

The Arming of Desire -
Counterculture and Computer Revolution

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Introduction

My thesis here will be that the creation of the personal computer, the Internet and open source design – the “computer revolution” to which I allude in the title - was not a linear, predictable process but one which involved many different people exercising various aspects of their beings – the artistic as well as the technical, and the visionary as well as the analytical. I hope to demonstrate how it is both incorrect to credit the counterculture or the youth-based cultural and political movements of the 1960's with this revolution and yet correct to ascribe it to a more pervasive continuation of an ongoing “revolt against institutions”.

Materialist analysis

The materialist view would hold that, in effect, the personal computer made itself, as a logical stage in the development of the technology. Moore's Law, it is argued, made the personal computer revolution inevitable. While Moore's Law is a relatively simple semi-logarithmic projection, it is by no means a law describing the operation of nature. It was used by semiconductor companies as a metric to gauge their progress and as a means to moderate competition. In recent years it has faltered, since the costs of complying with its projections are no longer being met.

Moore's Law and lack of vision

In addition, Moore's Law says nothing about the form of the products built with the resulting semiconductors. Nothing in the projections for the development of computers indicated anything like the personal computer. The few who talked about such things were relegated to the domain of science fiction and fantastic thinking. When one

such visionary, David Ahl, managed in the early 1970's to demonstrate a prototype computer that could work on a desktop and be used by schoolchildren, Kenneth Olson, the chief executive of his company, widely respected as thoughtful and technologically skilled, famously commented that he could think of no reason why anyone would want a computer in the home.

Industry vision

The computer industry believed that its future lay in both in the mainframe computer, serving an entire enterprise with increasing speed and storage capability, and in the minicomputer, serving industry and academia with small, single-purpose computational and data-monitoring machines. The semiconductor manufacturers were developing chips that, while they worked like computers, were destined for the insides of special-purpose machinery, where they would labor invisibly. The largest projected market was for controllers of traffic signal lights.

The Hippy influence

It is sometimes said that “the hippies” entered the computer industry and diverted its course toward the personal computer. Since there is no accepted definition of a “hippy” it is impossible to address this statement on a logical level. John Markoff has recently examined the issue of the relationship between the counterculture in a more careful fashion, noting the history of experimentation in psychedelic drugs, especially LSD, at the time and centered in the same area as the origin of personal computing.

Drugs and creativity

These experimenters would not be called hippies by any stretch of the imagination, being middle-class in their presentation to the world and keeping whatever epiphanies they had experienced mostly to themselves. Despite predictions made at the time of a new age of creativity about to be brought on by the new psychedelic drugs, while some creative people may have experienced a widening of their horizons, there is almost no testimony to the effect that engineers and technologists were significantly

aided in their work through the psychedelic experience.

Creativity as a drug

Speaking as a design engineer it is my contention that the processes of conceptualization and realization are transcendental experiences for those who engage in them. As an irreverent song about the Pope says: "...he don't even have to use dope". The "flow" experience as described by Csikszentmihalyi is often experienced when one is contending with the universe by creating functional form using areas of the brain not directly available.

We didn't even need to take dope. The hippies were far behind us.

New politics

Something also happening during the 1960's was the emergence of a politics originating from the African-American community struggles of the civil rights movement as university youth participated and experienced their own epiphanies of the possibilities of what was called "participatory democracy".

Students for a Democratic Society organized itself in 1962, publishing the "Port Huron Statement" in which they rejected the anticommunist politics of the older generation, the consumerist goals offered to them, the sterility of middle-class life and the casual acceptance of racism and militarism. Under the title of the "New Left" they set out to address the issues that motivated them by community organizing and generally attempting to apply the tactics of the black civil rights movement.

Anti-war street politics

While the struggles against the Vietnam war which this movement spawned grew into a much wider movement, giving the impression of vast support amongst youth for the goals of the New Left, in fact the single issue of the war and more specifically the

military draft fed this expansion. Once the military draft was ended and the last US soldiers left in 1973 the vast anti-war demonstrations ceased to be a phenomenon.

The end game

In the aftermath of the anti-war movement the New Left, based among university students and pursuing its reformist aims through direct involvement in aggrieved communities, was nowhere to be found. The movement had split along racial and ideological lines and driven out most members who would not take extreme positions. The degree to which this was due to government subversion as versus legitimate internal dynamics remains to be determined, although anyone striking a radical political posture and expecting to be treated fairly by the power structure has a contradiction to deal with.

New Left/Old Left

At no point did the radicals of the New Left consider technology as something other than an abstract aspect of the power structure which would be turned in the right direction when the larger questions of power and control were resolved. In this respect they differed not at all from their Marxist "Old Left" predecessors. Any discussion within New Left circles that approached the idea of changing technology in order to empower people was met with either incomprehension or advice to drop the idea and organize a union at the technological workplace.

Not one, but all

Now that I have asserted that neither the drug culture, nor the 1960's youth political culture, nor the inexorable development of technology were directly responsible for the development of the personal computer or the Internet, it is my responsibility to assert that, while there is no direct connection, in fact all of these factors were responsible indirectly. My point is that human desire, thought and interactions are far more complex than simplistic, linear models would indicate, and that the personal computer and Internet were results of a very human process.

Therefore, instead of abstract talk about desire and process, I would like to focus on the people who nurtured these desires. I would like to acknowledge the invaluable help of Lena Diethelm in developing some of these ideas.

Personality types – apollonian and dionysian

There are an unknown number of personality types, and two have been much discussed: the apollonian and the dionysian personalities. To review, the apollonian is driven by logic, reason and self-control. The dionysian is driven by the possibilities of the body, of the libido, and of sensuality. The apollonian principle is “I think, therefore I am”, and the dionysian is “I feel, therefore I am”.

Hephestus

We will now introduce the Greek god Hephestus, the technologist of the gods also known as Vulcan in Roman mythology. Hephestus was born deformed, rejected and cast out by the perfectly-formed gods, and learned metalworking during his exile. Returning to the company of the gods, he was accepted grudgingly as his technical talents were needed to make weaponry, and was given Aphrodite in marriage. He was never fully accepted, though, Aphrodite was unfaithful to him, and he always retained a tense, resentful attitude toward the other gods, who were never too proud to disdain his weaponry.

Hephestians...

We may therefore define the “hephestian” personality as based upon the principle “I make, therefore I am”. We can recognize many people of this personality type in and around the technology sector. Like Hephestus, many see themselves as outcasts from the time of childhood, who compensate by immersing themselves in the subject of their choice and gaining expertise, and who thereafter maintain a resentful attitude toward the rest of society, constantly trying and failing to win plaudits and acceptance from ostensibly

“normal” people through displays of virtuosity.

...and the zeitgeist...

While we can ascribe the apollonian type to many who were the earnest political activists of the New Left and the dionysian type to many in the drug-oriented hippie counterculture, what, we may ask, was the reaction of the hephestian type to the totality of the cultural and political milieu of that time?

...of the revolt

This totality might best be generalized as an outbreak of the revolt against institutions. This revolt has been under way in various forms at least since the Reformation and possibly since the Magna Carta. The American revolution was a major milestone of this process, and it has provided a powerful encouragement to generations of rebels and people who, with no political program of their own, simply resist the demands of authority.

The civil rights eruption

In the 1960's the major manifestation of this revolt was the civil rights movement, in which African-American communities united to challenge unjust laws and customs and to demand full rights of citizenship. The sense of communality, of solidarity and of righteousness was, as indicated earlier, highly contagious, and inspired various movements demanding various forms of equality and generally eroding the legitimacy of the American power structure. This eruption of the revolt against institutions became global in 1968, and it continues in various forms to this day.

Blowback onto the campus

Of extreme significance in this process was the first of the campus revolts in the U.S., the Free Speech Movement at the University of California at Berkeley in 1964.

What started as a response to an attempt by the administration to suppress student activity in support of the civil rights movement grew over the course of three months to an all-out revolution that overthrew the system of power relations that operated “in loco parentis” and drove the university to recognize the full civil and political rights of its student body.

A large collection of documents, both historical and interpretive, as well as photographs is available at the website of the Free Speech Movement Archives <www.fsm-a.org> . As a participant in these events I cannot pretend to objectivity, as the effects were so formative. However, it is possible for me to say that these effects were felt by tens of thousands of people at the time, and caused thousands to make major changes in their life courses.

Revolution in fact

In the literature of revolution, most notably “General from the Jungle” author B Traven wrestles with the question “what is the revolution?” As he and other authors work out the answer, it seems that the revolution occurs not when leaders are toppled and replaced with others, but when ordinary people as a whole suddenly realized that all things are now possible.

Bliss it were

I believe this to be true, because it describes the exact situation which I experienced on the Berkeley campus in the winter of 1964-65. That was the beginning of the Haight-Ashbury counterculture community – thousands, I am sure, left the confines of the campus to attempt to live as they knew they wanted to live. In many other ways people in the thousands changed their directions, goals, life strategies, partners and outlooks. This was not simply protest, nor revolt, but revolution.

The revolutionary zeitgeist

Such an environment, especially as it reinforced itself at Berkeley and other

universities, has a much broader and deeper effect than merely stimulating some to make dramatic changes in their lives. It affects the way very many people see themselves in relation to society. It causes people to consider new possibilities, new ways of doing things. It becomes, in effect, a zeitgeist – an intangible spirit of the times. The revolution opens new possibilities even for people who were skeptical spectators rather than direct participants.

The Internet emerges

This, I contend, is what happened at campuses all across the US during the decade from 1965 – 1975. It was during this time that graduate students at electrical engineering and computer science departments designed and built the ARPANET, which begat the Internet. The principles of design and governance by informal cooperation amongst skilled participants – sound anarchist principles which have delivered stellar results – are the result of the zeitgeist of the revolt against institutions working through the hephestian consciousness.

Participatory design

There was no party, no political discussions, no plenary sessions or votes. It was much more like “governance by participation”. The Internet Engineering Task Force has functioned for decades creating solutions to problems and repelling the advances of those who would create problems by favoring one commercial interest over others. While science fiction has often postulated a future in which engineers cooperate to solve society's problems, the IETF and the builders of the Internet have shown the world how this can be done by applying creative energies rather than a divisive zero-sum worldview.

Personal Computer - Engelbart

The personal computer came from a slightly different direction. The use of a computer as a personal augementer of human intelligence was memorably demonstrated by Dr. Douglas C. Engelbart at a momentous event in San Francisco in 1968. Engelbart

had been inspired by a famous 1945 article by Vannevar Bush – the head of the scientific/industrial establishment as it developed during World War II. Entitled “As We May Think” it was published in a well-regarded magazine and talked about the coming of machines to assist and empower individuals in research and creative activity.

Engelbart following his desires

In 1950, at a point when he believed he had accomplished all of his goals in life, Engelbart consciously turned his professional direction as an electrical engineer toward the benefit of humanity. This eventually led him to start a project to develop ways in which computer power could be used to augment the intelligence of individuals and of teams. Quietly, working with first minicomputers and then mainframes, Engelbart developed the graphic user interface, the chording keyboard, the mouse, word processing and many of the capabilities and tools which we now take for granted. He worked to develop the community of developers as much as the technology.

Brand and Engelbart

When it came time to present the “mother of all demonstrations” as it is aptly called, Engelbart called upon someone who had experience in staging multimedia presentations – Stewart Brand, later the founder of the Whole Earth Catalog. Brand had studied biology at Stanford and served in the peacetime army, becoming a follower of author Ken Kesey during the era of legal LSD experimentation, and he followed Kesey on his famous cross-country psychedelic bus trip.

Brand and counterculture

Brand, an Apollonian, shrank from becoming a part of the Dionysian spectacle about him. It is telling that Engelbart knew about Brand, indicating the zeitgeist of which I have spoken. Explorers sought one another out, crossing boundaries to do so. Brand saw the development of the counterculture and the attempts by some to set up households or communities in which life could be lived according to new values and noticed that the

participants were having a difficult time. Almost all had come from privileged middle-class backgrounds had no experience in the use of necessary tools.

Down on the farm

When one insists on forgoing the amenities that come with conformity and the cash social nexus, one must replace the amenities with older, more labor intensive technologies. The knowledge of how to use a kerosene lamp properly, for instance, had not been passed to them as part of their upbringing. Brand set out to educate these recent homesteaders in the lore of various domestic technologies and to make tools available to this new market.

Whole Earth Catalog

Brand first set up the Whole Earth Truck Store consisting of a truck that would visit rural communities and households, selling tools and dispensing advice. The need was greater than these means, and Brand soon turned to a medium well known in American culture - the mail-order merchandise catalog modeled after the Sears, Roebuck and Co. catalog – this time labeled the Whole Earth Catalog.

“we are as gods...”

Subtitled “Access to Tools” the WEC put forward the idea that skillful use of tools was not antithetical to counterculture values, often oversimplified as a blanket rejection of technology. “We are as gods,” Brand wrote, indicating a high regard for technological capability, “so we might as well get good at it”. The Whole Earth Catalog attracted a huge readership, mostly among people who had not struck out for the backwoods but who were struggling with the issues of how the society of the future could be restructured on humane lines.

Brand and computer/cybernetic culture

In 1972 Brand was sent by Rolling Stone magazine, the publication of the youth culture (not the same as the counterculture, but with significant overlap) to report on the developing computer culture at the Stanford Artificial Intelligence Laboratory, the Xerox Palo Alto Research Center (PARC), and a group named Resource One that had set up a mainframe computer intended for use by the counterculture (I was an interviewee in the latter group). This story revealed the developments at PARC that continued Englebart's work and which resulted in today's personal computers. Expanded to include a section on Gregory Bateson's biological cybernetics it was published in book form as "Two Cybernetic Frontiers".

Brand as PC marketer

We can see Brand's evolution from investigating the mind through psychedelics to investigating the role of tools and how they enable social formations to grasping the potential of tools that augment the mind. Brand became the single most effective marketer of the personal computer. Marketing, unlike sales, is the selling of the concept of a product, so it is best carried out before the product exists, so that the products can be designed appropriately.

Marketing bullet points

The process was most likely unwitting and the logical outcome of Brand's intellectual development. Over the time of several years the Whole Earth Catalog and the companion Coevolution Quarterly established the following ideas among people who saw themselves as rejecting all facets of society:

1. To reduce one's reliance institutions one needs to be able to use tools, rather than pay others to use them on your behalf.
2. The making or shaping of tools represents a higher level of autonomy than the using of tools.
3. Tools that empower the mind are effective in changing social arrangements and institutions.

4. The building ecological crisis demands that new social institutions be built – in the words of Buckminster Fuller, it is “utopia or oblivion”.

Ready when you are

By the time the personal computer arrived on the marketplace even in its first embryonic form there was a cohort of people who knew that they wanted to put it in their hands and begin a process of learning how to use this technology to head toward utopia and away from oblivion. There wasn't much agreement on what constituted utopia in this case, but everyone involved agreed that it would require the personal use of computers to approach it.

Design for desire

Earlier, in 1973, a magazine article offered plans for building a “TV Typewriter” that allowed a page of text, entered from a built-in keyboard, to display on the screen of a television. 20,000 readers sent in \$2 for the plans, exceeding the magazine's expectations by a factor of 1000. In my opinion, this was the opening event of the personal computer revolution. The response was to a promise for literal hands-on control of two of the technologies most significant to society – television and digital electronics.

Many of us at the time considered this design as a way to build cheap terminals for computers, and I asked Don Lancaster, the designer, to attempt to reconcile a problem inherent in the design. When it became evident that the device would not work as a computer terminal, Lancaster defended his choice by saying “some people just want to put up letters on a TV screen!”

What use?

This struck me as one of the clearest statements that human desires, not economic imperatives, would control the form of the personal computer as it developed. As the process went forward there were periodic episodes in which rational thinkers like Ken

Olson tried to understand the goal of the effort – what use would these things be? Why did thousands of underqualified people throw their time and energy into this Sisyphean labor which lacked even a defined goal?

Various desires

Some wanted to become as gods, or at least be regarded as having extraordinary capabilities. Others wanted to bypass the mass media by building networks of person-to-person communication. Some wanted to gain parity with large commercial organizations in the ability to conduct business transactions without requiring large work forces. Others wanted to make music or animated graphics. Some wanted to make work into play.

Commonalities

All wanted to do as they saw fit without asking permission from holders of power, especially those who lacked their level of understanding of the technology or its possibilities. This they shared with the hippies. And most saw the possibility of community created by direct ties of communication and unmediated human interaction. This they shared with the New Left political and social activists who were motivated by the authenticity of the civil rights struggle.

Desire armed

The personal computer and the Internet were both created by and enablers of human desires. One can look around the world and see how they are opening doors previously closed or well controlled. These doors may lead to outcomes that are silly or venal or nonproductive, but no one is compelled to go through them – all who do so are impelled by desire. And the channel is open for sharing one's experiences learned by one's adventures. In this way is desire armed.

Utopia?

Also, one sees a cohort of people, mostly hephestians, working cooperatively through the open source movement to continue to build the tools in defiance of the zero-sum logic of classical economics. One could see this as living out the utopia of Marx, based upon applying the most advanced technologies available and carried out by people who do not feel the sting of necessity as a primary motivation. In this utopia one chooses one's field of endeavor and gains skill through learning and practice. One freely chooses one's project and expends effort in advancing it without thought of material gain but rather of advancing one's standing among peers and of creating a lasting and elegant artifact that itself furthers the work of others.

Is this impractical? Useless? Destructive of enterprise? Hardly. "If you seek our monument" these people might say, "look about you".