Introduction

In July 1980, Gloria Steinem, who was then probably the most eminent of American feminists, wrote a short article in Ms. magazine, "Rx Fantasies: For Temporary Relief of Pain Due to Injustice."[1] In it, she constructed a series of scenarios whereby women might somehow seize concentrations of male power (the Mideast oilfields, the Pentagon, the New York Times, etc.), and begin using this power for feminist ends. One of the scenarios featured a group of cleaning women reading up on computer, technology, and then conducting a computer heist to appropriate the wealth of the large banks. For Steinem computers were apparently part of the male structure of domination. The fantasy was not so much that bank computers could be raided-- computer crime was very much in the news by then.[2] The fantasy was that women could do such a thing; could actually do such a male technological thing as programming a computer.

At that time, seemingly unbeknownst to Gloria Steinem, there were, at a rough estimate, a quarter of a million women gainfully employed as computer programmers in the United States. There had

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1. Ms. magazine, July 1980, p. 99, reprinted in Gloria Steinem, Outrageous Acts and Everyday Rebellions, 1983, pp. 341-345.
    Steinem, who had founded Ms. eight years earlier, had begun her journalistic and feminist career by working as a Playboy Bunny and then writing about it. This provided the informing paradigm of her life's work, the remark that "...all women are Bunnies (Outrageous Acts, p.78)."

2. For example, see Thomas Whiteside, Computer Capers: Tales of Electronic Thievery, Embezzlement, and Fraud, 1978, republished as a Mentor paperback in 1979.

been female computer programmers as long as there had been computers. They had participated in all the adventures of the computer's birth. At their head by general acclaim was Adm. Dr. Prof. Grace Murray Hopper, USNR, the COBOL-mother herself, by this time well into the gravelly-voiced sybiline venerability of extreme old age. There were any number of women, quite possibly including Grace Hopper, who were capable of taking down a bank computer if they wanted to. But they had no real incentive to a life of crime. They were quite well paid.

This was no accident. It was an expression of the power of computing and computer programming. This power grew out of the very nature of the technology.

Computer programming is an exceptional technology, in the same sense that seventeenth to nineteenth century America was an exceptional country. The basis of American exceptionalism was of course, per Turner, that the frontier and the consequent free land created a state of plenitude, and offered the possibility of an ongoing reinvention of society. Computer programming also has its frontier, but an inner frontier rather than an outer one. The frontier of computer programming consists in the decoupling of information from energy. Energy is finite. Information is infinite. If one wants more energy than one has, one must go and steal it, with whatever violence is required. The ultimate basis of the idea of limits to progress, expressed in the economist's abrupt "TANSTAFL",[1] is the first law of thermodynamics, the rule

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1. "TANSTAFL" is a barked-out shorthand for 'There Ain't No Such Thing As A Free Lunch'

which describes the scarcity of energy. But this law does not apply to information. If an indefinite number of angels could dance on a pinhead, so can an indefinite number of programs and datasets.[1] If one wants more information, one copies it. To decouple information from energy is to release its potential

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1. There is of course an upper limit represented by quantum mechanics. It has been argued by H. J. Bremermann that no possible computer, electronic, mechanical, or biological, can process more than $2 * 10^{47}$ (2 times 10 to the 47th power) bits per gram per second. Thus no computation in excess of about $10^{100}$ bit operations can ever be performed. However, this is so large as to be practically infinite. It is of real concern only to the makers of encryption ciphers, who may chose to arrange that the cipher cracking process goes over the Bremermann limit.
   See John P. Hayes, <u>Computer Architecture and Organization</u>, 2nd ed., McGraw-Hill, New York, 1988, p. 10

abundance.[1]

    Just as the plenitude of free land permitted the socioeconomic invention of America as a society of freeholders rather than one of landed estates, even if that was not always the most efficient way, the plenitude of computing power permitted the socioeconomic invention of computer programming and use in terms far removed from machine efficiency. Computers are the least efficient of machines, with vast amounts of waste motion and outright Rube-Goldberg-ism tolerated, nay encouraged, in the interests of consistency, coherence, reliability, ease of use, etc.

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1. As early a political thinker as Thomas Jefferson recognized the special quality of information:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possess the whole of it. He who receives an idea from me, receives instructions himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation.

letter of Jefferson to I. McPherson, Aug 13, 1813, quoted in Lipscomb, <u>13 Writings of Thomas Jefferson</u>, 1904, pp.333-4 and thereafter in: Benjamin Kaplan and Ralph S. Brown, <u>Cases on Copyright, Unfair Competition, and Other Topics Bearing on the Protection of Literary, Musical, and Artistic Works</u>, 3rd ed., The Foundation Press, Mineola, New York, 1978, p. 3

The first indicator of the transformative power of the computer was its power to dismantle social distinctions. Computer power proved its mettle by undermining what was seemingly the most absolute of social distinctions-- that between men and women.

There has come to be a plenitude of computer power. This abundance of computer power provides the necessary driving force for a software regime of complexity and artifice. This regime of complexity and artifice has permitted the construction of a humane inner world, that is, a world scaled and proportioned to humanity. It was the existence of this humane world which made it possible for women to liberate themselves.