Getting Out of the Gernsback Continuum

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The title of this essay refers to the cyberpunk writer William Gibson’s first published story “The Gernsback Continuum,” whose narrator, a free-lance photographer, has been hired to shoot 1930s futuristic North American architecture for the British nostalgia publishers’ market. The streamlined design of factory buildings, gas stations, diners, and movie marquees—finned, flanged, and fluted—recalls a future perfect that never was, a tomorrow’s world fully planned and designed by technophiles faithful to the prewar ethic of progressive futurism. From the sleek rockets on the “spray-paint pulp utopias” of the Frank R. Paul covers of Amazing Stories magazine to the winged statues that guard the Hoover Dam, the story was of a promised future that would come into being only as a nightmare; the rockets were those that fell on London during the war, the streamlined cars and crystal superhighways gave the green light to postwar ecological atrocities committed by General Motors under the aegis of petroleum capitalism.¹

In the course of his photo assignment, Gibson’s narrator is haunted by the “semiotic ghost” of these outdated futures, chunks of “deep cultural imagery” from the “mass unconscious” that take on part hallucinatory, part material form as he travels around Southern California—a flying-wing luxury liner, gleaming eighty-lane highways, shark-fin roadsters; a city with ziggurats, zeppelin docks, giant neon spires; and a

population of white, blond, "perfect" Americans, redolent of Nazi Youth propaganda ("GC," pp. 7–9). Advised by a friend to seek out "bad media" (porn movies, game shows, and soaps) to exorcize these ghosts, he plumbs instead for the latest ecology-disaster literature on a newsstand, agreeing with the newsagent that things are bad, but assuring him that perfection would be, or would have been, much worse ("GC," pp. 10–11).

Gibson's elegant story is an economical commentary on the history of science fiction over the past half-century. Its meaning depends on a contrast between the tough, savvy realism of contemporary SF's assessment of technological dystopias and the wide-eyed idealism of the thirties pulp romance of utopian things to come. Through its sparing frame of reference to the generic history of science fiction, the story presents a state-of-the-art explanation of the current climate of antifuturistic commentary, so much so, in fact, that it was selected as the lead story in Mirrorshades (1986), a definitive "cyberpunk anthology" edited by Bruce Sterling. Gibson's story, according to Sterling, "was a coolly accurate perception of the wrongheaded elements of the past—and a clarion call for a new SF esthetic of the Eighties" ("GC," p. 1).

Sterling's comment was clearly and unashamedly self-promoting; it was part of an attempt to clear the ground and launch cyberpunk as a "movement" that marked a break with the past. But the spirit of his diagnostic dismissal of "the wrongheaded elements of the past" is widely shared within the SF community, whose members are often embarrassed by the genre's origins in early pulp fiction. In the account of pulp fiction that follows, I will examine some of the reasons for this dismissal. As a counterbalance to the genre's sense of shame at its family origins, I will try to provide a more exhaustive historical explanation of the conditions of early SF, while arguing that many of its salient features, often considered to be "naive," were linked to central elements of progressive thought in the first three decades of this century.

Pop and camp nostalgia for the lofty ziggurats, teardrop automobiles, sleek ships of the airstream, and even the alien BEMs (bug-eyed monsters) with imperiled women in their clutches, are one thing; the cyberpunk critique of "wrongheadedness," whether in Gibson's elegant fiction or Sterling's flip criticism, is another. Each provides us with a stylized way of approaching SF's early formative years, years usually

described as "uncritical" in their outlook on technological progress. But neither perspective can give us much sense of the sociohistorical landscape of the thirties on which these gleaming technofantasies were raised. To have some idea of the historical power of what Gibson calls the "Gernsback Continuum," we need to know more, for example, about the entrepreneurial activities and scientific convictions of Hugo Gernsback himself, a man often termed the "father" of science fiction because he presided over its market specialization as a cultural genre. In Gernsback's view, SF was more of a social than a literary movement. We need to know more about the hallowed place of engineers and scientists in public consciousness in the years of boom and crisis between the wars, the consolidation of industrial research science at the heart of corporate capitalism, and the redemptive role cast for technology in the drama of national recovery and growth. We also need to know about the traditions of progressive thought that stood behind the often radical technocratic philosophy of progressive futurism in the thirties. My description of North American SF's period of genre formation will show the crucial influence of the national cults of science, engineering, and invention as well as discuss the role of technocracy in the social thought of the day. I will also consider the ways in which pulp SF escaped or resisted the recruitist role allotted to it not only by shaping figures like Gernsback, who devoted himself directly to enlisting his readers in the cause of "science," but also by subsequent critics of early SF, including those writers, like Gibson and Sterling, who have lamented its naive celebration of technological innovation.

Because of their obligation to the conventions of historical narrative, literary historians of science fiction tend to favor linear accounts of its development as a cultural genre. A thumbnail sketch of its canonical literary history will almost inevitably include the story of a formative naive period (Age of Gernsback and Amazing Stories), followed by the maturity of a Golden Age in the forties and fifties (Age of Campbell and Astounding Stories), succeeded by late modernist and protopostmodernist challenges to the classical assumptions of the genre in the seventies and eighties (New Wave, feminist-ecotopian, cyberpunk, and so on).2 The advantages of this kind of narrative lie in its overall

2. Most histories of the genre accept this model to some degree. For an interesting example, see Peter Fitting's periodization of SF history in "The Modern Anglo-American SF Novel: Utopian Longing and Capitalist Cooption," Science-Fiction Studies 6 (Mar. 1979): 59-76. Fitting's brief history of "modern SF" begins, symptomatically, in 1937, after Gernsbackianism, and consistently "looks forward" to the heyday of feminist utopian writing in the seventies. In a response to Fitting's article, Samuel R. Delany raises discussion of the earlier Gernsback period, but only to characterize it as "uncritically accepting technology," or else to praise what John Campbell's writers drew from "the nascent critique of the philosophy of science that they had found in a fraction of the SF from the 1920s and '30s" (Delany, "Reflections on Historical Models in Modern English Language Science Fiction," Science-Fiction Studies 7 [July 1980]: 135-49, 140).
account of the formal history of the changing rules of generic conventions, understood and fully absorbed by historically conscious writers, readers, and fans within the SF community. Knowledge of these historical changes forms the “tradition” of a literary genre, inherited and used by its practitioners and cognoscenti. However, the linear conventions of this narrative tend to deflect our attention from the story, naive or not, that SF also tells about the place of science and technology in society at any one time. Consequently, the form of this narrative is less useful to cultural historians who are interested in examining the role of SF in the material culture of a particular historical moment. It is especially difficult to write about the early years of a genre without falling prey to the knowledge that one is talking about “origins” that will then be “superseded” in the later history of the genre. All historians confront this problem to some extent. Historians of a cultural genre are particularly constrained by knowledge about the subsequent development of the genre.

In the case of early SF, the conventional historical narrative is often overlaid by prejudices against the North American vulgarization of the high-minded and socially critical European SF tradition created by intellectual giants like H. G. Wells, Jules Verne, Aldous Huxley, Yevgeny Zamyatin, Fritz Lang, Olaf Stapledon, Karel Capek, Franz Kafka, and C. S. Lewis. According to Brian Aldiss, the lowbrow American pulps were marketed as mere “propaganda for the wares of the inventor,” where “screwdrivers substitute for vision” and where a standardized and “debased . . . product” is churned out of “sweatshops” of the mind.3 For Aldiss, the high European SF of the thirties grappled with the global zeitgeist—the rise of National Socialism and the fledgling specters of bureaucratic statism—while the lowly “bathetic” trade of the pulps was devoted solely to uncritical and unspeculative technojingoism, or to the crude, chauvinist Americanization of its largely immigrant readership.

Leaving aside the prejudicial bent of this description, one could still argue that Aldiss does the zeitgeist of the thirties a disservice by assuming that it flowed only through the refined synapses of European literary minds. The ideological backdrop to the pulps—the technocratic conflicts over the control and (mis)management of industrial production in a liberal democracy—harbored many of the ultimately decisive postwar solutions to the growing antagonisms between labor and capital. The postwar social contract that secured the long period of Fordist growth in the Western democracies proved to be a more resilient and efficient response to these antagonisms than the ideological cocktail of progressive modernization and reactionary folk nationalism.

that was the vehicle of European fascism, especially in the German version. In retrospect, technocratic Fordism and fascism were alternative solutions to the problems that capitalism faced in the thirties.

If the SF pulp authors of the twenties and thirties had little occasion to address directly the highly charged role of technology in the social drama of their time, they nonetheless owed their literary raison d'être to the cults of science and technological invention that emboldened a positivist religion (shared by left and right alike) in the years between the world wars. The pulp rhetoric of unstinting faith in the progressive virtues of science ranged across a wide social spectrum: this rhetoric was used by popular entrepreneurs like Gernsback, management reformers like Frederick Winslow Taylor, Progressive engineering professionals like Morris Cooke, business leaders and governing figures like Herbert Hoover and Theodore Roosevelt, nonmarxist technocrats like Thorstein Veblen and Lewis Mumford, and could be found even at the core of the organized revolutionary left among those committed to the inevitability of "scientific socialism." To see this widely shared social fantasy as a naive example of blind faith in technological progress is not good enough; such judgments are part of our own naive response to history. Technocracy and Fordism were just as enthusiastically received by the European left (Antonio Gramsci says it all in "Americanism and Fordism"), who saw these principles as applied modernist antidotes to fascist folk mysticism. To explain the significance of early SF, I will argue that we are obliged to substitute for given wisdom about SF's "uncritical technophilia" a more historical account of its place within a moment of critical technocracy.

So, too, any properly historical analysis of the early years of the genre ought to challenge the enduring assumption that pulp magazine production was an assembly-line culture designed to force-feed a passive population a reactionary diet of escapist sensation. The market dynamics behind SF genre formation were indeed part and parcel of the pulp publishing revolution that created specialized audiences for detective fiction, spy fiction, horror fiction, Western fiction, romance fiction, and others in the interwar years. But SF deserves attention as a special case if only because of the extraordinary role played by its amateur fans. It is still the only cultural genre where the literary activities of its fans—in fanzines, gatherings, and conferences—far outnumber the published output of the genre's professional writers. This obsessive amateur subculture came to mediate the pulp magazines' appeal to a popular audience at every level: questioning, challenging, and contesting editorial power; determining the shape and success of

certain magazines; and producing writers and editors from its ranks who, versed in the often politicized dialogue of fandom in the thirties, rapidly rose to transform the direction of the genre as a whole.

The most celebrated group of fans in this period were known as the Futurians (including such soon-to-be-famous names as Isaac Asimov, Donald Wollheim, Frederik Pohl, C. M. Kornbluth, and Judith Merril), some of whom were associated with the Young Communist League and who did a good deal of not-very-successful socialist recruiting among SF fans by employing arguments drawn from well-known SF dystopias in which fascist orders prevailed. Active in small groups with names like the Committee for the Political Advancement of Science Fiction, their watchword was "the theory of science-fiction action," tied to the socialist ideal of the science of social "progress." Consequently, their conception of science was much broader than that encompassed by Gernsback’s philosophy, although they shared his penchant for recruitment. While they would soon change the shape of the genre as professional writers and editors in their own right, the critical activities of these fans served as a kind of counterculture operating against the editorial establishment. Their injection of social consciousness into the world of fandom had an enduring effect at a time when the pulp stories were only just beginning to address the future of authoritarian social orders. Anti-Gernsbackian in their commitment to seeing SF as a socially aware genre rather than as an opportunity to further the cause of science, these fans cultivated the romance of the boy fiction-inventor at the expense of the cult of the boy hardware-inventor.

Hugo’s Hard Line

To explicate fully what is meant by the "Gernsback Continuum," we need to look first at Gernsback’s own role in publishing and in "fathering" the genre. Pulp publishing, said to have begun with Frank Munsey’s all-story Argosy magazine in 1896, was a revolution in industrial mass production that capitalized on North America’s vastly increased immigrant population, literacy rates, rural postal delivery, and urbanization. When pulp publishing was at its height in the late thirties, there were over two hundred pulps with over twenty-five million readers distributed across a wide social spectrum. Popular

5. See Sam Moskowitz, The Immortal Storm: A History of Science Fiction Fandom (Atlanta, 1954), esp. pp. 158–68. Moskowitz’s book is the most exhaustive record of the early period of fandom. Moskowitz himself was a leading figure in New Fandom, the grouping that was politically opposed to the Futurians.

Publications, for instance, claimed to have had both Al Capone and Harry Truman as subscribers. Isaac Asimov recalls how his immigrant father, a candy store owner, despised the pulps he sold as trash, but often read them to improve his English.

In the pulp star system, it was usually the magazines, or their formulae, and seldom the writers themselves (however highly paid), who were the major actors. For the SF cognoscenti, it was the magazine editors who played the starring role; consequently, it is Gernsback and John Campbell, editor of *Astounding Stories* from 1937–71, who are commemorated as the “fathers” of science fiction, not Verne, Wells, Capek, or E. E. “Doc” Smith. It is clear, moreover, that Gernsback’s “invention” of the genre, with the appearance of his pulp magazine *Amazing Stories* in 1926, is markedly different from, say, Munsey’s fathering of the all-story pulp, or Street & Smith’s creation of the specialized genre of crime-and-detection fiction with the publication of *Detective Story Magazine* in 1915. This is not to say that the private detective story, with its origins in Allan Pinkerton’s dime-novel memoir-adventures of the West, was any less an original “American” genre than the gadget fetishism of the Gernsbackian story, with its roots in the “invention” dime novels like the *Frank Reade Weekly*, the ham-radio culture, and the popular boy-inventor culture of the turn of the century. But, unlike Munsey, an ex-telegraph operator turned publishing entrepreneur, Gernsback’s own life story was exemplary of the starring role cast for the free-lance inventor in the popular formulae he established as the generic “hard science” core of SF. In an age of collective corporate management, Gernsback’s hands-on ownership and editorial role in the “invention” and early production of SF was a throwback to the individualist inventor-entrepreneur of an earlier era à la Thomas Edison. T. O’Connor Sloane, Gernsback’s first managing editor at *Amazing Stories*, an inventor and scientist in his own right, happened to be Edison’s son-in-law as well. Gernsback’s rugged individualism went against the grain of the increasingly Taylorized culture industry, just as the inventor-wizards who starred in the pulp SF stories had become an anachronism in the corporate research world of Bell Labs.

As a promoter of the ham-radio craze in the first two decades of the century, Gernsback had already been at the center of another amateur culture long before he “created” the amateur fandom at the

heart of science-fiction culture. An immigrant from Luxembourg in 1904, and a sometime boy-inventor of layer batteries, his Electro-Importing Company brought in specialized electrical equipment from Europe but was more famous as the first mail-order radio house. He designed and sold the first home radio set (at a price so low his store was raided by the police) and the first walkie-talkie. He also began to publish a host of amateur science magazines. These, along with the Wireless Association of America founded by Gernsback in 1909, became the eyes and ears of the flourishing amateur radio movement. Relying on popular archetypes of the middle-class boy-inventor cult, which had inherited the romance of strenuous intellect from the likes of Frank Merriwell and Tom Swift, this fiercely networking community of boy ham operators played a significant role in contesting corporate and military attempts to establish monopoly control over the ether in the years before and after the First World War.\textsuperscript{11}

By the time Gernsback's unwavering efforts to promote popular science came to include the first magazine devoted to science fiction in 1926, it was perhaps only with feigned surprise that, in the third issue of the magazine, he reacted to "the tremendous amount of mail we receive from—shall we call them "Scientifiction Fans"?") (\textit{E}, p. 236). In the prespecialized days of all-story magazines, it had already been established that there was a large readership for the kind of "gosh-wow!" stories that Gernsback printed (\textit{Amazing Stories} would soon have a readership of 100,000). As a result, his novel attempt to recruit for the "cause" of popular science through pulp literature generated a cult-like following of boys willing to be enlisted in the service of the new cause. In fact, it was the crusading role with which Gernsback's SF publications promoted scientific education and recruitment that served to demarcate the genre of the SF story from the whole field of fantasy stories, out of which the SF story itself grew and continued to flourish in competing pulps like \textit{Weird Tales}.

If the function of Gernsback's "scifiction" was to consolidate popular education about science and technical knowledge, then the literary tendency to encourage formal "invention," especially of the sort that led to flights of fictional fancy, had to be subject to a restrictive principle. Indeed, the tension between technical invention and literary invention stretches across the whole history of science fiction: Verne once said famously of Wells's stories that they "do not repose on very scientific bases. . . . I make use of physics. He invents."\textsuperscript{12} All popular genre fiction tends to have its own formal rules that guard against


overinventiveness, but in the case of SF, the distinction between “using science” and “inventing” lay at the very heart of genre formation for other than formalistic reasons. To make his rules stick—to demarcate his genre of stories from those of his competitors—Gernsback created a whole supervisory apparatus to guarantee to readers the “technical plausibility” and accuracy to scientific fact of the prophetic stories he published under such slogans as “Extravagant Fiction Today—Cold Fact Tomorrow” (Amazing Stories); “Prophetic Fiction Is the Mother of Scientific Fact” (Science Wonder Stories); and “Adventures of Future Science” (Wonder Stories). Gernsback’s editorial line in these matters can be summed up in this statement from the first issue of Science Wonder Stories in 1929: “It is the policy of Science Wonder Stories to publish only such stories that have their basis in scientific laws as we know them, or in the logical deduction of new laws from what we know.”

How was this policy regulated and what did it mean in literary practice? Not only did Gernsback establish a panel of experts—all reputable professionals from universities, museums, and institutes—to pass judgment on the accuracy of the science; he also encouraged his writers to elaborate on the scientific details they employed in their stories, comment on the impossibilities in each other’s stories, and even offered his readers prize money for identifying scientific errors. Factual, nonfiction articles about science and technology could be found in each issue of his magazines, and the editors’ column, a regular feature, provided a forum for readers’ queries about the world of science (“Science Questions and Answers,” imitated by competitors like Astounding Stories’s “Science Forum”). Gernsback’s readers were addressed as a special breed: they were amateur chemists, astronomers, or radio novices more likely to be reading Gernsback’s companion publications like Science and Invention and Radio News for self-improvement rather than general pulp aficionados perusing other pulps like Ranch Romances, Ace-High, Spicy Mystery Stories, or even, heaven forbid, Love Story and Miss 1930 for lurid sensation.

Gernsback also fought long and hard, in a highly competitive arena, to permanently attach his agenda of technical plausibility and hard science to a generic term for the specialty field. This term, “science fiction,” emerged only after a long contest waged between competing magazines like Argosy, Weird Tales, and Astounding Stories over terms like “pseudoscientific stories,” “scientifiction,” “weird-scientific stories,” “off-trail stories,” “fantascience,” “super science,” and others (E, pp. 318–33). Of course, the contest over the definitive term had high commercial stakes in the subscription game, but it was also part of a search, in the pulp world, for a stable, legitimate standard.

around which the loyalty of fans and readers could be mobilized. Long after 1934, the year when Astounding Stories, Gernsback’s chief competitor, was reorganized and began to dominate the field, Gernsback’s rules of play concerning the centrality of the hard physical sciences continued to hold sway. Story lines diversified. Orlin Tremaine, then the editor of Astounding Stories, introduced the more metaphysical “thought-variant” story. Campbell, Tremaine’s maverick successor, encouraged his famous stable of writers to try more speculative, psychohistorical, and even sociological treatments. In the fifties, Campbell allowed his writers to investigate the fields of psi, dianeics, and parapsychology. Even in Gernsback’s heyday, a number of fanciful scientific “errors” were tolerated as “superscience” conventions in order to explain the interstellar plausibility of the generic “space opera,” pioneered by E. E. Smith in The Skylark of Space (1928). For the most part, however, the gatekeeper-editors at the head of the field stuck to the positivist line as an issue of fundamental policy until well into the fifties, when dystopian critiques of the religion of “progress” through science and technology began to predominate in a field founded on the idea of progressive futurism, the dominant discourse of its day.

Gernsback often used the fandom he had helped create to regulate these hard science policies. For example, the second issue of Amazing Stories carried a Gernsback editorial that cited a letter from George Anderson of Fairmount, West Virginia, suggesting that the magazine should “print all scientific facts as related in the stories in italics. This will serve to more forcefully drive home the idea upon which you have established your magazine.”14 Other readers would complain that the stories were too scientific and that more attention ought to be paid to literary style. Although neither suggestion was implemented, the typical Gernsbackian story of adventures through gadgetry would always feature moments in which the genius-inventor took time to explain at length, often in isolated and stylistically unrefined paragraphs, the science that he was employing to save the world.

Critics of Gernsbackianism have charged that Gernsback’s devotion to the pragmatic, hardware-oriented tradition of invention was a formula for technological fiction only and had little to do with a properly scientific fiction that fully questioned the nature of the objective world. In the years before SF was established generically, the new quantum physics, for example, had been exploring the heady qualities of a newly implausible universe. At the core of the Gernsback formula, however, was a populist principle that science could be explained and understood by everyone, and that its name would not be associated with

exclusive rhetorical idioms or with obfuscatory accounts of the object world by overaccredited experts. For Gernsback, scientific language, in particular, was a universal language of progress that ought to be accessible to anyone without a college degree. Indeed, the straightforward prose of early SF contrasts with the rich American argot of local dialects found in the Western and hard-boiled genres. Its undeveloped style is equally distinct from the luxurious hand of the likes of H. P. Lovecraft, whose overwritten fantasies crammed the pages of *Weird Tales*. All the same, there were dialects to be heard in Gernsbackian fiction, specifically those of the alien species who were typically vilified in the most overtly racist ways. Since women rarely appeared in pulp SF, this “universal” language of science was, in practice, for white boys and men only. It functioned as a mark of their superiority in coping with conditions in exotic localities like Mars or Venus, whose climates were simply displaced from the popular action-adventure regions of the arid West and tropical Africa respectively. So, too, the jargon of “positronic rays” and “electronic vibration adjusters” quickly became the mark of an insider language that readers and fans could learn to cultivate as the language of experts, eventually producing their own subcultural variant in the unique idiom of fanspeak.

Although the “universal” language of science and rationality popularized in pulp SF was limited to a rather narrow, white male view, it could still be construed as a populist refusal of the elitist vehicles of “literary” speech and “metaphysical” discourse that had traditionally governed the definition of universality in Western literate culture. Indeed, the belated recognition of SF as a literary genre by technophobic humanists was a consequence of its perceived challenge to that tradition of humane discourse. The spare, economical language of technorationality, everywhere valorized in the twenties and thirties as the official language of the latest version of North American pragmatisms, embodied the austerity measures that were also favored by much of high modernist culture. One thinks of the ascendancy of the maxim “form follows function” in art, design, and architecture, or the rhetorical economy of Ezra Pound’s imagism, in which excess was condemned as “wasteful.” Many of the formal principles that lay behind the modernist movement can be seen as a literal translation of the efficiency techniques of Taylorism. The new technocratic principles of stark efficiency, tight economy, and hard precision had come to fill the role vacated by the eschewal of ornament and the rejection of conspicuous expenditure associated with the wasteful style of high bourgeois culture in the late nineteenth century. These utilitarian conventions were broadly welcomed, in culture and social thought, for their appeal to the principles of democratic modernization.

Alternately, the history of the adoption and incorporation of utilitarian conventions into antidemocratic philosophies in the course of the
1930s is well known, especially in the case of European high modernism, many of whose adherents followed the road to fascism without having to beat a retreat from their politics of style. In German SF, where a specialized mass genre of SF did not exist, Nazi ideology was nourished by the Aryan-mythological elements of "Teutonic" fantasy fiction, by the purified spiritual histories espoused by various occult science groups, and even by the activities of the Society for Space-Flight, whose amateur experiments with rocketry were lionized in the American pulps throughout the thirties. The National Socialist fusion of precapitalist pastoralism, technological modernization, and millenarian futurism were all fully present in the German SF culture of the time.  

Arguably, however, the best examples of Nordic-Aryan adventure fiction could be found in the North American pulps during these years. The historical continuity of these stories with the colonial romance of the Western served to reaffirm whatever codes of nationalistic destiny were still at work in the formula. The colonial romances of the new high-tech adventure formula had to take place in foreign locations; they could not be pursued in the squalid urban conditions familiar to the modern, technointensive labor force. In this respect, North American SF was much more than a naive reflection of the cult of technology; it was also an embryonic response to the call for the colonization of space, where adventure, as always, was imperialism's accomplice. The language of colonization was the sparse instrumentality of scientific boospeak with an American accent, just as the lingua franca of science among earthlings today is American English.

In the fledgling struggles over genre formation in the SF of the twenties and thirties, what we can see is an attempt to establish a language that signified scientific rationality (what is science if it is not a self-legislating language?) and to eliminate a language that privileged romance, fantasy, and literary invention, except, of course, where the romance was that of science and technology. In its quarrel with fantasy fiction, popular SF was as actively committed to this crusade as the modernist movement was to purging the rhetorical vestiges of romanticism. Today, the opposition between science and rhetoric is no longer as clearly defined. While the origin story of science is still told in opposition to the humanist tradition of rhetoric, in recent years critics have come to see science itself as just another form of rhetoric with particularly aggressive claims to make on objectivity. In literary prac-


tice, of course, Gernsback’s purist devotion to the rhetoric of hard science was everywhere open to adulteration, as the genre could not stand still if it was to be true to the spirit of fictional, or even scientific, invention. A literary commodity that traded on its “amazing” and “astounding” qualities was even less likely than other forms to be able to toe the hard line against rhetorical excess.

**Engineers’ Dreams**

For the most part, rationalist technospeak is the language we associate today with the term “technocrat,” the language that has come to dominate the bureaucracies of business, government, education, and military diplomacy. Today this language signifies impersonality and inhumanity, the technocrat’s cross to bear. By contrast, in the twenties and thirties, it was the language of modernity and progress. All advocates of social action were obliged to emulate it, for it was the language of efficiency, even when it seemed long-winded and opaque. The universal claim of the countercultures of the day—whether socialist, technocrat, populist, or avant-garde—was that they could speak this language more proficiently than the dominant culture. While sharing the dominant values of modernity and progress, these countercultures promised to be more creative, more productive, more efficient, more growth-oriented, and more humane than the fettered capitalist management of society was proving to be.

In the thirties, technocracy could still be a radical word, as it was not yet associated with soulless bureaucratic rationality. Technocracy was also the name of a short-lived popular movement, forged in the crisis years of the Depression. This movement, whose history is very colorful, demanded a complete replacement of the economy’s dependence on commodity value with a system based on the full use of available energy resources and technologies. Despite this eccentric and impractical suggestion, the Technocracy movement was asking many of the right questions about automation and technological unemployment, the rationalized use of expertise and management over the arbitrary diktat of capital, industrial democracy, production for use and not for profit, and the nonutopian horizon of a postscarcity culture. The movement, which lived and died by the sword of its scientific analysis of energy conservation, eventually developed its own weird protofascist trappings (while being strictly antifascist), complete with regulation suits, armbands, paramilitary salutes, motorcycle corps, and even a youth group called the Farads.17

The solutions offered by the Technocracy movement looked back to the earlier progressivism of the engineers reform movement from which it derived. At its roots was the vanguardist role Thorstein Veblen cast for the engineer. Going back even further, there were links with the Midwestern agrarian populists, who had excoriated absentee landlords for their distant mismanagement of agricultural production. In many ways, the story of the technocratic idea—from the so-called “revolt of the engineers” during the teens to the media-hyped Technocracy movement of the thirties—was more representative of domestic U.S. culture between the wars than the romance of American Communism, although it is the less well known of the two stories. Arguably, the appeal of Technocracy to native populism and to philosophical pragmatism (jokes about the “dictatorship of the engineers” notwithstanding) held more sway over popular antibusiness consciousness than the pre-Popular Front image of a “Soviet America,” which was so captivating to Europeanized intellectuals of the time. Inspired by the romantic engineer-adventurers of popular film and fiction like The Trail of the Lonesome Pine and Soldiers of Fortune (these engineer-heroes were figures not unlike the modern Indiana Jones), and helped along by the pioneer cult of rugged individualism, engineering became a messianic vocation in the first three decades of the century. Technological progress was raised to the status of a self-evident truth, and the cults of efficiency and waste conservation presided over everyday life. Even women in the home were addressed as the engineers or scientific managers of their households: toward the end of the teens, “Training the Home Engineer” and “Running the Home Like a Factory” were typical lead articles in popular magazines like Woman’s Home Companion.18

So pervasive was the moral category of efficiency that Veblen’s idea for a revolutionary “soviet of technicians,” who would take control of the economy and sweep away the inefficient price system, was received as a respectable proposition in many circles in 1920. Veblen’s idea was particularly well received in business circles, since it was rather hostile to labor interests (class conflict was too “wasteful” to be scientific). Veblen and other technocrats posed science and business as good and bad angels respectively, two conflicting demands on the engineer’s vocational conscience.19 By the twenties, however, science had long been the governing genius of industrial production, and technological progress, as applied science, had become the primary rationale for capitalist growth. The crisis tendencies of capitalist overproduction were now held in check, of course, by the principles of scientific management. In other words, there was virtually no de facto opposition

between business and science. Scientific knowledge had come to govern the processes of production; the goal of modern industrial use of technology had become one of transforming science into capital. Control of science itself became an industrial monopoly: confined to the new corporate research laboratories, or to university locations where research worked hand in hand with corporate interests, and where technical education was shaped by industrial needs. Consequently, the golden age of industrial invention lay in the past, much too volatile in its effects for the scientifically regulated processes of production favored by monopoly capitalism. Given these developments, it is easy to see how the cultural myth of the individual inventor, like that of the rugged engineer, was an increasingly necessary myth for recruiting in an age when both types were almost as extinct as the dodo.

If This Goes On . . .

With the growing normalization of the industrial research scientist working for a large-scale corporate organization, the romance of the Edison cult and the roughneck engineer cult lived on in popular mythology rather than in industrial reality. Even so, these cults were still usefully employed for the purposes of recruitment and popular legitimation, especially in the Gernsbackian pages of the pulp SF magazines, where the practical imagination of the boy-inventor wizard could still be relied on to save the world. One classic example, from a 1938 issue of Astounding Stories, was Jack Williamson’s serial story, “The Legion of Time,” in which a choice between alternate futures, good and evil, depends on a boy in a meadow picking up a magnet. That he does so, and is thereby encouraged to become a scientist and an inventor of “dynatomic tensors”—atomic technologies for benign uses—saves the world from the less-savory alternative future in which he ignores the magnet, becomes a “shiftless migratory worker,” and in which his redemptive technology is invented and put to despotic ends by less-honorable foreigners. The utopian city of the good future carries all of the classic architectural features of the futurist vision:

The ship was two miles high. Yet, so far as his eye could reach in every direction, stretched that metropolis of futurity. Mirror-faced with polished metal, the majestic buildings were more inspiring than cathedrals in their soaring grace. With a pleasing lack of regu-

21. Thirty-one percent of boys in high school in 1922 said that they wanted to be engineers; agriculture came in second with twenty-four percent. See Tichi, Shifting Gears, p. 102.
larity, they stood far apart all across the green parklike valley of a broad placid river, and crowned the wooded hills beyond. Wide traffic viaducts, many-levelled, flowed among them, busy with strange, bright vehicles. Coming and going above the towers, great silver teardrops swam through the air about the ship.22

The utopian city is named Jonbar, after John Barr, the boy inventor, and is dominated by a huge statue of Wil McLan, the mathematician who figures prominently in the series as the heroic inventor of an atomic-powered time ship that allows the adventurers to navigate between the alternate futures. In the scientifically administered future city, these rugged individuals from the past are honored in various memorial forms while the scientists of the day are strictly technocratic; they are “brisk and efficient,” and as undifferentiated as their correlates in the alternate evil future—an urban army of giant, hypertrophied ants. In this respect, one could say that the far future more clearly resembles the scientific milieu of Williamson’s present, honorifically organized around corporations bearing the names of their inventor-founders. It would be critically reductive to say that such stories were simply anachronistic, that they were symptoms of a lazy, determinist lag between the soloist culture of boy’s adventure fiction and the corporate world of social and industrial reality, and that the fiction would eventually catch up. Alternately, it is too facile to see the world-saving, genius-inventor type as a critical response, however politically unconscious, to monopoly capitalism’s incorporation of science. After all, most popular fiction (in contrast to middlebrow and highbrow fiction) depends on the narrative vehicle of strong audience identification with individual character types, while its ideological appeal often rests on nostalgia for traditional, or mythical, forms of knowledge and social action. But SF, especially in the thirties, made a special case for itself as an “advanced” genre of popular entertainment, a genre concerned with new, cutting-edge, even prophetic forms of knowledge and social action in the present and in the future. Consequently, the contradictions it displayed as a bearer of the new technocratic ideology had a claim on modernity that other generic popular fiction was not in a position to share or to match.

The survival of the erector set-inspired amateur inventor as a type in thirties SF, even though it was anachronistic, meant that this heroic figure became available as a protopolitical vehicle. Not unlike the celebrated “small guy” in Frank Capra’s films of the time, the figure was used to express some kind of defiant alternative to the stifling assembly-line spirit of corporate labor. In both cases, Capra’s and Gernsback’s,

the appeal was ostensibly populist, and eventually, in Capra's case at least, antifascist, in keeping with the spirit of the Popular Front in the mid- to late thirties. In an age of high anxiety about technological unemployment, the inventor's autonomy over the creative use of gadgetry was an attractive alternative to the feeling of loss of mastery over technology to the new corporate technostructure. This feeling extended from the shop floor, where the skills embodied in workers' rules of thumb had been coopted by the new Taylorist managers, to the cockpit, if we believe their complaints, of the old-style captains of industry.

So, too, if we take Gernsback's agenda of recruitment literally, we can see that a diet of pulp SF may have been an appealing advertisement for the social virtues of doing science, but it was a poor preparation for likely industrial draftees. Youthful readers whose hopes were flattered by the Gernsbackian tendency to highlight the more attractive, utopian elements of the new technocratic ideology, to emphasize the creative rather than the instrumental side of technical reason, had every chance of seeing those hopes dashed in the employment market of the time. When one is raised on a diet of "astonishing," "amazing," and "wondrous" adventures through scientific endeavor, the prospects of being thrilled by the drudgery of employment in the everyday factories of science and technology were very slim indeed. In a similar way, the adventures of time travel and space travel, the standard imperialistic components of pulp SF, might also be seen as utopian versions of the desire to escape the new Taylorist tyranny of organized and quantified time and space that had come to preside over the contemporary workplace.

Like the genius-inventor, the cowboy and the private detective were anachronistic heroes increasingly employed to criticize the loss of individual autonomy in a bureaucratically organized corporate culture. For the most part, however, the outcome of this romantic individualism was a libertarian critique, usually with conservative implications. This tendency is quite evident, for example, in the early science fiction of Robert Heinlein, in which the hatred of state and monopoly capitalism is expressed through nostalgia for the free-enterprise frontier of nineteenth-century North America, where invention and rugged individualism are prized. In stories like "If This Goes On..." (1940) and "Logic of Empire" (1941), dystopian pictures of future monopoly states, capitalist and theocratic respectively, are challenged by the heroic activities of patriarch-entrepreneurs. Over ten years before, in the heyday of Gernsbackian pulp, similar dystopian stories by David Keller about the loss of autonomy were appearing in Amazing Stories: "The Revolt of the Pedestrians" (February 1928), "The Threat of the Robot" (June 1929),

"A Biological Experiment" (June 1928), "The Psychophonic Nurse" (November 1928), and "The Menace" (June 1928) were all published in the late twenties.

Towards the end of the thirties, elements of anti-Gernsbackian dystopian thinking were becoming a permanent presence in the pulps, especially in Astounding Stories. At the same time, the dreamy rhetoric of technological futurism had been taken over lock, stock, and barrel by corporate advertisers and managers, who were in the business of selling tomorrow's streamlined world. This rhetoric reached its culmination at the 1939 New York World's Fair, "the first fair in history ever to focus entirely on the future."24 The fair, constructed on a reclaimed ash dump in Queens, was one of the largest civil engineering feats of the decade: initially conceived by a group of businesspeople as a post-Depression stimulant, it was thematically planned by progressive designers and architects like Walter Teague and Robert Kohn. The design and themes of the fair were the high-minded outcome of a debate between traditionalists and "functionalist" progressives, including, most prominently, Lewis Mumford, who argued persuasively for a totally planned fair devoted to exhibiting the social and historical significance of technological change. The principal elements of the fair's philosophy included the potential of technology to create a postscarcity culture out of machine rather than human labor; the need to preserve democratic institutions in the face of fascism; and the capacity of social and urban planning to resolve the alienation of people from a communitarian life.25 In contrast to recently staged fairs in Chicago (1933) and San Francisco (1939), which had sensationalized the spectacle of mechanical progress, those planning the New York World's Fair would reject the showy appeal of gadgetry for gadgetry's sake. Instead, the New York fair would try to showcase entirely planned and integrated living environments, in other words, an attainable near future. While the machine remained the central motive force for social change, the package also highlighted science, art, education, consumer abundance, and environmental well-being. All of the great designers and architects of Streamline Moderne were recruited to translate these themes into a popular language: Raymond Loewy, Norman Bel Geddes, Henry Dreyfuss, Egmond Arens, Donald Deskey, Gilbert Rohde. The fair became the first showcase for industrial designers, the artist-engineers of the day.

As a result of this lofty debate among intellectuals about the fair's


social themes, which were integrated, wherever possible, into the focal exhibits, there was a good deal of popular suspicion about the high-minded paternalism of this "World of Tomorrow." In response, a good deal of the educational apparatus was removed in an attempt to make the fair more people-friendly, and more sensationalist appeal was added in its second, and last, money-losing year in 1940. It didn't help matters that Franklin Delano Roosevelt's opening speech underlined the daunting link between the nationalistic pioneerism of the previous century and the new manifest destiny of an extraterrestrial tomorrow, when he proclaimed, with Emersonian echoes, that "our wagon is still hitched to a star." Those parts of the fair that looked like "no place on earth" can be seen, in retrospect, as a semi-official response to the new cult of the space age launched in the name of science. While the embodiment of the fair's social philosophy, streamlined democracy, could be found centralized in the Democracity model inside Dreyfuss's Perisphere, the crowd-pleasers were all located in the Transportation Zone where the fair's big commercial sponsors presented the hugely popular spectacle of corporate SF in practice. It was there, in the Rocketport inside the Chrysler Building (Loewy), on Ford's Road of Tomorrow (Teague), and, above all, in the Futurama of General Motors' Highways and Horizons Pavilion (Geddes) that the gleaming visions of the Gernsback Continuum—the streamlined rockets, teardrop cars, and sleek super-highways—took on their most concrete corporate form.26 The time capsule that the Westinghouse Corporation buried at the fair in Flushing Meadow even contained an issue of Amazing Stories on microfilm. With great ceremony, it was decreed that the capsule, ominously shaped like a double-headed bullet, would lie unopened until 6939 (like the nuclear waste that the military-industrial complex would soon be burying for just as long), a date that could have significance only in an SF story of the day.

On exiting the Futurama building, which housed a giant scale model of the United States in 1960, every visitor was given an "I Have Seen the Future" button, courtesy of General Motors. The emphasis was clearly on spectatorship. As Bruce Franklin points out: "General Motors had constructed a model of America's future. It is the corporation that plans and builds, while the people are purely passive, comfortably watching the creation in motion as mere spectators" ("ASF," p. 121). In contrast to the polluting automobile hell that lay in GM's real American future, Franklin cites the ecological example of the electric intramural railway, which had been prominently displayed

26. Franklin has compared the uncritical enthusiasm of the "verbal and model worlds projected by the large corporations" at the 1939 World's Fair with the more dystopian sentiments found in stories published the same year in Astounding Stories in "ASF," pp. 107-23.
in the name of the future at the Columbian Exposition of 1893. Such a railway was running cheaply and cleanly in all major U.S. cities (especially Los Angeles) by 1935. The purchasing and scrapping of the electric railway system by GM and allied interests in the subsequent years turned out to be one of the great crime stories of the century ("ASF," pp. 122–23).

In the decade before the New York World’s Fair, SF had been part of the cultural process of popular consent that helped to grant the autonomy commanded by these corporate forms, and that ultimately endowed the likes of GM with powers that soon came to preside without ecological foresight over the nuclear militarization of aerospace and the carbon-intensive automobilization of ground space. But it seems quite reductive to hold pulp SF’s aesthetic of “progress” to account for its apparent complicity in the corporate version of the Gernsback Continuum. The history of the genre formation of SF, as I have briefly described it here, was certainly intimate with dominant ideas about science as instrumentally self-justifying. But it was also responsive to “amazing” ideas about the future of science and technology that went well beyond the limited purview of industrial capitalism, stretching those limits into unmanageable realms of social invention that could never possibly be met by the subsequently deflationary reality of everyday technology. Once it has abolished utopias by announcing the end of ideology, corporate technocracy has to deliver what it promises—incremental raises in consumer gratification—or it is found wanting. SF culture is not part of that risky game. Its futures provide ample room for alternative forms of gratification. Even in those early years, when SF most embodied the technocratic spirit, there was a close link to what I have described as critical technocracy, an attempt, in its heyday at least, to change the rules of the game that have governed GM’s idea of technological progress.

The exploitationist side of the World of Tomorrow capitalized on the hopes of a depressed population slowly coming out of the grip of the Depression. But the other side of the Gernsback Continuum, which I have tried to describe here, was complicit with three decades of progressive thinking about technology’s capacity to weld the future and progress together into one social shape. The aesthetic form of this continuum between future and progress had found its most visible expression in streamlined industrial design—the smooth dynamics of an inevitable horizontal movement of energy, insistently fluid, with no obstacles in its rounded path towards a future. Friction-free, energy-efficient, and seductively constructed around the attractive surfaces of Bakelite, Vitrolite, and newly synthesized plastics, this representation of the hygienic speed of tomorrow became the visual language of progress in the thirties, a sign that the future, to cite a favorite streamline pun, was just “rounding the corner.” Pulp SF, which boasted the
utopian, streamlined, teardrop look on every magazine cover, was one of the more popular versions of an aesthetic that signified a genre going somewhere fast. Like the streamline designers, who thought that basic units like the teardrop were Platonic forms, essentially perfect solutions to all design problems in the future, the Gernsbackian version of futurism was untroubled by its ideological assumptions about the unilinear shape of the future. Both aesthetics would fall victim to the new logics of obsolescence, social and stylistic, with which art moderne was industrially associated. The “future” look would soon be out of fashion, proving, perhaps, that the future really was a continuum and illustrating one of those time paradoxes of which SF is so fond. The Gernsback Continuum would ultimately leave Gernsbackianism behind. Of course, there were reasons other than the innovations of industrial design and fashion for the obsolescence of futurism. War, and Hiroshima in particular, gave the future a bad name. But while it lasted, and until it was hired to sell the corporate definition of the American way of life at the New York World’s Fair, the streamlined Gernsback future had been a “natural” expression of progressive thinking about a better society.

At a time when science and technology were becoming the primary rationales for capitalist growth, technocrats, socialists, and progressives each assumed, in a publicly visible way, that they were the historical heirs to a tradition of technological futurism, a tradition not at all adequately described by today’s derogatory term “technophilia.” For technocrats, it was a tradition in which expertise, rationality, and knowledge would challenge the arbitrary diktat of capital; for socialists, it was a tradition in which the technological forces of production would undermine the existing social order even as they reinforced it; and for progressives, it was a tradition in which technology was the ally of democratization and the enemy of limited production for profit.

It is not fair to assume, in our own prematurely conscientious green days (when Gernsbackian stories about the redemptive wonders of high technology are presented, just as unfaithfully, in the name of “clean,” ecologically enhanced futures), that the heirs to these traditions were simply not ecologically minded. Exemplary thinkers like Mumford insisted on seeing technologies in the context of a general social ecology. Mumford, who had a typical Gernsbackian youth, not only drew on the conservation movement of Progressivism, which ultimately produced such fine critiques as Stuart Chase’s The Tragedy of Waste (1925), but also on the garden city and regional planning movements, which leaned towards the decentralized pastoralism preached by the Russian anarchist Pyotr Kropotkin and the Scottish utopian Patrick Geddes. In Technics and Civilization (1934), Mumford produced the most representative document of progressive technocratic thought of the thirties. In that grand survey of Western technological cultures, he
lays out his qualified faith in the cleanliness and efficiency of the new unseen energies that power the electronics and physics-based technologies; the task of the “new technics becomes the removal of the blighted paleotechnic environment, and the re-education of its victims to a more vital regimen of working and living.”27 With the harnessing of these new energies, the machine becomes an “ally” of holistic, as opposed to mechanistic, life: “Efficiency must begin with the utilization of the whole man; and efforts to increase mechanical performance must cease when the balance of the whole man is threatened.”28 In his attention to the “calculus of life” over and above the “calculus of energies,” and in his ecological rejection of the almost universally admired advances of the Soviet planned economy with its worship of mechanical scale and giant production, Mumford embodied the unequivocally green side of thirties “technophilic” futurism. And in his critical challenge to the “obsolete” structures of profiteering and militarism that determine the research and development of technologies, which would limit their use to market stimulation or to barbarism, Mumford demonstrated Marx’s lessons about a capitalist system that could no more afford full-blown technical progress than it could afford to stagnate without it.

Like even the most skeptical subscribers to the idea of a technological sublime, Mumford, in the thirties at least, was still placing his faith in the future. He hoped that what he called “geotechnic” and “biotechnic” progress would bring even more “life-sensitive” technologies into a world restored to a state of decentralized pastoral idealism. In this, perhaps, he reaffirms a pervasive North American vision of the “machine in the garden,” in which the promise of decentralized democratic community is often advanced as a cover for ever greater commercial exploitation of physical resources and labor power.29 In this persistent myth, versions of which are shared by left and right alike, cultural power is indeed concentrated in nostalgia for a future that will never be. This is the myth of the future that cyberpunk, for example, claims to have forgotten in the interests of the new dystopian realism.

There is little to be gained from using our hindsight simply to excori ate the “wrongheadedness” of thirties progressive thinking about technology’s capacity to manufacture a better social future. Like the streamlined design, which took on the “natural” look of progress, the codes of technological futurism were second nature for the progressive thought of the time. Max Weber’s lesson that science and technology were ideologies in their own right, intimately tied up with processes of domination over nature and with bureaucratic social organization, had
not yet been fully borne out. Yet Futuristic planning on the part of technocratic elites had not yet become fully institutionalized to the point of excluding democratic decision-making procedures. Efficiency was still a matter of public interest and public policy, long before it became a byword for privatization. And the ecological specter of dwindling natural resources and global degradation would take decades to assume a cogent political form. Clearly, however, there are lessons to be learned from our looking back at the now distant shape of these outdated futures, and I have tried here to show how and why the origins of generic SF were so bound up with this historical version of futurism.

But there is another responsibility called up by any survey of the naivete of historical futurism, and that is the responsibility to recognize the naivete of our own prevailing modes of futurism today. Again, I would argue that this is a responsibility quite specific to SF, a popular genre that has learned to ask very serious questions about possible, probable, or preferable futures. In popular culture today, the period "look" of the future is a survivalist one, governed by the dark imagination of technological dystopias. This recession of the future is characterized increasingly by the prospect of slow, ecological decay rather than by the instant annihilation of the future once promised by the nuclear threat. Cyberpunk literature, film, and television express well the current tendency to unhitch the wagon from the star, to disconnect technological development from any notion of a progressive future. In doing so, they leave the field of futurology open to those for whom that connection still is a very profitable idea. Once considered the home of progressive utopian thought, the future has become quite heavily populated by traditionally antiprogressive interests. In the last forty years, it has become the favored environment for corporate and military forecasting, and the locus, among other things, for "thinking about the unthinkable," to use Herman Kahn's notorious phrase to describe the logistics of postnuclear survivalism. While our popular culture is governed, to some degree, by an antifuturist aesthetic, the social and cultural shape of the future is already being planned and managed by speculators in the futures industry. We can no more afford to see ourselves as unavoidable victims of technological development than as happy beneficiaries of a future that has already been bought and sold many times over. This is not an image of empowerment. While it may offer a way out of what Gibson called the "Gernsback Continuum," it is a one-way ticket to a future that we must try to make obsolescent as quickly as we can.

31. See Herman Kahn, Thinking about the Unthinkable (New York, 1962).