood in Southern California, with another 20 percent in Florida.⁵⁴

Peter Chernack, president of the Themed Entertainment Association and co-founder of Metavision, a Burbank-based developer of high-tech filmed amusements, traces the shift towards themed entertainment to the opening of Disneyland in the 1950s. Prior to that, there were hundreds of amusement parks—with rides, cotton candy, even freak shows—but they offered similar generic experiences.

Walt Disney, Chernack believes, changed everything by “theming” his Anaheim facility with mythologies borrowed largely from the European past as well as from the experience of the American Frontier. Since then this method has been duplicated by others—including Universal, MGM, and Warner Bros.—thereby generating a theme park industry with revenues in excess of \$8 billion annually.⁵⁵ The local concentration of these theme parks has also been critical in the revival of the Los Angeles area’s \$9 billion tourism industry, which itself employs some 250,000 people in the region.⁵⁶

Today, themed entertainment includes not only traditional, family-oriented entertainment but also gambling meccas such as Las Vegas. Locked in an ever-escalating competition to lure gamblers, many of the major casinos—such as the Sahara and the Las Vegas Hilton—have invested heavily in the latest theming technology. “Las Vegas has become the ultimate Disneyland for adults,” notes Metavision’s Chernack, now working on the new “Starbase” casino at the Las Vegas Hilton. “Everyone there is upping the ante.”

Increasingly, theming “technologies” are also finding applications even in Main Street’s restaurants, shopping malls, and arcades. The intensifying competition for customers among retailers and cities has forced consumer-oriented businesses to look for new ways to lure people into their stores, observes Roberta Perry, vice president for New Business Development at Edwards Technologies, Inc., which develops kiosks for restaurants, bars, and arcades as well as more traditional theme parks. “Competition is doing this to everyone. I get calls from retailers every day,” Perry explains from her modest office in El Segundo, near the Los Angeles Airport. “Shopping has boiled down to choice or chore—and most retailers would prefer make it a choice. Even for a sandwich shop, just having a good sandwich doesn’t do it anymore.”

Perry's airport location is a fortuitous one, since her company's expertise in creating kiosks and other interactive systems has created enormous worldwide demand for its product. Over the last few years, her firm has worked on major projects in such diverse locales as Las Vegas, New York, Australia, Spain, Korea, and Japan. The rapidly growing economies of East Asia increasingly represent the most lucrative new market for the theme industry; annual investment in entertainment assets in Asia, now estimated at \$1 billion, reports *Forbes*, should reach \$5 billion—\$3 billion for theme parks alone—by the beginning of the next century.⁵⁷

The critical importance of style and craftsmanship in LA's cultural-industrial complex also extends to a host of other industries, such as textiles, garments, and household furnishings, which have traditionally been considered "low tech." The "information" content of such products—its fashionability or uniqueness—has become ever more important in determining both price and profit margins. Observes Sakaiya:

In the coming epoch, people, rather than buying a lot of goods and replacing them in rapid succession in the disposable mode of material consumption, will purchase high-priced items possessing preferred designs, high-gloss brand images, high-level technologies, or specific functions and will commit themselves to consumption patterns in which the items purchased are possessed for a much longer period.⁵⁸

Such new "consumption patterns," Sakaiya adds quickly, do not suggest a "renunciation of material goods" but a shift in tastes towards products with greater "knowledge value" imbedded in them. In Southern California, this shift is transforming traditional "low-tech" industries, such as furniture, pottery, garments, textiles, and toys. Faced with lower-cost foreign rivals, most recently from Mexico, local companies in such industries must accentuate the design element to remain competitive. These companies employ tens of thousands of people in Southern California, particularly Hispanics,⁵⁹ and, as highly concentrated conglomerations, provide economic sustenance to many of the poorer sections of Los Angeles and Orange Counties (see figure #9).

Figure 9 Selected Industrial Districts

Source: *Annals of the Association of American Demographers*, 1996

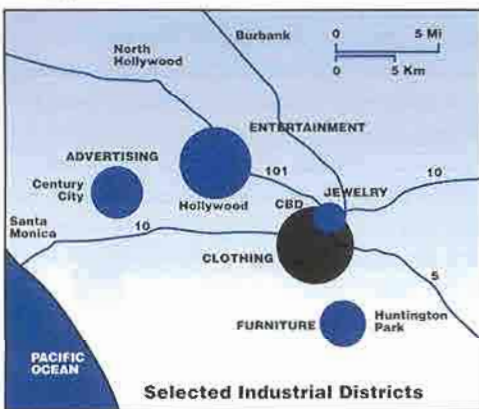
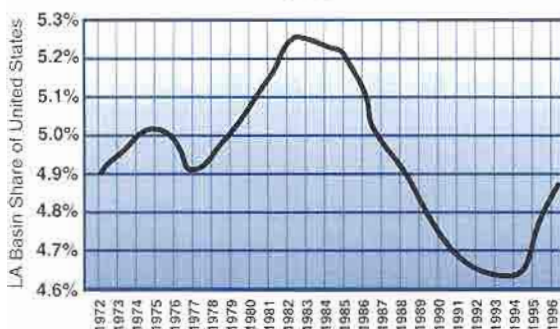


Figure 10 Los Angeles Basin Share of U.S. Diversified Manufacturing

Source: Center for Continuing Study of the California Economy, "California Economic Growth," 1996/97



This shift toward "knowledge value" can be seen, for example, in the evolution of the area's furniture industry, which lost 11,000 jobs during the 1980s, due largely to regulatory pressures and the severe recession of the early 1990s.⁶⁰ But more recently, notes UCLA researcher Steve Herman, this downturn has been reversed, largely due to the growth in more design-intensive manufacturers who identify their product with the Southern California "lifestyle," which they then market both at home and abroad, notably in Japan.⁶¹

"We're finally beginning to see increases," says Herman, who has studied the local furniture industry for RLA, a Los Angeles-based nonprofit economic development organization. "The end that's getting better is the design end. The companies that have more innovative, creative styles are pushing the design edge along."

Similar patterns of growth can be seen in other fields not usually associated with the "information age," such as textiles, apparel, and toys. This may explain why Los Angeles, in sharp contrast to other large cities such as New York, has actually begun to see a significant uptick in its manufacturing economy, with the addition of nearly 20,000 new jobs since the region's industrial economy hit bottom in 1994.⁶² As a result, there has been a widely unexpected increase in LA's share of the nation's diversified manufacturing production (see figure #10). Particularly notable has been the growth of the higher-end "fashion" side of the sportswear market, including companies such as BUM, Rampage, and Carole Little.⁶³

Although seemingly far distant from the bright lights of movie sound stages, the growth of Los Angeles craft-based "knowledge value" industries—as well as services such as architecture and automotive design—cannot be separated from the largely Hollywood-derived image of the Southern California lifestyle. As UCLA's Alan Scott has noted:

the culture products industries constitute a system that constantly creates and recreates images of Los Angeles as a place, i.e., as a locale associated with a distinctive aura and mystique in the form of certain impressions, personae, memories, styles, trends⁶⁴

Multimedia: The Critical Convergence

Figure 11 Penetration of CD-ROM Drives in U.S. Computer Homes

Source: Adams Media Research, 1995

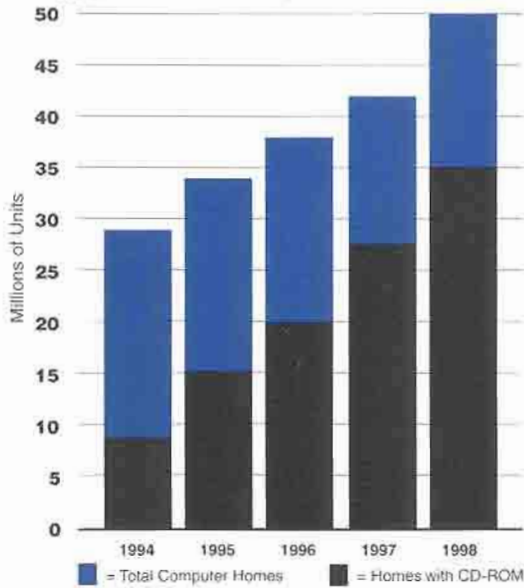
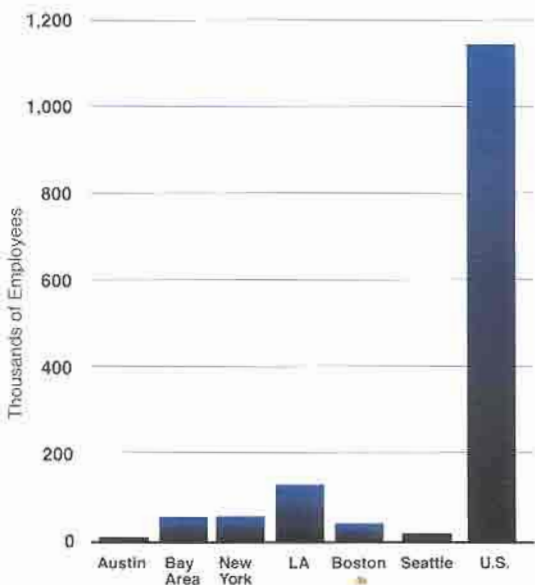
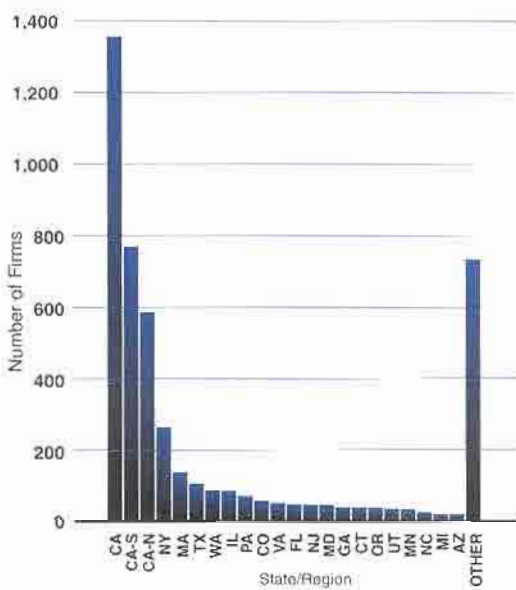


Figure 12 Multimedia by State

Source: The Carronade Group, 1996



Today the region's cultural-industrial complex faces perhaps its greatest challenge—and opportunity—since the advent of television. As technology spawns new cultural forms together with the means to transmit them, the information-age economy has begun blending its “hard” and “soft” characteristics. It is a convergence for which Southern California is well positioned, but by no means assured of a leading role.

The central change agent in this process is digitization. The increasing use of computer-generated effects in film and video, and the rise of the computer game and Internet-related markets has ushered in a new period of ferocious competition among information-oriented companies and regions. The stakes are enormous, not only for the new players in these various industries, but also for the more traditional information sectors, such as computer software, entertainment, and the cultural products industry (see figure #11).

Gaining a strong position in these industries already has become a critical strategic priority for many regions. Some—primarily Seattle, the Bay Area, and New York—have been quicker than Southern California to lay claim to the emerging digital information industries. New York, armed with the biggest bugle, has been blowing its tune the loudest. “The Cyber Gold Rush was supposed to happen in California,” proclaimed *New York* magazine in a gushy profile of New York's multimedia scene in November 1995. “But then, less than a year ago, the cry of the high-tech prospectors changed to ‘go east, young man’.”⁶⁵

In comparison, Southern California's multimedia industry has largely labored in obscurity. Indeed, in many accounts in the East Coast-oriented national press, including *The New York Times*, *Business Week*, *The Boston Globe*, *New York*, and *Publisher's Weekly*, the Los Angeles-based industry has been barely mentioned.⁶⁶ Southern California also has not gotten much attention from San Francisco's growing digital media, including publications such as *Wired* and *Computer Life*, which have helped turn South-of-Market into the West's focal point for cyber-hype.⁶⁷ “Los Angeles seems to have fallen off the digital map,” observes Nick Rothenberg, founder of W-3 Design, a quickly growing Web-site developer in Culver City. “People think there's nothing here and it's hard to convince them that they're wrong.”

Rothenberg's frustration is all the more understandable because the media's perceptions sharply conflict with most objective studies. Of course, the emerging multimedia industry remains difficult to measure given changing definitions and slower-than-anticipated growth of many key multimedia niches such as advertising-based Web-site development. But it seems clear that the Los Angeles area's multimedia industries have achieved a leading, even preeminent, position. The Carronade Group, for example, which attempts to track legitimate multimedia firms, has found that since 1994 Southern California has had more such companies than Northern California. The survey placed New York, despite the hype, in a distant third, and put other “wired” cities such as Seattle even further behind (see figure #12).

Similarly, another survey designed to track multimedia employment, conducted by the Bay Area Economic Forum, gave Los Angeles an even more decisive lead. The study found that Los Angeles area-based multimedia firms employed roughly 133,000 people, more than the combined total of New York and the Bay Area, which had roughly 60,000 each. Once again, many of the other highly touted cyber-cities, such as Seattle and Austin, had commendable industries, but were only a fraction of the size of LA's⁶⁸ (see figure #13).

Southern California's lead in multimedia can be traced largely to the fact that this region uniquely combines a strong technology base with a world-leading cultural-products industry. New York, which also has a strong cultural base, maintains a high-tech sector that is barely half the size of Southern California's.⁶⁹ In fact, in contrast to the “high-tech boom town” depicted by boosters such as *New York* magazine, the region's technology industries have been shrinking across the board since at least the early '80s and have experienced, in the words of *The Wall Street Journal*, “a serious high-tech decline.”⁷⁰

Figure 13 (left) Multimedia Employment Performance (Thousands) 1995

Source: Bay Area Economic Forum, “The Bay Area: Leading the Transition to a Knowledge-based Economy,” 1996

Yet even in the best of circumstances, Koltai does not envision CyberStudios ever becoming a new Warner Bros. The very nature of digital industry, Koltai believes, militates against the kind of mega-giantism that once characterized the vast entertainment studios. Instead, he sees the new digital Hollywood as a classic information-age industry consisting of highly specialized firms, animators, software programmers, writers, and graphic artists who collaborate on individual projects, then break off before embarking on a new venture, often with a different cast of partners. "I have turned over to the 'small is beautiful' mode right now," the Hungarian-born, LA-reared executive admits, "and I think that, among the creative community in the digital area, one of the real draws is you don't need a huge organization to be able to produce and distribute your product. That's the exciting thing about the medium."

The Rise of Digital Moguls

Digitization's impact will not only create a new group of multimedia companies, but it will also spawn new entertainment studios built around the mastery of digital technology. Clearly not all of these studios will be located, like the traditional studios, in Southern California. Bay Area firms such as Pixar and Pacific Data Images (PDI) may well emerge as small, self-contained producers of digitally oriented entertainment.

Yet Southern California seems likely to become the focal point for the creation of these new kinds of digital studios, now estimated to be growing at 20-25 percent annually.⁷ For one thing, the region's unparalleled entertainment production networks have access to an unrivaled confluence of writing, production, and marketing talent.

This, in turn, allows even small firms such as Studio City-based Hammerhead Productions to produce its own films. Two years ago, the principals at Hammerhead were working at PDI's Hollywood office. But when PDI closed the office and consolidated operations in Silicon Valley, a handful of the firm's top programmers stayed in Los Angeles in order to make their own movies. "We all consider ourselves artists even if we also come out of computers," explains Hammerhead President Dan Chuba. "We were movie fans before we got into computers."

Today, working with a staff of 15, Hammerhead is finishing up its first feature-length movie, *Shadowbuilder*, and getting ready for its next, *Supernova*, which Chuba himself wrote. Having made a modest \$500,000 in 1995, the firm last year tripled its revenues, in part by creating effects at a fraction of the cost normally charged to mainline Hollywood studios. "We have found ourselves always being frustrated by people in Hollywood who were not able to appreciate what these new tools can do," director Jamie Dixon, a Hammerhead founding partner, maintains. "Now we can create products using the tools and take advantage of our skills."

In addition to small "cyber-gnats" such as Hammerhead, the increasing importance of digital technology is also fostering the growth of several "mini-studios"—technically oriented firms capable of extending into several industries, from theme parks and CD-ROMs to special effects and full-length movie production. John Hughes, founder and president of Rhythm and Hues, believes LA's appeal to emerging major digital studios reflects the region's leading position across a broad range of fields. "I think Los Angeles is the only city in the world that can support the kind of digital revolution that's going on, because we have not only the animation, but we've got feature films, we've got the theme parks with Disney and Universal, and now we've got the video games," notes Hughes, whose firm won an Oscar in 1996 for its work on the hit movie *Babe*.

Some digital companies, such as Digital Domain, also located in Venice, are already well on the way to becoming diversified information-age companies, with interests in the Internet and CD-ROMs—including last year's Christmas best-seller, *Barbie Fashion Designer*⁸—as well as in providing effects for movies and commercials. Company President Scott Ross sees the development of digital distribution methods, such as satellite, the Internet, and digital discs, as providing the means for breaking up the last vestiges of the old studio monopolies.

Figure 15 Percent of Adults with a Bachelor's Degree

Source: Price Waterhouse based on 1990 Census. Adult population is defined as 25 and over.

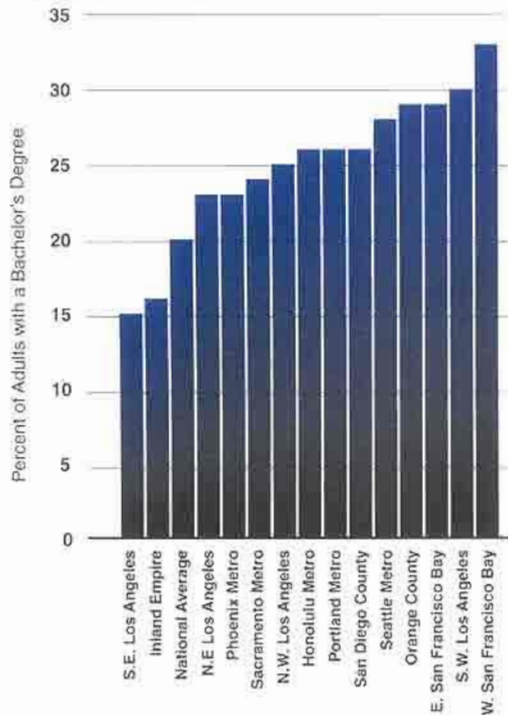
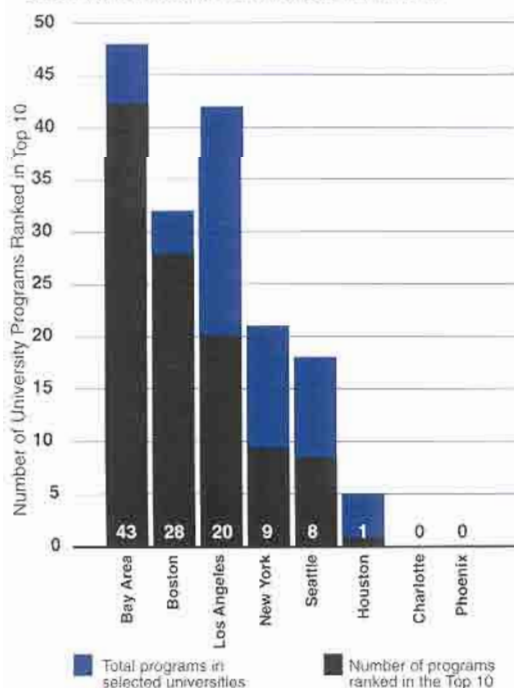


Figure 16 Excellence in Graduate Education in Science, Math, and Engineering 1993

Source: National Research Council; project team analysis



"Once we start being able to distribute digitally, the impediments will be broken," suggests Ross, a former top executive of Industrial Light and Magic. "Right now they can still get you on the distribution deal—things don't happen if you can't distribute the film. But when you can send the signal digitally, you can get out your content for a new kind of studio."

Even more ambitious are plans by Santa Monica Pictures to develop a 6.5-acre, \$85 million, state-of-the-art digital studio—complete with digital sound stages, live/work space, massive post-production facilities, and a 100-seat theater at their Olympic Boulevard site. Like Hammerhead, Santa Monica Studios is also beginning to develop its own content. Its first feature film, *Goldilocks and the Three Bears*, is now finished, its thriller *Twisted Hearts* is in production, and three other films, including two science fiction movies, are in development. "There's a lot of the old ways of doing things here, but what we don't like about Hollywood, we've gotten rid of," company founder David Rose suggests. "With control of the new technology, there's a gamut of new possibilities that didn't exist before for people like us."

Prospectus for Southern California's Information Age

Whether in traditional entertainment, theme parks, computer software, digital effects, Internet-based entertainment, or educational CD-ROMs, Southern California currently holds a strong, even commanding position in the emerging information-age economy. However, numerous interviews and other research together indicate that Southern California's ultimate standing in these critical industries will depend largely on how the region faces several major challenges.

Education

Perhaps the greatest obstacle facing Southern California's information-age industries lies in marshaling the proper human resources. The new industries most likely to spur economic growth—multimedia, computer software, biotechnology, special effects, animation—require high degrees of education and training. In this respect, the prospects for Southern California are decidedly mixed. Greater Los Angeles contains some of the Western United States' most well-educated regions, such as Orange County and West Los Angeles, as well as some of the least, such as the Inland Empire and South LA²⁷ (see figure #15).

For the most part, Southern California excels at the higher levels of education. In terms of graduate programs in science and technology, the region ranks second, just behind the Bay Area, but ahead of greater Boston, and considerably in front of New York²⁸ (see figure #16). Despite these strengths, some companies, such as Seventh Level in Glendale, believe that the "hard" engineering skills are far more available in areas outside Southern California. Notes Seventh Level's Scott Page:

The company is built along a Dallas-LA axis. Here we're part of the new hybrid industry—the new studios. It's where the talent is. In Dallas, you have the programmers. It's hard to get good programmers here.

This assessment is not shared by many other local multimedia executives. Knowledge Adventure founder Bill Gross believes Southern California has technological human resources equal or better than anywhere else in the nation. And high-tech recruiters such as Helen MacKinnon, founder and president of Technical Connections, a Century City high-tech recruiting firm, notes that other regions—including Silicon Valley—face similar problems recruiting large numbers of technically gifted people. "LA has some advantages too," MacKinnon observes, "because the aerospace industry left a lot of technical talent around here."

On the "soft" side of the information-age equation, the region's higher-education advantages may be less ambiguous. In concentrations unmatched anywhere, the region boasts numerous institutions—CalArts, the University of Southern California, Art Center College of Design, and Santa Monica College—with specific programs aimed at design skills, animation, and digital artistry. The University of Southern California also has been awarded a prestigious grant from the National Science Foundation for its Integrated Media Systems Center.²⁹

Despite these strengths, many companies, particularly in the digital effects area, find themselves looking outside the region to find adequate staff. Animators, and particularly those with computer skills, have become among the most precious commodities in Hollywood. Newcomers now earn more money than MBA graduates, while people with five years of experience are drawing upwards of \$1,600 weekly, compared to \$1,200 back in 1992.⁶⁷ The market dynamics are definitely in favor of the trained animator; in 1996, there were only 14,000 computer animation graduates but 34,000 new jobs.⁶⁸ Notes John Hughes:

Our ideal person is someone who's very strong in math or engineering or technology, plus has a second degree in art, whether it be photography or sculpture or illustration. Those people are very hard to find and, in fact, we have to search the world for those kinds of people.

Even more worrisome to Hughes and others is that Southern California's primary education system continues to lag well behind national norms, with the Los Angeles area ranking considerably below the Bay Area in critical areas such as math, reading, and writing⁶⁹ (see figure #17). Although the Los Angeles area has an above average percentage of people with a four-year college degree, it also has the second highest percentage, after New York among the major urban areas, of residents with less than a high school education.⁷⁰

Figure 17 Education Performance within CLAS* Achievement 1993-94 School Year

Source: California Department of Education; project team analysis
*California Learning Assessment System

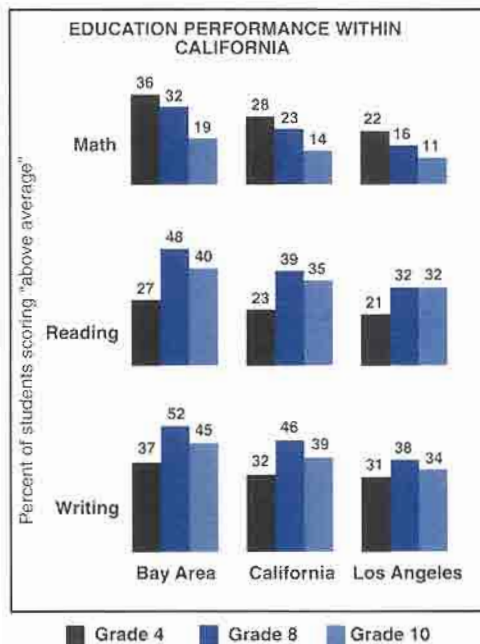
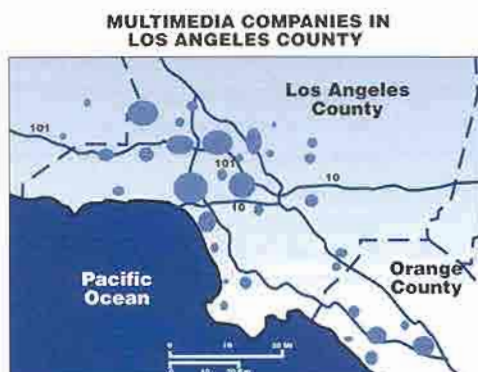


Figure 18 Concentration of Multimedia Companies in Los Angeles County

Source: Scott, A.J. (1995), and Samsel, J. and Fort, C. (1995).
The Multimedia Directory



To some extent, these discouraging numbers can be traced in Southern California, as well as in New York, to the relatively low levels of education among many new immigrants. But for the long term, the region must do more to train these people—and more crucially, their children—for jobs connected to the information-age economy.

One innovative approach has been taken by Rowland Heights High School, just outside Los Angeles, which has developed a computer animation training program that has already placed 50 youngsters in jobs at both Disney and Warner Bros., and has put scores of others in smaller production houses at salaries starting in the range of \$40,000 and up. "Our best students don't have to look very hard for jobs," says Larry Kurnasky, the professional animator and filmmaker who runs the Rowland Heights program. "The studios come looking for them."⁷¹

Marketing and Networking

Despite its huge size, Southern California's information-age economy does not enjoy the kind of positioning enjoyed by competitive regions. In the aftermath of the Los Angeles riots and 1994 Northridge earthquake, many regions, particularly New York, made a concerted attempt, aided by local and nationally based New York media, to seize the initiative in the entertainment-related industries.⁷² This marketing effort has reaped some PR coups, as in a September 1996 *Wall Street Journal* piece on entertainment industry growth, which focused largely on New York and barely mentioned Southern California, where by far the largest number of new jobs in the industry have been created.⁷³

To a large extent, the effort to shift conventional movie and television production out of Southern California has not succeeded, but the determined marketing by other regions—and the lack of the same here—could have greater impact on newer, less rooted industries such as multimedia. Knowledge Adventure founder Bill Gross, among others, ascribes this relatively weak positioning of the regional industry in part to geographic factors.

There are few areas in Southern California, Gross notes, where—as in San Francisco's "South of Market" or New York's "Silicon Alley"⁷⁴—reporters can walk from one company to another, sip cappuccinos, and write about a trendy "cyber culture." In contrast, the Southern California multimedia industry is now concentrated in several widely scattered nodes—primarily on the Westside and in Santa Monica, in the Burbank/Glendale/Pasadena area, and around Irvine (see figure #18). "In Los Angeles the talent is very spread out, like everything else," observes Gross. "You don't have a lot of people getting the connections all in ten square blocks."

Yet this multipolar pattern of post-industrial development also has its advantages, providing companies with varying locational options that appeal to different kinds of people working in information-oriented industries. Irvine, for example, provides an almost ideal locale for software-oriented firms—with their need to attract computer scientists and engineering types—and it now includes such leading multimedia companies as Interplay, Virgin Interactive, Graphix Zone, and Blizzard.¹⁰

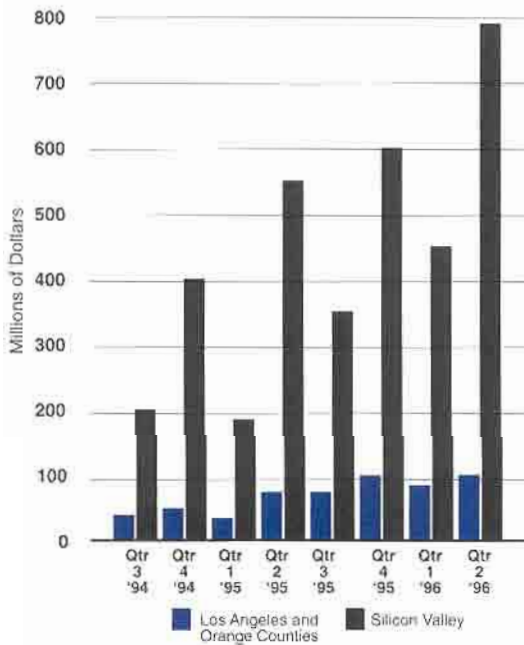
Similarly, the well-run, low-crime, pro-business cities of Burbank and Glendale draw on unmatched concentrations of animators and other entertainment craftspeople who live in or around the area. “This is where the film editors, the craftspeople are and prefer to live,” observes Paul Rodriguez, president of EFX, a sound firm that has worked on CD-ROMs as well as movies and television. “This is a very comfortable and affordable area for people.”

The third area of concentrated talent, and in many ways the focal point for the region’s information-age industry, lies along a swath of territory on the west side of Los Angeles County, from Santa Monica and Venice to the South Bay. With its beaches, relatively clean air, and mild climate, this region appeals particularly to the younger digital artists and producers attracted by the area’s “hip” cultural environment. “Santa Monica plays perfectly for the ponytail, nose ring types,” jokes Jim Jonassen of the Larkin Group, a leading multimedia consulting firm.

Linking these three distinct regions—as well as the historic movie center in Hollywood—represents both a cultural and logistical challenge. Yet models for this broad kind of regional economic cooperation can be found in successful efforts elsewhere, including Joint Venture Silicon Valley in the San Jose area and the Greater Houston Partnership. The past success during the 1980s of the Southern California Executives Network and the current interest in multimedia oriented groupings such as the LawnMower in Los Angeles—whose membership has grown from eighteen to several hundred since 1994¹¹—suggests that the region’s firms can be persuaded to band together for mutual advantage.

Figure 19 Venture Capital Stays North

Source: Price Waterhouse LLP, 1996



Finance

Over the past two decades, Southern California has created a vast new high-technology complex, but for the most part without the specialized financial support evident in such high-tech regions as Silicon Valley or Boston’s Route 128. Despite the region’s powerful, even leading position in such areas as digital imaging and multimedia, Southern California has lagged significantly behind its northern counterparts, and indeed much of the nation, in garnering venture investment¹² (see figure #19).

Clearly Southern California’s high-tech sector—particularly on the “hard” side—could easily absorb more financing of this kind. But the lack of a strong venture network and locally oriented investment banks, together with an apparent bias against the region within the nation’s financial community, presents huge barriers to the emergence of a strong venture capital presence in Southern California. “Right now I could do fifteen deals with good companies that need money,” observes Brent Rider of the Southland Venture Alliance, himself the former head of Union Bank’s venture capital division. “This place doesn’t need one more fund, it needs ten more. It’s amazing to me—I have never had to compete for a deal here.”¹³

Lack of access to venture and other investment capital, notes Activision CEO Bobby Kotick, has several negative effects. For one thing, it slows the creation of large, locally based firms, such as those that have sprung up in Silicon Valley, by forcing them to rely on alliances with studios and other large companies for financing as well as distribution. “The one thing a place like Silicon Valley has been successful at is building an infrastructure that goes beyond the original entrepreneur,” observes Kotick. “Right now LA is still largely an economy of little shops.”

Figure 20 Employment Growth

Source: Milken Institute for Job & Capital Formation, Dunn & Bradstreet

| Employment Growth | | |
|-----------------------------------|--------------|------|
| | Rest of U.S. | L.A. |
| Finance, Insurance, & Real Estate | 6% | -16% |
| Banking | -6% | -22% |
| Credit Agencies Other Than | 36% | 13% |
| Security and Commodity | 29% | 7% |

In addition to problems with venture financing, Southern California in the 1990s also lost ground across the board in the financial sector—particularly with the loss of two of its major banks, First Interstate and Security Pacific, due to mergers. Between 1990 and 1996, Southern California’s financial industry, according to studies conducted by Milken Institute economist Beverly Burr, fared far worse than its counterparts around the country¹⁴ (see figure #20).

As a result, cities such as Burbank, Glendale, Culver City, West Hollywood, and even Santa Monica now have vacancy rates well below those in surrounding areas, with demand driving rental rates far higher.¹⁰⁰ "They can make all the jokes they want about beautiful downtown Burbank," says Robert "Bud" Ovrom, Burbank's city manager. "We're getting the last laugh"¹⁰¹ (see figure #21).

Clearly governments can play an important, albeit supportive, role in nurturing the growth of information-based companies through a broad range of activities—not only by easing regulatory barriers and trimming differences in comparative costs, but also through improving the living and working environment. Fortunately, recognition of these dynamics is spreading throughout Southern California as well, even in the city of Los Angeles, as evidenced by efforts to restore the historic entertainment industry core by cleaning up Hollywood Boulevard, reducing crime, and adding new attractions to the area.

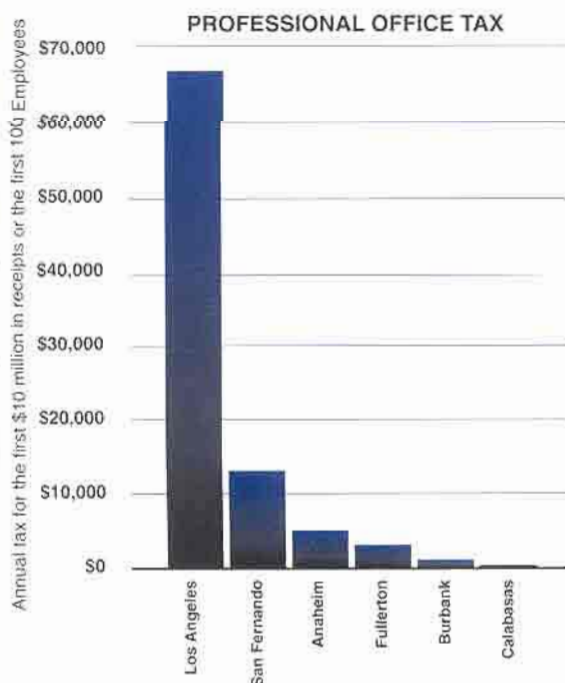
Equally important, the city has recently acted to reduce taxes for multimedia firms while cutting regulatory burdens through the merger of the city and county film-permitting offices. These efforts are widely credited with turning around the early 1990s trend toward "runaway" production, ensuring the region's continued leadership in the entertainment arena. "Permitting is a lot easier than it used to be because the streamlining means you're not going through seven different agencies," observed one studio location manager. "It probably has helped keep production here. People want to stay in Los Angeles, and they are trying to make it easier."¹⁰²

Conclusion: Southern California's Prospects in the Information Age

Despite its impressive combination of "hard" and "soft" information-age industries, Southern California's political, business, academic, and media communities should not take the region's leading position in the global "knowledge value" economy for granted. Competition from other regions, as well as continued and often unjustified negativity among the local elites and company owners, threatens to blunt the pace of future expansion. As Bill Gross, among others, has noted, creative people are the most critical fuel for powering these new industries. Given the relative worldwide scarcity of specialized talent, Southern California can only prevail in these markets to the extent that it can attract and retain the necessary people to the region.

Figure 21 Unequal Taxes

Source: "Kosmont Cost of Doing Business Survey," 1996



Ultimately, the future of Southern California's information industry cannot be separated from the broader regional challenge of fashioning successful, livable communities within the context of a vast, multi-ethnic region. The economic, financial, marketing, educational, and political challenges involved, as suggested above, will be daunting not only for cities in the region, but also for neighborhoods, school districts, craft unions, and trade groups.

Yet Southern Californians have a long history of rising to such challenges. The adventurous spirit that brought water to this arid coastline, built ports where none existed, and developed technologies that conquered external enemies as well as outer space, long has been essential to overcoming obstacles. The ability to summon that spirit once again will determine whether Southern California will remain, in the next century, the place where the future happens first.

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