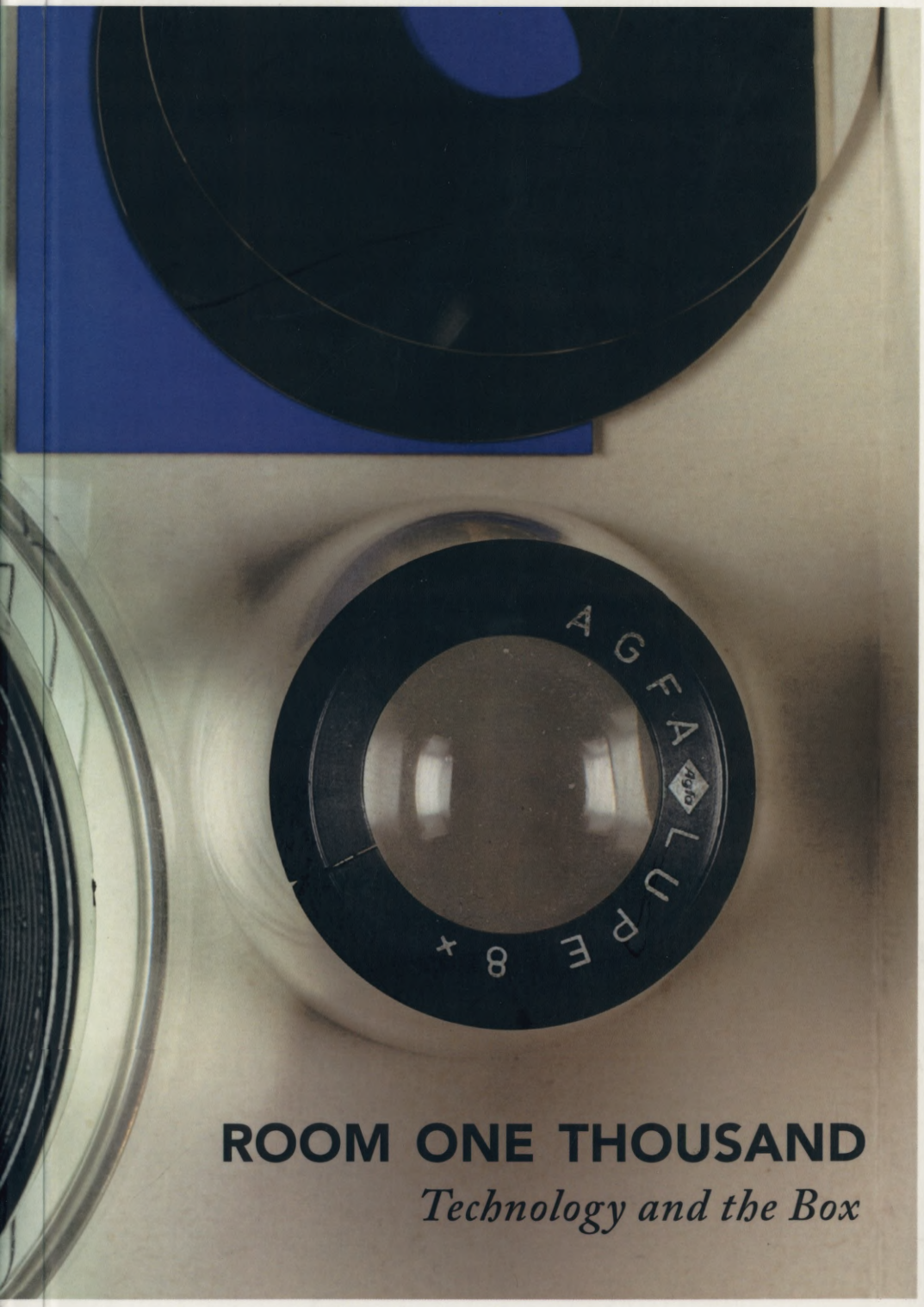


ROOM ONE THOUSAND

Technology and the Box

Little boxes on the hillside
Little boxes made of ticky-tacky
Little boxes on the hillside
Little boxes all the same
There's a pink one and a green one
And a blue one and a yellow one
And they're all made out of ticky-tacky
And they all look just the same

And the people in the houses
All went to the university
Where they were put in boxes
And they came out all the same
And there's doctors and lawyers
And business executives
And they're all made out of ticky-tacky
And they all look just the same

And they all play on the golf course
And drink their martinis dry
And they all have pretty children
And the children go to school
And the children go to summer camp
And then to the university
Where they are put in boxes
And they come out all the same

And the boys go into business
And marry and raise a family
In boxes made of ticky-tacky
And they all look just the same
There's a pink one and a green one
And a blue one and a yellow one
And they're all made out of ticky-tacky
And they all look just the same

-Malvina Reynolds, 1962

Margaret Crawford

Little Boxes

High-Tech and the Silicon Valley

The story behind this song, as recounted by Reynolds's daughter, is that Reynolds, a folk singer, political activist and Berkeley resident, was driving down the San Francisco peninsula to La Honda, in the hills behind Palo Alto, to perform at an event supporting nuclear disarmament. As she passed through Daly City, she noticed that the hills were covered with endless rows of new candy-colored tract houses. She pulled over, asked her husband to drive, and immediately wrote "Little Boxes."[1] The song, which became an unlikely hit for Pete Seeger the next year, and has since been covered by countless other musicians, became the hymn of anti-suburban sentiment.[2]

Reynolds, who had a PhD in English from UC Berkeley, fits neatly into the ranks of academics and intellectuals who scorned these new suburbs and all they represented. Even if her lyrics seem over-simplified today, a surprising number of contemporary critics of suburbia maintain a similar social and aesthetic disdain for suburban houses and their residents.[3] As historian John Archer has pointed out, their critiques are based on two enduring concepts. One is environmental determinism, positing that an architecturally regimented environment equals a regimented and homogeneous population, so that identical houses inevitably produce identical inhabitants.[4] The other is the expansion of the

Frankfurt School mass culture critique to postwar consumer society. Theodore Adorno argued that the material rewards provided by this form of capitalism had seduced ordinary Americans into accepting the status quo, leaving high culture as the only arena of resistance.[5] These powerful interpretive frameworks blinded many observers to the diversity, complexity and nuances of suburban environments and lives.

Perhaps this explains why Reynolds got her sociology completely wrong. The people who would initially inhabit the houses under construction were not the upper middle class, educated, martini-drinking lawyers and businessmen she depicted. They were blue collar and white collar families taking advantage of the last burst of the postwar housing boom, which made massive numbers of suburban single family houses, subsidized by government programs, available to a mass market of consumers at very reasonable costs.

Reynolds' misunderstanding of Daly City's little boxes reflects what might be characterized as a "moral panic" of the era: mass conformity as a threat to society. Her fear echoes the conclusions of a large body of popular and academic writing that, beginning in the 1950s, expressed alarm at the apparent demise of individualism. Lamenting the loss of authentic selfhood brought about by large corporations, government bureaucracy, consumerism and new media like television, numerous social critics made arguments very similar to those of Guy Debord in his far more radical 1967 diatribe, *The Society of the Spectacle*. Written at the same time that Reynolds visited Daly City, William H. Whyte's bestselling 1965 book, *The Organization Man*, made explicit connections between the social order of suburban housing tracts and the conformity of the corporate workplace, a conclusion approvingly noted by Debord.[6]

Recent scholarship in suburban studies has questioned both the theoretical and empirical bases of such negative assessments. Urban historians such as Andrew Wiese, Becky Nicolaides and Richard Harris

Figure 1: Daly City hillside houses, the "little boxes" Malvina Reynolds wrote about, today.

have demonstrated that suburbanization was never limited to the white middle class as Reynolds imagined, but involved large numbers of African-Americans, working class and even poor people. Other scholars, such as Dianne Harris, have revealed that during the civil rights era, racial battles were fought in suburbs as much as in cities. Still others, including John Archer and Robert Bruegmann, have pointed out the elitism often contained in critical judgments largely founded on class-based aesthetics and taste.[7]

And, in fact, almost as soon as "Little Boxes" was written, actual events undermined its assertions. Daly City's identical houses and their presumably identical inhabitants began to change. In 1965, as the result of the Immigration and Nationality Act, which encouraged family unification, Daly City began attracting large numbers of immigrants from the Philippines. The 1968 Fair Housing Act opened up new markets in the suburbs to formerly excluded ethnic groups including relatively well-off Filipinos. As a result, they were able to buy affordable houses that embodied their image of a modern American life. As

more and more Filipinos settled there, Daly City became the self-proclaimed "Pinoy capital of America," with the highest concentration of immigrants from the Philippines in the country.[8]

Reynolds's dismissive assessment of their houses as "ticky-tacky" misjudged their potential for transformation. Filipino homebuyers quickly restructured their dwellings to fit their needs. Their lightweight construction allowed easy alterations as immigrants occupied garages and built additions to accommodate large families and, following a pattern of chain migration, newly arrived relatives from the Philippines. Since housing costs in Daly City remain relatively low even today, Filipinos continue to arrive and, along with other Asians, settle there. By 2000, Asians outnumbered Whites in the city, their presence underlined by increasing numbers of Filipino businesses and organizations. The city's strip malls and aging commercial blocks filled up with restaurants, stores of all kinds, nightclubs, as well as a Filipino TV station and three newspapers, to serve their needs.[9]

Daly City marked the northern boundary of the postwar housing boom on the San Francisco peninsula. Beginning in the 1950s, the continuing construction of tract houses covered the east side of the San Francisco Bay all the way to San Jose in the south, consuming the orchards and commuter towns of San Mateo and Santa Clara counties. There, houses similar to those in Daly City were attracting young engineers and their families, drawn by employment opportunities in the aerospace and electronics industries that were developing around Stanford University, funded by the Defense department and other government contracts.[10]

Daly City's housing tracts spread across the hills, but the Peninsula's topography more visibly mirrored its class structure. Sorted by elevation, the homes of the wealthy nestled in the foothills while cheaper developments covered the flat land along the east and south

Figure 2: A 1950 "Rancher" in Palo Alto - three bedrooms and one bath, now worth more than $800,000.

edges of the bay. Engineers and other well-paid tech employees were the first wave of settlers, but, after 1965, as in Daly City, immigrants joined them. New arrivals from Vietnam, Cambodia, Mexico and the Philippines found work on expanding electronics production lines, assembling semiconductors, microchips and circuit boards. Their low wages limited their housing choices to new tracts in the Valley's poorest areas, Mountain View, Alviso and other low-income neighborhoods in San Jose. Even there, high housing costs often forced families to share or double up in houses.[11]

As a result, unlike Daly City, where housing prices maintained stability, the changing demands of the Silicon Valley economy transformed the built environment. During the 1980s, the semiconductor industry that gave the Valley its name restructured itself. As the Valley economy moved beyond semiconductors to personal

computers and software, this new paradigm expelled mass-production facilities to lower-wage or off-shore regions. The numbers of production workers declined as the demand for highly-educated employees grew.[12] The built environment reflected these changes, with upscale housing and retail dominating new construction. Priced out of the housing market, low-wage workers moved south and east to cheaper areas. During the late nineties the dot-com boom drove up already high housing prices in key valley locations to astronomical levels. By 2000 a three-bedroom tract house built in the 1950s in Palo Alto was worth more than a million dollars. Owners rented them out as group houses, where international collections of roommates reflected the Valley's changing demographics. A New York Times Magazine article described such a house, where two Taiwanese computer programmers and an Indian engineer were willing to pay more than a thousand dollars a month to rent a bedroom in an ordinary tract house because "they wanted to be as close to the action and energy of Silicon Valley as possible."[13]

Although prices have come down, information technology firms continue to attract highly educated workers from all over the world. There are notable concentrations of Europeans and Israelis but the largest number are immigrants from East Asia and India (a popular local joke claims that Silicon Valley owes its success to ICs, meaning Indians and Chinese, not integrated circuits).[14]

Employment remains a largely male bastion though many immigrants arrive with families. As they settle in across the Valley, they reproduce bits of their homelands. Like Filipinos in Daly City, Indians in Sunnyvale have made their presence known with a large Hindu temple, shops, and specialized enterprises such as Bollywood Aerobics. They also generate new demands, such as the demand for high quality public schools or the multiple branches of the Asian supermarket chain Ranch 99 that now dot the Valley.[1]

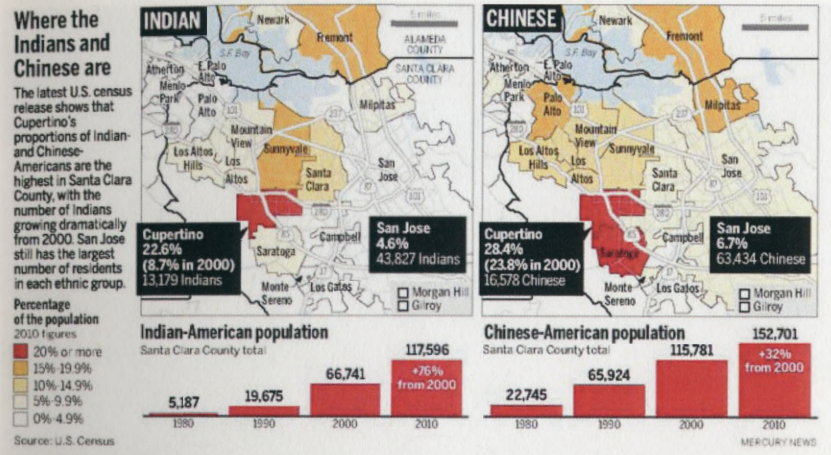


Figure 3: Growing Asian and Indian populations in the Silicon Valley, described in the San Jose Mercury News.

Little Boxes II

Before Silicon Valley existed, another "little box," the garage, already occupied a central role in the development of the electronic industry in the area. Although historians often cite the Stanford Industrial Park as the key physical site in the development of high-tech industry, a good case can be made that the lowly garage played an equally central role. In 1938, Bill Hewlett and David Packard rented a house in Palo Alto. Hewlett moved into the 12 x 18 foot garage, which they also used as a workshop. There, they invented and produced audio oscillators; the first product of what later became the electronics industry. Now a museum, the preserved shack is listed on the national register of historic places with a plaque reading "Birthplace of Silicon Valley."[16] After this, the new Hewlett Packard Company moved to a shop front in Palo Alto and then built their own warehouse-style building adjacent to the railroad

Figure 4: The garage at 367 Addison St. in Palo Alto where Hewlett Packard began in 1939.

tracks there. Only much later, in 1957, did they separate research and management from production, building one of the first modernist complexes in the new Stanford Industrial Park. As the flagship tenant in the development, their buildings, designed by architects Clark, Stromquist and Clark and landscaped by Thomas Church, set an example for later Silicon Valley campuses: with their striking design and employee amenities, rare at the time, including gardens, cafeterias, fountains and a "worker's playground" with a horseshoe pit, badminton and volleyball courts.[17]

Later, preparing the ground for the Valley's second wave of innovation in the 1980s, other garages also served as incubators, nurturing new products that would ultimately transform the industry. In 1975, the Homebrew Computer Club began meeting in Gordon French's garage in Menlo Park. The hobbyists were interested in building and programming their own personal computers, and the group included

Figure 5: Hewlett Packard's new building in the still unfinished Stanford Industrial Park, c. 1957.

Steve Wozniak among other hackers and IT entrepreneurs. The next year, Wozniak built the first microcomputer in the garage of his friend Steve Jobs' parents' house in Los Altos. Both garages were attached to "little boxes," slightly more expensive than those in Daly City but still affordable for a working class family like Jobs'.[18] These garages have become so legendary in Silicon Valley mythology that they now serve as shorthand for the initial stage of a startup. A recent headline in the *San Jose Mercury News*' SiliconBeat referred to a new company's expansion as "taking a startup out of the garage."[19]

Once a new high-tech company moves beyond the start-up phase, they usually rent a space in one of the cheap office and production facilities that have proliferated across the Valley. Developers construct large numbers of one and two story structures, made of tilt-up concrete slabs or prefabricated construction systems like Butler Buildings, as low-cost and expedient ways to occupy promising sites as place holders

Figure 6: House owned by Steve Jobs' parents at 11161 Crist Drive, Los Altos. Steve Woźniak invented the personal computer in the garage.

where they can later build more permanent and remunerative buildings. These parks are collections of unfinished spaces, usually with roll-up doors and plenty of parking. Although somewhat larger, they play a role similar to that of the garage, providing cheap and flexible spaces that can accommodate any combination of research and development, production, warehouse or office functions.

Only after achieving considerable success can firms afford to hire an architect or move into a large-scale campus or headquarters building. Like Hewlett Packard, Apple followed an architectural trajectory shared by many upwardly mobile tech firms. In 1977, the new company moved out of Jobs' garage into a light industrial unit on Stevens Creek Boulevard in Cupertino that could accommodate twelve employees.[20] They later rented a series of adjacent buildings on Bandley Drive, occupying new spaces nearby as the company grew. These were all single-story buildings until, during the 1980s, one team moved into

Figure 7: Intel's original building at 365 E. Middleford Road in Mountain View combined production, sales, and research and development.

a two-story building they named "Taco Towers."

In 1992, the company bought a set of six developer-built buildings, designed in an undistinguished corporate style, off of De Anza Boulevard, connected by a private road they renamed the Infinite Loop. This was Apple's first real campus, retrofitted with amenities that were now standard: basketball courts, rec rooms, an amphitheater for outdoor concerts, and free high quality meals and snacks. Finally, in 2006, Steve Jobs acquired a large parcel of land nearby and commissioned British starchitect Norman Foster to design an iconic building that could accommodate all 12,000 employees. Foster responded with a grandiose circular structure that will be surrounded by a vast landscape of green.

As companies grew, Silicon Valley hubs such as Palo Alto, Mountain View, and Cupertino became crowded with large-scale office campuses, corporate headquarters, and multistory office buildings occupied by legal firms and venture capitalists. Increasing density brought higher land

Figure 8: Apple's first post-garage building at 20863 Stevens Creek Blvd, Cupertino.

costs, all of which reduced low-end real estate available for startups. For a brief time during the dot-com boom, Sand Hill Road in Menlo Park was the most expensive commercial real estate in the world. This pushed developers of entry-level office and industrial parks out to cheaper land in San Jose, a city that has replaced San Francisco as the growth pole of Silicon Valley, and its suburbs.[21] In nearby towns, such as Fremont and Milpitas, lacking a prestigious Silicon Valley address, lower land costs encourage new office and industrial parks and their low rents continue to attract startups of all kinds.

Silicon Valley and Suburbia

Silicon Valley's unparalleled economic and technical successes spawned envy and imitation. Its resident entrepreneurs' ability to continually innovate made it a model for aspiring tech industry centers across the

Figure 9: Apple's first campus at 1 Infinite Loop, Cupertino.

globe. High tech outposts can now be found in Bangalore, India, on the outskirts of Beijing near Tsinghua University, and in the numerous Silicon Glens, Forests, and Prairies sprouting up around the world. Easily recognizable by their built forms, which have adopted their aesthetics and typologies from the final stage of Silicon Valley evolution, the sleek, high-end research park, surrounded by greenery, they are usually top-down government efforts. Few, if any, have managed to duplicate the original's dynamic culture of innovation or economic energy.

Observers, attempting to account for this have traced Silicon Valley's unique achievements to many causal factors: its history of well-funded military research, Stanford University's strong links with tech industries, the Valley's mild climate, and the availability of risk-tolerant venture capital.[22] Annalee Saxenian argues that the Valley's success lies in its dense communication networks, where continuous personal

Figure 10: Intel headquarters, 2200 Mission College Boulevard, Santa Clara, houses only management functions, with chip manufacturing done in multiple sites, often offshore.

interaction between engineers led them to change firms or start new firms, a type of intellectual and economic mobility that has produced the continuous flow of startups that guarantee the Valley's continued economic vitality and growth.[23]

Less attention has been given to the role of Silicon Valley's suburban landscape in fostering this culture. In fact, urban scholars have cited its "haphazard planning" and "car dependency" as detriments to its development.[24] However, it might also be argued that the flexible, network-based structure of Silicon Valley life and work found its physical analog in flexible, connected suburban space, with its freeway network and cheap and easily adaptable buildings. Over the decades, the little boxes that Malvina Reynolds imagined would produce identical residents have accommodated groups as varied as engineers and their families, working class homeowners, low-wage production workers,

Figure 11: The Oasis, 241 El Camino Real, Menlo Park - one of the valley's hang-outs for inventors and engineers.

groups of unrelated high-tech employees, and Chinese and Indian immigrant families. Conversations in roadside bars and restaurants, like the Oasis on El Camino in Menlo Park or the famous Wagon Wheel in Mountain View, where tech employees met after work to share information, produce synergies that generate new solutions, products and startups.[25] Finally, cheap, easily available workspaces encouraged aspiring entrepreneurs to start new firms with minimal risk.

Despite its economic success, Silicon Valley is a complex place with an underside of social and ethnic inequality. However, critiques focused on the Valley's suburban environment ignore these issues to attack an easier target. Silicon Valley demonstrates that a dispersed landscape predicated on mobility and the continuous construction of banal and repetitive building types is easily adaptable to growth and change. Since both are essential elements of innovation, it is not surprising that

innovation flourishes here.

Silicon Valley's persistently suburban environment exists as a rebuke to much current thought about urbanism. Its tract housing origins, strip development, and workplace enclaves at both high and low ends of the market are far from the dense urban fabric that many scholars offer as the normative description of a good city. The fact that the Valley's economic dynamism derives from its rich social networks and exchanges of information challenges urban scholars who believe that productive social interaction can only take place on crowded sidewalks in walkable cities and that sprawling landscapes cannot foster diversity. Now overlaid with an environmental critique, these negative assessments of Silicon Valley are uncomfortably reminiscent of academic approaches to earlier suburban environments. Instead, these "little boxes" should remind scholars of the built environment that we need to understand meaning as well as form, carefully monitor change over time, attend to everyday habitation, and, perhaps most importantly, defer judgment.

[Endnotes]

1. "Little Boxes," Wikipedia, The Free Encyclopedia, http://en.wikipedia.org/wiki/Little_Boxes (accessed April 4, 2013).
2. These are often ironic. Featuring more than 30 versions of Little Boxes as its opening theme song, the television show, Weeds, offers a far more ambiguous reading of suburban lifestyles in the 21st century.
3. The satirist Tom Leherer called Little Boxes the most sanctimonious song ever written. Wikipedia, op. cit "Little Boxes."
4. John Archer, "Suburban Aesthetics is Not an Oxymoron," in *Worlds Away: New Suburban Landscapes* (Minneapolis: Walker Art Center, 2008) 145.
5. Theodore Adorno and Max Horkheimer, *The Dialectic of Enlightenment* (Stanford CA: Stanford University Press, 2002).
6. Guy Debord, *The Society of the Spectacle* (London: Black and Red, 2000) 64.
7. See Andrew Wiese, *Places of their Own: African American Suburbanization in the Twentieth Century* (Chicago: University of Chicago Press, 2004); Becky Nicolaides, *My Blue Heaven* (Chicago: University of Chicago Press, 2002); Richard Harris, *Unplanned Suburbs. Toronto's American Tragedy, 1900-1950* (Baltimore: Johns Hopkins University Press, 1996); Diane Harris, editor, *Second Suburb* (Pittsburgh: University of Pittsburgh Press, 2010); John Archer, *Architecture and Suburbia 1690-2000* (Minneapolis: University of Minnesota Press, 2005); Robert Breugmann, *Sprawl: A Compact History* (Chicago: University of Chicago Press, 2006).
8. Benito M. Vergara, Jr., *Pinoy Capital: the Filipino Nation in Daly City* (Philadelphia: Temple University Press, 2009).
9. Sobredo, James. "DALY CITY: THE NEW FILIPINOTOWN." *Shaping San Francisco's Digital Archive at FoundSF.* 1996. http://foundsf.org/index.php?title=DALY_CITY:_THE_NEW_FILIPINOTOWN.
10. For an interesting personal account of this era, see David Beer's *Blue Sky Dream: A Memoir of America's Fall from Grace* (New York: Doubleday, 1996).
11. David Naguib Pellow and Lisa Sun-Hee Park, *The Silicon Valley of Dreams: Environmental Injustice, Immigrant Workers and the High-Tech Global Economy* (New York: New York University Press, 2002) 85-136.
12. Pellow and Park, op. cit., 169-92. Since 2006, Google has topped the list of most desirable employers for MBA graduates in the U.S. http://money.cnn.com/galleries/2012/pf/jobs/1205/gallery.top-MBA-employers/index.html (accessed May 6, 2013).
13. "New in The Valley," *New York Times Magazine*, (April 4.1999) 45.
14. j.a.English-lueck, *Cultures@Siliconvalley* (Stanford: Stanford University Press, 2002) 109; Annalee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge: Harvard University Press 1996).
15. Willow Lung Amam, "Asian Malls and Supermarkets in the Bay Area," paper submitted for ARCH 299, "Rethinking Suburban History" Department of Architecture, UC. Berkeley, 2008.
16. http://www.hpl.hp.com/about/ (accessed April, 14, 2013).
17. See Louise Mozingo, *Pastoral Capitalism: A History of Suburban Corporate*

Landscapes (Cambridge: MIT Press, 2011) 170-2; John M. Findlay, *Magic Lands: Western Cityscapes and American Culture After 1940* (Berkeley: University of California Press)137-40.

18. Jobs' father was a skilled mechanic and carpenter and his mother worked in a clerical position at high-tech firms like Varian. The family moved from Cupertino to the more upscale suburb of Los Altos in search of better schools for their son. Walter Isaacson, *Steve Jobs* (New York: Simon and Schuster, 2011) 159.

19. http://www.siliconbeat.com/2013/04/17/wiretap-bandpage-co-founder-takes-new-startup-out-of-the-garage/

20. http://myamericanodyssey.com/vital-circuit-a-tour-of-silicon-valley-historic-sites/

21. In 2000, San Jose surpassed San Francisco to become the third largest city in California, with a population of 964,679 compared to San Francisco's 815,358.

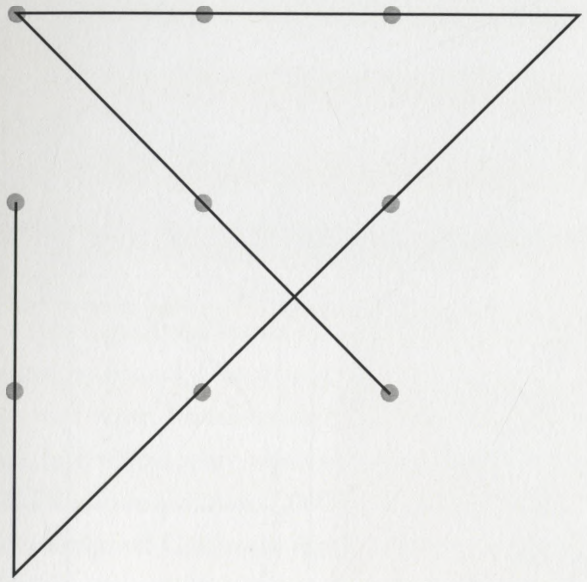
22. Margaret O'Mara, "Silicon Valleys," *Boom: A Magazine of California*. Vol. 1 no. 2 (Summer 2011) 79.

23. Saxenian, op. cit., *Regional Advantage*.

24. O'Mara, op. cit., 78.

25. Graham, Robert. "The Wagon Wheel Restaurant's Role in Silicon Valley," Interview for the Silicon Valley Historical Association. 1995. http://www.siliconvalleyhistorical.org/#!film-interviews/cihc http://www.voobys.com/video/video.php?q_search=Jerry+B&id=1PaTS9KKBWA&backid=xo2E_n27WjQ

[Image on page 40: "Zero Launch Photo Series: Technology and the Box." Photograph by Jason Miller and Padma Maitland. 2013]



Think Outside the Box—Solution

Solution to the puzzle on page 21.

This was a favorite exercise of American corporate creativity consultants in the 1950s and 1960s and is the origin of the catch-phrase "Think outside the box."