

Silicon Missionaries and Identity Evangelists

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Abstract:

In order to do high tech work, individuals must channel information, services, products, monies, and equipment to other people, and maneuver to capture the right stuff to do their own work. Beyond being organic platforms for work skills, high tech workers are also social beings with identities that can become catalysts to elevate the mundane realities of high tech work into the realm of social and moral transformation. An Irish high tech worker is not only designing software, he is contributing to the repositioning of Ireland into a global economic player. A gay project manager is not just creating and monitoring milestones for the design of a new product, but creating “an alternative space” in which gay communities can be formed. A technically savvy adolescent is building a new generational order by mastering technologies. The workers, and potential workers, use their various identities to recast technical work into socially charged causes.

This paper reflects ethnographic research on high tech workers in Silicon Valley by anthropologists in the Silicon Valley Cultures Project, and research on the impact of emerging technologies on work by the Institute for the Future. We are also examining the practice of global work in other “silicon sites,” including Bangalore, India, Taipei-Hsinchu, Taiwan, and Dublin, Ireland. This comparative research highlights the connection of identity to high tech work. Additional research with high school students in San Francisco and Silicon Valley families clarifies the process by which identity is linked with high tech activities to become identity evangelism.

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So information technology is really revolutionizing the system.. [by creating]] connectivity. It is going to unite [people]. It is going to remove the barriers that we have today... Each of us has our own strength, as a race, as a community, as an individual... and when we combine those strengths, we win.

(Bangalore 01, a software engineer from a multinational corporation)

These words, spoken by an Indian software engineer, convey that enhancing and combining ones individual, community and national strength defines the ultimate good derived from information technology. Translating this concept into more familiar terms, strengthening ones identity is, in itself, a good to be pursued. An identity may be individual, or social, and ultimately a new identity may emerge that will combine the strengths of the former into a source for social transformation. Other papers in this session have explored the ways in which high tech work is viewed as an agent of goodness, by promoting space exploration and medical applications, by conceptualizing Silicon Valley as a “grand endeavor,” by replicating a “new morality” among assembly workers, by fighting the evil empire of monopoly through open source software or by using high tech an agent of development, an illustrated by the Vietnamese experience. Our paper highlights another, very specific, aspect of “doing good.” When high tech prowess is linked to individual, local or national identity, or when it forms the basis for imagining a new identity in which troublesome differences are minimized, pursuing high technology work is transformed into a worthy mission.

The paper is based on a wide range of ethnographic projects.¹ Using ethnographic interview, participant and structured observation, the Silicon Valley Cultures Project team and the Institute for the Future have explored the interconnections of work, technology and identity. High tech knowledge workers were sampled in Silicon Valley, in the Bay Area of California an well other nodes in the Global Silicon Network (Institute for the Future 1998), the Taipei/Hsinchu Corridor in Taiwan, Bangalore, India, Dublin, Ireland and London in the United Kingdom. Coupled with direct research on high tech knowledge workers, our various projects also tapped into the “proto-workforce,” reflecting interviews and observations of American adolescents and children. In the course of our research, we found that high technology knowledge work was not a concrete or simple phenomenon, but one fraught with uncertainty and ambiguity. Some of the uncertainty was built into the creative and communicative process of work. Other areas of uncertainty stemmed from the complexities of intercultural interaction in the global workplace. One of the tools for managing that ambiguity is identity. High tech knowledge workers manipulate particular individual, local, or national identities to allow them to negotiate the uncertainty. Technology, both an a means and an a metaphor, becomes one of the foundations on which identity is created, maintained and promoted.

The Management of Ambiguity

The linkage of high technology to identity is not an spurious as it may first appear. High tech knowledge work is a creative ambiguous process. It requires intellectual flexibility, the inherent innovation in creating new products makes it problematic to taylorize work practice. While some of the work can be routinized, the more creative the endeavor, the more difficult it is to know exactly what to do at any one moment. In the words of a computer programmer, a self-proclaimed geek, “That is what my job’s all about. We keep on, right now, working sort of at the edge of things, doing stuff that hasn’t been done before or only recently done... I mean you’re always sort of at the esoteric edge.” (Silicon Valley 19) The creativity imbedded in his work challenges his ability to predict day to day life with any certainty. Social relationships are also flexible and opaque. Workers in high tech function within rich medium of reciprocal favors. At any given moment they may need to derail a planned activity to provide or receive a favor. Note the following comment by a young software engineer:

The way I make things work is... a lot of give and take. I am working with a lot of people that require things of me. I require information and assistance from hardware engineers for instance... When people need help, you help them. When people have questions... Maybe they need a piece of software to do a job... or maybe they have found a problem and they need you to fix it. And a lot of times it is just clarification, ‘How does this work?’ (Silicon Valley 72)

These favors may take one far afield from ones central area of expertise. From a worker in the UK we hear that although he specialized in database work, he is the defacto expert on using the mail function. He notes, “A lot of people ask me in my department, ‘How [do you] use this?’, or ‘How do you do this?’, or ‘How do you put a return receipt on it?’, or ‘How do you change the layout of it?’ or the font in it or whatever... People identify me as someone [who knows]. I’m not really involved in the mail process of things.” In another example, one of our Taiwanese informants, a mobile technology marketer who specializes in Europe, nonetheless found herself the defacto consultant to all things Japanese, because of her language and cultural skills. Uncertainty and ambiguity are built into these exchanges of favors. The hidden social work required to maintain the connections are imbued with issues of identity. Creating and maintaining the connections requires finding a commonality, rooted in similar avocational, professional, or ethnic/national affiliation.

Global work, however, requires that you work across identity boundaries, not quite knowing how to negotiate the commonality that will form the basis of future trust. This sense of uncertainty is compounded by two factors—the ambiguity bound up in the practice of knowledge work and the cultural uncertainty of working across cultural boundaries. One woman from Taiwan, who works in the multimedia industry conveys this idea, noting:

An a global worker you are information driven... Information about people as well as data... Since you’re working with other people, it’s not just the Taiwan experience that will count. If I want to work with a designer in the US, I need to know how they work. It makes me feel, in terms of working, a constant lack of information. Because I need to work with people, not just in Taiwan, but other areas. Those people are virtual. I’ll probably never see them. But my work partly relies on them. So it makes me feel a little less secure because you can’t really see things. You can’t control it. (Taipei/Hsinchu 05).

People in high tech knowledge work cannot assume that the transnational members of a work team, or international clients, or suppliers, will share the same cultural assumptions. In Ireland, a worker for a multinational

team notes, “And you’re dealing in a very heterogeneous environment as well. Your languages are completely different. Your cultures are completely different. You don’t treat everybody the same. You can’t” (Dublin 12). This sentiment is echoed by an engineer, now a manager in a high tech multinational corporation in India. He notes that it is not easy, either logically or culturally, to create meaningful connections to American counterparts. He shrewdly comments that enormous effort must be made to build relationships to the point where people can trust one another. So many variables “boil down to a lack of control.” (Bangalore 16).

Identity becomes a tool that allows global work to happen. It functions in two ways—as a glue, pulling members of a particular community together—and as a buffer, placing a layer between interacting participants. Sometimes common identity is heightened to facilitate the connection. At other times the contrasts are emphasized to explain “inexplicable” behavior. When a transnational, transethnic or even transgender interaction is problematic, it is often attributed to “culture.” In this way culture becomes another tool for conceptualizing and managing ambiguity.

Even pinpointing the relevant identity that is being negotiated is problematic. Will the link to be identified be based on ancestral or national culture, organizational culture or even technical culture? Jorge, a international head hunter who recruits talent to work in South America notes the difficulties built into the job:

It is very important that they be bi or tri cultural because often times they’ll be asked to do a demonstration in Colombia one day, one in Venezuela the next week, and the week after will be one in Brazil. So it’s very important they be keen and they be affable and adapt and assimilate because within different organizations. [You will be asked] “Are you a Mac user versus a Windows user?” You’re going to have sub cultures. . . We also have to take into account are they a hardware company? Are they a software company? Are they more of a left wing or a right wing type of company? Are they more button down or are they more Birkenstockish? So there are sub cultures and even sub sub sub sub sub sub sub cultures. (Silicon Valley 144).

One mechanism for managing this ambiguity is to identify with high tech work, an a transcendent identity category that can conveniently graft to work practice. Thus emphasizing a common professional identity, Unix platform software engineers, creates a bridge for interaction. This identification is valuable to the stakeholders. This identification is conveyed to others by distinctive speech, dress and attitude. A software engineer reflects on how he identifies himself to others. He notes that he dresses up, but “not too much, wear the black tennis shoes with the black jeans.” He adds that “you are defining yourself with clothes that don’t smell bad and don’t look bad, but don’t look too good either or the other engineers will think you are a dilettante.” It is knowledge, language and attitude that convey the image, “You define yourself clearly with your ability to answer technical questions. That is important, but that is only part of it. You infuse the atmosphere with your confidence.” (Silicon Valley 72)

The functionality of identity is well established in the anthropological literature. From Barth to Cohen, identity is less a concrete object, than a process for creating the context in which interactions occur. Identity is malleable, reflecting the social moment. Identity manipulation is also deeply pragmatic. People choose to create identities, present those identities to the social world, and manipulate others perceptions of those same identities based on an imagined advantage. When such ambiguity prevails, creating, and manipulating identity becomes a tool for managing uncertainty. Identification is a form of context management, which, not coincidentally, is also one of the chief requirements of high tech knowledge work.

In high tech work, the context is constantly shifting and tasks flow in and out of a workers life. The shifting contexts of work—opening E-mail from fellow engineers while processing the voice mails of supervisors and children, simultaneously managing and creating ones own creative work—are commonly referred to as multitasking. That misnomer places emphasis on the job tasks, away from the social context that is inexorably linked to those tasks. Note the following quotation, drawn from a dual career working woman. She attributes her flexibility to technology, and highlights the social complexity of her network.

But because of technology now, I can be anywhere. And if my focus at the moment is office stuff, my physical self tends to put myself at the office. But that does not preclude me from doing scheduling stuff, or keeping in contact with family members, or keeping in contact with friends, or maybe making that phone call or Internet hit for a vacation thing...I am now finished with ‘work’ and I am now on my way home—but that doesn’t preclude a co-worker calling me on the cell phone in the car. Or my calling the soccer hotline to see if there’s going to be practice that day while I’m on my way to school to pick up the kids and take them to the field that’s now been closed. Then I get home, and I am now in my ‘I’m at home’ mode, but that doesn’t prevent a fax coming in, a co-worker calling me, my calling someone at the office I [have] just left because they weren’t there when I needed to talk to them but I had to leave to go pick up a child. So now I can call them from home and say, ‘Blah, blah, blah.’ And they can then fax me something or e-mail me something... The technology has allowed me to keep up with the different worlds, no matter where I am.... The technology has allowed me to keep things going at the office while I am transitioning, and allows me to be home and keep things going there.

This woman is not only shifting rapidly from task to task. Each task is imbedded in a social network, in roles that relate to relationships in those networks. When she shifts tasks, she is switching contexts. She juggles her knowledge about the people, the relationships, their connections to the tasks. When she is reformulating herself to relate to each task linked social context she is doing identity work. She is not just doing this in the workplace, but also at home. Her family and community relationships are also imbedded in the tasks she performs. Individuals identify themselves and others as “the master scheduler,” a spouse with PDA, cell phone and notes affixed to refrigerators, or “domestic communications managers,” a nanny who is home more than the family members. They are using organizational titles to clarify tasks, relationships and social contexts. Work, family, and community life is imbued with the qualities of a managed organization.

Some of this identity work is going to act at a local level. It will invoke subcultural affiliations. Do the people belong to particular networks? Do we have a common or affiliated “personal brand?” Other aspects of the identity work may tap into regional or national identities—drawing on, or promoting the dominance of Silicon Valley, or making Ireland an engine for software development. The identities that are in play in high tech work may not only reflect existing contexts. In our interviews and observations informants refer to an emergent global identity that transcends national and local identity and invokes a link to the future, praising the creation of a “small world” created by information technology and global work.

Doing Personal and Family Identity

An ambiguity colors actions and interactions, an increased emphasis is placed on achieved, rather than ascribed identity. Doing rather than being become the bases of personal and even familial identification. This lends itself ever so well to the worldview of the technical worker. A software development manager put it succinctly, “I’d probably define myself more in terms of what it is that I do. I’m much more of a

doer than a be-er, if you will. ...in defining who I am, I'd probably define it in terms of, hey I'm a technical kind of guy," (Silicon Valley 110). This in turn leads to a flurry of identifications with work beyond mere job titles including: "worker bee" (Silicon Valley 37), "QA [Quality Assurance] drone" (Silicon Valley 19), or at the more exalted end, "in this particular area of expertise is I'm the god. So if there's some question about it I see it from Alpha to Omega" (Silicon Valley 90). The latter's apotheosis is mirrored by the following description: "Some people have foresight and aren't necessarily implementers—perhaps maybe aren't designers an much. Some people are both and those are the real gods. The ones that can see it and the ones can design it and the ones that can do it—[that] can make it happen (Silicon Valley 72)."

These identifications are not trivial. Work relationships depend on competence and the communication of competence. The exchange of favors, credibility in the workplace and development of client-provider trust depend on these projected identities. A Dublin specialist in "customer care" highlights this when she states, "Yes, you can trust me 100%. That what I say to you, the information is 100% correct. It's up-front quality information. It's not wavering at any stage." (Dublin 14). She is relating a personally, morally-based identity that is fundamental to her work.

Beyond articulating ones social and moral role, informants identify more globally with the technology itself and the prowess associated with using the technology. We see this identification played out in family roles and relationships. This is particularly acute when examining intergenerational relations. Young people express both dismay and enchantment that they are linked to high tech prowess. Does this prowess create an identity link with a particular group? How does it change relationships within the family to people that may be similarly technically identified, or more problematically, that may be Luddites? The discourse is reminiscent of immigrant sentiments, either reinforcing a common ethnicity or identifying a generational divide.

A software engineer reflects on his common bond with his technically literate family. He notes his father worked on accelerator power supply magnets at a National Laboratory "for 170 years" and his mother was a "a programmer before there were programmers." He tells us he learned Pascal at his mother's knee. He relates how his sister once challenged the family identity, "My sister... ended up in a scientific field. For a while she wanted to be a waitress, and we were kind of worried about her but it turned out okay." He concludes that he belongs to a "technically literate family." (Silicon Valley 119)

His experience contrasts with those for whom technological identification is problematic. Teenagers interviewed in the Bay Area repeatedly noted how their own expertise, and their parents lack, proved perplexing. One notes:

You were always the one taking advice, and now you're the one giving it back. That just reverses the role. It turns the table on you, because you were always the one asking the questions. Like when you're five, you're always asking. 'Why is this happening? Why does this work?' I remember that my mom taught me how to drive, but she doesn't know how to use a computer. It's strange that they can know so much more than you, but on some level you just surpass them in some areas. Like my mom is completely computer illiterate, and just the other day she was asking me how to do something in Microsoft Word. It's odd that they can have so many more experiences than you, but since they are not growing up with a computer, they are not in tune. (Lick-Wilmerding High School student)

Another student notes that the expertise has transformed some family relationships. "Once I got my computer at home—when I really got into it and I really became literate or whatever—not only did my immediate

family, but my entire family really changed in relation to me. Some of them know that I can use the computer and surf the Net and fix them and install stuff... My dad and my sister are like, ‘Well, he knows about computers. Let’s listen to him.’”

This generational difference in expertise is not lost on the older generation. One global worker in Silicon Valley coined the next generation “the net kids.” He notes, “It’s like in the mid 80s, when the Mac was out, and I was at Apple, you know we were kind of marveling these 4 to 6 year old kids, that were pushing mice around and figuring out how to make MacPaint go... Now they’re on the net...[the] kids regard an normal that the entire world’s knowledge is there, right through the screen.” He goes on to add his opinion, “I don’t know what it’s going to be, but it’s gonna be really weird and I think it’s going to be a very good thing... This will be ... fun. I may want to be safely retired by then, but it’s gonna be fun [he laughs].”(Silicon Valley Global Worker 04). This sentiment was echoes by informants in Bangalore who noted, “The kids of today are going to be far more savvy in terms of knowing how to access information, knowing how to get things done, than we were.”(Bangalore 19). From Ireland parents quipped, “Well, when I think about my children, at the moment, an far an they’re concerned, mobile phones, laptops, play stations ...It’s all part and parcel of everyday life. My son who is five can’t read but he can play his play station and work his way around. He said to me the other day, ‘I can’t read but I can play this’ ... I got a PC for my sister over Christmas, and it’s her son who set it up!”(Dublin 09). Just as previous generations of immigrants found their rich cultural skills to be at odds with their children’s realities, tomorrow’s “tech kids” find themselves identified with the technological expertise that separates them from their elders.

A gay man reflects on his own adolescence, noting that while he “did not fit completely into the social circles developing in junior high” he did display technical prowess. That prowess gave him an “identity niche” so that he “found a very comfortable space focused on technology and got a lot of attention, a lot praise for it, then and now.” This identity is deeply intertwined with his identification with his work organization. He notes, “An Apple person would be someone who loves the technology, who is attracted to the platform, who is attracted to the people who use our equipment, because there is that whole creative thing that’s what attracts a lot of Apple employees.”(Silicon Valley 97) he goes on to comment that people are “so devastated when they get laid off.” He worries about his own fate noting that his “personal identity gets really tied into the identity of the place where you work.”(Silicon Valley 46)

In addition to personal, familial and organizational identity, high tech work is also bound up with national identity. Taiwanese informants suggested beyond the current identification with semiconductor and computer hardware manufacture, Taiwan is in a position to translate its “sophisticated use”(Taipei/Hsinchu 07) of communications technologies into becoming a broker in the world of information technology. “We say that we want to make Taiwan a technology island” (Taipei/Hsinchu 03) based on information technology. Identifying Taiwan with technology is particularly important since the political position of the country is ambiguous. An executive in the Internet industry notes:

It’s very important to let other countries people know about Taiwan, and especially so we can break out from some political issues. Because Taiwan is not recognized in the world. Because they don’t think Taiwan is a country. They don’t even know what Taiwan is! They think maybe it’s a small island, but maybe it belongs to mainland China. I see that we can use this as a way for people to know more about Taiwan. And they can know the key power...Taiwan cannot do everything. But Taiwan has its advantages, especially in the IT industry. I think if we can develop our telecom, and develop our Internet industry very well, we can enhance the power of Taiwan. (Taipei/Hsinchu 01)

Another notes that promoting national identification with information technology is “how we declare to the world that Taiwan is not just a PC production place—but here we also have Information Technology.” (Taipei/Hsinchu 06)

In Ireland, people noted that “20 percent of Ireland’s business is high tech,” reflecting an American influenced business style that is believed to be the basis of future prosperity. In that transformation “Everyone is pretty much tech aware.” (Dublin 02) This Irish manager notes that when the flap about flaws in the Pentium hit the news, his mother asked him “What’s this mean for Ireland?” That’s ridiculous. It’s crazy in some ways. It’s like living in California.” (Dublin 02) Some of the features of this techno-identified Ireland include a “can-do mentality,” (Dublin 10) and a perception that the technology reduces the impact of geographic and political isolation. One accountant went so far as to suggest that Ireland’s humble political past could be turned into an asset by making Ireland a Third party trusted mediator in international exchange. He hoped the technology would allow Ireland to issue “digital certificates to individuals or people who want to trust each other.” He postulates an example in which people New Zealand and Argentina want to make a transaction, but they do not know each other. Ireland would step in as “a trusted third party in a small country which is traditionally independent and neutral and no major allegiances at the cutting edge of technology... to act as that kind of hub for almost all global [e-commerce]. So there’s a great—there’s a revolutionary ideal. We don’t know if it will happen, but it’s a plan and it could happen.” (Dublin 03). As in Taiwan, technical prowess could amplify Ireland’s national image.

The issues are similar in India, but they take on a particular hue. There, Indian technical workers and managers talk about the necessity of highlighting the competence of Indian engineers. This image will in turn create an identification that will bring yet more work to India. One manager talks about the effort to get work to shift from one segment of the multinational corporation to the Indian site. He notes, “The people we send abroad to work with customers, they show or demonstrate the skill level that they have. Based on that, they are able to convince the customer that we have a good pool in India. . .That’s how we manage to get some good projects back to India. So one of the responsibilities this person has is to try to get the project back to India if possible. Or grow the project into a bigger project.” (Bangalore 15) The key to this economic success is technical prowess. “I think Indians by and large are great engineers as well... We’re able to imbibe technology extremely easily.” (Bangalore 18)

Of course, the identification of place with technology is not limited to the national setting. Darrah’s presentation on Silicon Valley highlights the identification of technology and place. But the metaphorical meaning of Silicon Valley, an elaborated by Darrah at the beginning of this session, points to yet another aspect of identifying with technology. Speaking of the value of information technology for Ireland a person notes, “It has its good points. It’s making us a smarter country. It’s making us an international country.” (Dublin 15) By citing the attributes “smarter and “international” this engineer conjures two of the most potent images of the metaphorical identification of technology—the creation of a more enlightened and smaller world.

Ethnogenesis and the Metaphorical Benefits of Technology

We found that technology workers, and their teenage counterparts, are creating a futuristic identity, one linked to technological prowess and excitement. Moreover the vision is invested with moral qualities. In facilitating the flow of information around the world, these people are creating a “small world” in which is rich with social potential. This vision embraces the idea that connectivity will reap benefits for social change and

intercultural harmony. It is similar to the frontier discourse of the American 19th century, even the metaphor of “pioneering” is used. (Silicon Valley 91). Technology is viewed as the mechanism for using “global connectivity” to transform social and economic isolation into a platform for future success. As seen in the following vision, technology launches India into a new, more global, era:

Basically I think that before this global connectivity, I think there were centers where everything was happening. And if you were not there, you just couldn't do anything. And now it's all much more equal... It has shifted the balance of power. I think if you want to look at it in economic terms, you can say that information can flow freely all over the world. So it doesn't matter where you are located. If you want to be a person whose main job is dealing in some way or the other with the information, it no longer matters where you are located. ...I think the big impact that it has is that there's a free flow of ideas between countries. I'm a bit hesitant on saying, but actually as you study the thing historically, you find that there has in the past been more interaction than you think...So we shouldn't minimize the amount of interaction that took place in the past in terms of ideas. But it seems like now there's a very large flow of ideas from different countries. (Bangalore 03)

This flow of information is limited to the techno-elite, but they will have “expanded... horizons” that will change the traditional constraints. The introduction of satellite cybercafes and the Internet are viewed as devices for social transformation, opening the closed economy of India in ways that “even the government may not be able to control that part of it.” (Bangalore 06) This revolutionary vision taps into ethnogenesis, the creation of new cultural identities. This is not to say local identities will be replaced by a homogenized experience, although that fear was expressed by some. Others saw the new cultural layer as additive, a new identity that can be placed over the other identities that people use. This vision is clearly articulated in the following comment:

You can see [information technology] has brought the world closer, brought the people closer. And now the differences which existed culturally are getting ironed out...And while this is the tip of the iceberg, I must say. Deep down the soul will still be Indian, and the soul at your place will still be American, and it would definitely influence your thinking, finally, to be a little different from each other. (Bangalore 18)

An Irish worker was so bold as to suggest that the Irish, with their diasporic history, are uniquely suited to add this new layer. He states, “But I think that in the future people will look at ‘global’ like I feel we do in Ireland. There's just nothing scary.” He goes on to state, in the language of doing, “You just get up and go and do and you deal with people.” He imagines the next generation will have fully developed this new identity saying, “Whereas I think in some of the other cultures I've lived in, global is scary. Global is something big and complex. It's only as big and complex as you want to make it. And I think hopefully my children will have the same outlook as I have and hopefully more and more cultures are, and I'm not qualified to say this, hopefully more and more people will just see that global is, that it is a global village.” (Dublin 08)

This notion that the new generation will embody this global/information rich identity places a heavy burden on the young. A teenager saw the situation as one in which the responsibility for technological preparedness—the central piece of this new identity—is placed on his generation. He says,

They're sending you to school. It's almost like they expect that you're getting something that they don't have. Like I came home from school and I had learned all this stuff, and all of a sudden I could

hook up my Mom's Internet connection and all that stuff that they didn't know, and it felt like I needed to know more about the Internet because she was old. (Lick-Wilmerding High School student).

Another student suggests that parents are acting out of their obligation to give their children the best possible life chance, at best they understand it. He comments, "There is a stigma in society that if you're not part of the information revolution, you are getting left out. Adults really feel that." (Lick-Wilmerding High School student) Well beyond any pragmatic use of the technologies, the symbolic role of learning, using and working with the devices forms the basis of this "new identity." Evangelizing the use of technology, technology work and technology worth becomes a significant part of the cultural work of this identity.

Evangelizing Identity

The ambiguity of knowledge work amplifies the need to "display" to others, since so much of the work is internal and invisible, leading people to create elaborate accounts of who they are and what they do. The technologies are deeply intertwined with these identities, not only as relationship building tools, but as metaphors and props for conceptualizing and displaying identity. The accounts people make to justify, rationalize and communicate their identities are both reactive and creative; they respond to others and actively set the discourse. Web page designs, wearable technology such as expensive MP3 players or mobile/cell phones are plumage that communicate identity affiliation. However, less obviously, technology preferences, such as using E-mail attachments in lieu of fax and telephone communication—also signal identity markers. Simply using digital technology signals being part of the emergent elite who value innovation, globalization. Resisting the technology, or turning to alternative uses, also indicates an "identity stance."

Robert Merton once suggested that science work could be context neutral, that the work itself transcended particular contexts and made identities irrelevant (see Stehr 1990). Good science in India was the same as good science at Cambridge. Our research with high tech knowledge workers in part contradicts this view. Instead, it suggests that among knowledge workers and proto-knowledge workers, i.e., young people, the creation and manipulation of identity is itself a mission, and that promoting these identities is an evangelical endeavor. Ironically, our data also suggest that, in part, Merton was right. For many, the notion that science, and presumably other forms of knowledge work, transcend individual and national identities, is itself the basis of a new identity. Even when individual distinctions and nationalism are minimized, the cultural context is not neutral, but instead forms the basis a new identity to be adopted and evangelized.

Endnotes:

1. Synopsis of relevant research

A. Saveri is director of Research at the Institute for the Future (<http://www.iftf.org>). Her projects include: 1) Managing Corporate Communications in the 21st Century. The study examines in detail the pattern of diffusion and adoption of messaging technologies (electronic mail, fax, voice mail, postal mail, and other forms of communication) in the corporate workplace. The study consists of a nationally representative survey of office workers in the United States and Canada and the United Kingdom. Most recently the study expanded to include Germany and France as part of the quantitative survey. The survey measures message volume, communications tool preferences by different groups, indicators

and drivers of message overload and coping strategies to deal with frustration. Each year the study presents a quantitative update of key indicators of messaging patterns, individual country profiles of messaging patterns and preferences, and other special profiles of distinct groups of workers (as defined by survey cross-tabulations). The study also includes ethnographic interviews with workers in the United States and in the United Kingdom. Each year the interviews take a slightly different focus to expand the analytical framework of the study. Together the quantitative survey and qualitative ethnographic data help to develop a picture of the evolving knowledge workplace—the culture of knowledge work, the use of messaging as a strategic form of communication, and the strategies of workers to avoid overload and to develop effective messaging and communications practices. Titles of selected reports from this study for the last two years include *Managing Corporate Communications in the 21st Century: A Focus on Interdependent Workers*. This report examines the communication practices of collaborative work groups and teams and describes how interdependent work and project cycles shape messaging patterns and strategies for media selection. Another publication from this project is *Messaging for Innovation: Building the Innovation Infrastructure Through Messaging Practices*. This year's report focuses on messaging as a practice for organizing knowledge work and structuring thinking processes in distributed work environments. It also describes how messaging practices build and leverage social capital in knowledge organizations. The report discusses strategies workers develop to learn various features of communications technologies and how features are clustered into messaging toolkits.

Another area of study for Saveri involves examining global work practices. One study is *The Work of Global Interconnection: Strategy, Experience, and Meaning*. Organizations are growing networks of new activities at their border. These networks are interconnecting with other networks to create a world of interlocking eco-webs—ecologies that are defined more by their connective pathways than by a shared physical space, a corporate culture, or even a product or a market. This study examines how globally knowledge workers live and work in one of these eco-webs—how they make media choices, how they use identity, timing, trust, and reputation to build the social infrastructure of the future organization. *The Ecology of Work: Flows and Cycles* is yet another study in this area. This part of the study focuses on how workers develop strategies to manage key flows of information, work, technology, talent, and markets that provide structure to eco-webs—the new foundation of 21st century organizations. It examines how interdependent workers use technology and social practices of building networks of connection to manage and manipulate flows of various information and social resources. These two reports are based on results from ethnographic interviews with workers in Bangalore, India; Dublin, Ireland; and Taipei, Taiwan whose work was interdependent with other knowledge workers across national boundaries.

Saveri's research also includes looking at how youth adopt and use technologies and how it shapes their views of the future, work and their social life. One salient report is *Natives in the Future Organization*. Examines the way teenagers use technology to create identities and social lives in the context of their school, household, and community life. The report discusses the lessons learned from teenagers as the early natives in the new digital society and identifies impacts and implications for the workplace. The study involved two structured group interviews with 24 teenagers and a day-long structured workshop (co-designed and facilitated by IFTF and high school students) at a local high school to discuss the personal visions of technology and their implications for high school students.

Jan English-Lueck is a professor of Anthropology at San Jose State University and a Research Associate of the Institute for the Future. She is co-founder, along with C. Darrah and J. Freeman, of the Silicon Valley Cultures Project (<http://www.sjsu.edu/depts/anthropology/svcp>). Two of the key projects in that study are the Work, Identity and Community in Silicon Valley Project, partially funded by the National Science Foundation and the Work and Family in Silicon Valley Project, funded by the Alfred P. Sloan Foundation. The former is based on interview and structured observation, the study examines the work practices, cultural identification and community activities and visions of 175 people, drawn from various occupations and organizations in the Silicon Valley Region. The latter uses 2400 hours of participant-observation, structured-observation and interview to capture the intersection of work, family and technology in the lives of a dozen families. She also participated in the study of global work practices with Saveri and Darrah, adding yet another segment on the study of Silicon Valley's global workers with the aid of students in SJSU's Fall 1999 Ethnographic Methods course. She is the author of the forthcoming book on identity in Silicon Valley, *Cultures@SiliconValley*.

References Cited

Barth, F.

1969 Ethnic Groups and Boundaries. Boston: Little, Brown and Company.

Cohen, A.

1994 Self Consciousness: An Alternative Anthropology of Identity. New York: Routledge.

Institute for the Future

1998 The Rise of the Global Silicon Network and the Growing Importance of Asia. Published by the Outlook Project 1997-1998. Proprietary Document. The Institute for the Future: Menlo Park, CA.

Stehr, Nico

1990 Robert K. Merton's sociology of science. In *Robert K. Merton: consensus and controversy*. Jon Clark, Celia Modgil and Sohan Modgil eds. Pp. 285-294. New York: Falmer Press.