

What do you mean: Science? Fiction?

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... some notes on the completion of an anthology of the year's best what?

I used to know what "science" meant: at least I understood the word well enough to believe that a statement like, "A revolution is occurring in science," made clear sense. At that time, the distinctions between "physical sciences" and "biological sciences," "theory" and "application," "research" and "engineering," "experimental" and "clinical," seemed perfectly obvious.

I also used to know what "fiction" meant. I knew the difference between a novel, a novella, a novelette, a short story, and a vignette; between "subjective" and "objective" narrative styles; between "psychological fiction" and the "adventure story"; between "realism" and "fantasy."

I never did know just what "science fiction" meant: in all the nights I stayed awake till dawn debating definitions, I do not recall one that stood up unflinchingly to the light of day. They all relied, in any case, on certain axiomatic assumptions about the meanings of "science" and "fiction."

Actually, when I first became involved in such debates—about twenty-five years ago—there was already a fair amount of honest confusion (among scientists) about the meaning of "science" in the 20th century. As dedicated—*addicted*—s-f readers, we had some awareness of the upheaval in process in scientific philosophy, following on the work of Heisenberg and Schroedinger, Bridgman and de Broglie; but as dedicated—*addicted*—s-f readers, we also made a complete, unconscious, adjustment when we talked stories instead of concepts—"science" in "science fiction" meant (and for most readers—and writers—still does mean) "technology."

What is viable in "science fiction" (whatever *that* may mean) today is coming from a comparatively small group of serious writers—in and out of the specialty field—who are applying the traditions of the genre and the techniques of contemporary literature to the concepts of 20th century science. The first results are already barely discernible. Science fiction is catching up with science. And the genre is returning from its forty years of self-imposed wandering, away from the wellsprings of literature.

The two events could only be simultaneous. Art at any time can achieve validity only if it is rooted in the accumulated human experience of its day, and touches somewhere on the nerve center of the culture from which it springs. The literature of the mid-20th century can be meaningful only in so far as it perceives, and relates itself to, the central reality of our culture: the revolution in scientific thought which has replaced mechanics with dynamics, classification with integration, positivism with relativity, certainties with statistical probabilities, dualism with parity.

If it seems I am saying that there is no adequate literature in existence now—I am. If it further seems I am claiming a special literary validity for science fiction—I would be, except that as it achieves that validity, it ceases to be "science fiction" and becomes simply contemporary literature instead.

I must pause here to establish my lack of credentials. Although, as fellow science fiction readers, our knowledge of scientific history, and contemporary scientific concepts, is probably roughly equatable, and (for many of you at least) arrived at in rather the same manner (elementary courses at school, and wide and presumably intelligent reading since), our knowledge of literature is neither equal nor similar. I learned my definitions of "fiction" from pulp writers and editors initially: their rules were hard-and-fast, and the penalty for breaking them was hunger; or worse yet, working for a living instead of selling stories.

So when I say I knew what fiction was, I mean I really *knew*. Things like: a short story is limited to one main character, who must be involved in a conflict which is resolved before the end of the story; it can be told from only one viewpoint, which must not shift during the story; a novelette is still primarily about one character, though it is possible to develop one or even two subsidiary characters to some degree—the main distinction is that there can be more than one or two incidents involved in developing the conflict before the resolution: if you get good enough, you can occasionally shift viewpoints in a novelette without killing the sale. Things like that.

I found out by a combination of my own dissatisfaction with the rule-book, and by a very slow and extremely erratic catching-up process (still far from complete) in my reading, that the rules I had learned were not only not universal, but not particularly applicable to anything I wanted to do—except *sell*. I also found out that in the upper literary strata, it was possible to break them and sell; and in the way-out literary strata (where nobody gets paid for anything) it was almost required to break them.

I didn't find the rules in other areas any improvement; at least, I kept on enjoying *reading* s-f more than other contemporary work—until a few years ago. What happened, or started to happen, a few years ago, I will come back to. Meantime, let me tell you about my great discoveries, and try to see them through the eyes of a genuine discoverer. Bear with me if I sometimes state the obvious; it was not so to me. And if some things I say are obviously *not* so—remember, I claim no authority: I am speaking only of my own experiences and discoveries.

It is not the Bomb or the Pill (or miracle drugs or synthetic materials or space travel) that are forcing us to re-think the meaning of "science": these, after all, are comparatively mechanical, *technological*, applications of what I have been calling 20th century scientific concepts—although they of course began in the 19th. The reverberations of that conceptual revolution have by now shaken every branch of scientific investigation and human life. Indeed the failure of entrenched, established academic Humanism to comprehend the meaning of the rumblings from cross-campus (the "two-culture" phenomenon) was probably due in part to preoccupation with the local effects of the same conceptual explosion in the arts and social sciences.

It was not James Joyce or Henry Miller or Jack Kerouac or William Burroughs who made it necessary to re-examine the idea of "fiction." They were simply pioneers in the process of re-examination. The seeds of the upheaval, as in the case of the scientific revolution, appeared at the height of Victorian formalist-mechanist complacency—the beginning of modern social science (Darwin, Freud, Boas, Veblen. . .) with a focus on human motivations, rather than surface behavior.

What happened in the various sciences had its almost exact counterpart in literature, and most markedly so in "fiction," that curious prose form which, like physics and chemistry, anthropology and psychology (and their numerous and hybrid offspring), came into existence as a distinct area of human endeavor during the Great Crackup of the 17th century. I will not attempt here to argue the causes. I am inclined to the notion that the voyages of exploration and discovery of America, and the printing press, with its attendant revolution in communications, were major factors. Whatever the chain of causation, the result was as though a figurative planet composed of man's intellect, suddenly acquired so much additional mass, or velocity (or both?), that it flew out of orbit, breaking up and fragmenting under the strain. (Perhaps the settlement of America enlarged the "subjective mass" of the planet in men's minds? Or possibly just the first accumulation of the sheer bulk of paper under which we are nowadays likely to be buried. . .)

One might carry the metaphor further, and assume that the reduced planet, and its severed chunks, would have settled, eventually, into new orbits closer to the source of energy. Some bits would have been drawn into the sun and lost entirely: Divine Right went that way (and with it a substantial part of the certainty of divinity). Other pieces, the largest ones, would have been drawn back into the parent body very quickly, and become attached as discrete territories, no longer part of the amorphous whole: one might conceive of the establishment of national sovereignties this way, or of the broad demarcations of not-yet-"scientific" disciplines as they first appeared—naturalist, mathematician-astronomer, philosopher, and so forth. The intermediate chunks, settling into orbits somewhat closer to the sun at first, absorbed more energy perhaps, and *grew*, moving back closer to the parent body with each increment of mass and velocity.

Take the fancy one bit farther, and picture the return of the pieces (rather as Planetarium lecturers are fond of presenting the image of an eventual falling-back of the Moon). At

least one of the first returning bodies would have landed with tremendous impact—Newtonian physics, the laws of motion, gravitation, and the Calculus, containing within them (if anyone had thought to notice, or had energy to spare to think it through) a clear explanatory warning of descents yet to come.

The new literary form, fiction, may be considered to have made its (far less impactful) return as a clearly formed body somewhere about the middle of the 18th century. (Even fancifuller, one might postulate that the date went unnoticed, and is still argued, because it landed in the tropic sea of some enchanted voyage of exploration—quite possibly just out of sight of Alexander Selkirk's lonely island—and that it was in the nourishing warmth of these waters that the solid mass broke somewhat apart, and eventually attached itself to the land mass again as the full-blown novel and incipient short story.)

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All metaphors aside, I believe it is significant that the fiction form took shape and name in the same intellectual-cultural upheaval from which the familiar "scientific disciplines" emerged—that it achieved a discernible form and popularity just about half way between the beginnings of physics and anthropology, and that its later history shows so many parallels with those of nineteenth-century science.

We tend to think of the 19th century in terms of its own popular image of itself: a time of complacency and classification, of rationality, mechanistic philosophy, scientific certainties, technological, literary and artistic polish rather than innovation. Actually, there seem almost to have been two parallel nineteenth centuries: some things about the *other* one we are still finding out. But we do know that the groundwork for modern mathematics—the non-Euclidean geometries of Gauss, Lobachevsky, and Riemann, as well as Boolean algebra and the basis of symbolic logic—had already been worked out in 1850—when Kierkegaard was writing the first Existential works, and Baudelaire was setting forth the principles of the Symbolist movement—all before either the publication of *The Descent of Man*, or the organization of the Periodic Table.

Fifty years later—just at the turn of the century, while Victoria still reigned, and Teddy Roosevelt brandished his Big Stick—Freud and Pavlov, Lorentz and Fitzgerald, Buber and Heidegger, laid the foundations for thought control, space-time cosmology, and even the Ecumenical Council.

The first confused wave of reaction against these innovations came in the form of reforced mechanism and increasingly "discrete" and complicated "classification"; perhaps it was not so much *reaction* as an honest effort on the part of people trained in the formalisms of the nineteenth century, to cope with the fascinating, staggering, new integrations while still using the familiar methods of separation and analysis.

Thus, the twentieth century opened to a compartmentation and fragmentation of knowledge unprecedented in scope, and probably in attitude. Within the physical sciences, separate but traditional disciplines were splitting and resplitting: chemists became

organic or inorganic chemists—then bio-chemists or physical chemists, etc. They devoted themselves to theory or to application. In the “social sciences,” the same phenomenon occurred. In both areas, the engineers took over—at least in popular esteem.

The reasons for this are both obvious and subtle, and it would require, I think, a complete separate essay to examine them satisfactorily. All that matters for purposes of this retrospection, is that two completely separate—and for a time increasingly separating—streams of intellectual endeavor proceeded, in dialectical fashion, from the origins of modern thought in the last half of the nineteenth century. The most obvious, and most comprehensible of these was for some time the essentially engineering-type application of bits and pieces of new conceptual discoveries by the best of the old-school mechanicians: the flood of electronic, aeronautic, and biochemical inventions; the sensational discoveries of the behaviorists and early cultural anthropologists; the economic determinists in politics and sociology; and the school of twentieth-century “realism” in fiction.

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I cannot define science fiction, but I can locate it, philosophically and historically:

There is a body of writing of whose general outlines the readers of *Extrapolation* are, by common consent, already aware: that is to say, the “classical antecedents” from Lucian and Plato through, approximately, Kepler and de Bergerac; the “borderline” (both of acceptability and between periods) instances of *Don Quixote* and *Robinson Crusoe*, terminating probably (in general acceptability) with *Gulliver’s Travels* and *Micromegas*; the “Gothic” vein which characterizes the first half, or two-thirds, of the nineteenth century, and continues as a major element well into the twentieth; the period generally considered as “modern,” beginning with Verne, and achieving general popularity in the last two decades of the nineteenth century; and the specific area of American specialty science fiction starting in the pulp adventure magazines of the 1910’s, and being consolidated by Hugo Gernsback as a discrete phenomenon in his specialty publications during the 1920’s.

Assuming this to represent some general area of agreement on what we mean when we talk about “science fiction,” I believe it is possible to distinguish within the broad area certain distinct and more reasonably definable forms:

1. “Teaching stories”: the dramatized essay or disguised treatise, in which the fiction form is utilized to present a new scientific idea, sometimes (as with the *Somnium*, or the works of “John Taine” and other pseudonymous scientists) because of social, political, religious, or academic pressures operating against a direct presentation; sometimes (as with the typical Gernsbackian story, and a fair proportion of late nineteenth-century work) as a means of “popularizing” scientific information or theories, or (hopefully) sugarcoating an educational pill. (This is what used to be called by literary snobs, “pseudoscience,” and should have been called “pseudofiction”—although in the hands of an expert it can become reasonably good fiction: Arthur C. Clarke

manages it occasionally, although his best work—*Childhood’s End*, for instance—is not of this type.)

2. “Preaching stories”: primarily allegories and satires—morality pieces, prophecies, visions, and warnings, more concerned with the conduct of human society than with its techniques. These are the true “pseudoscience” stories: they utilize science (or technology), or a plausible semblance of science (or technology), or at least the language and atmosphere, in just the same way that the scientific treatise in disguise utilizes fiction. And let me point out again (rather more enthusiastically than before) that some first-rate writing has emerged from this sort of forced marriage. (Perhaps the difference between the work of a marriage broker and a shotgun wedding?) Stapledon’s *Starmaker* falls into this group, as well as Ray Bradbury’s (specifically) science fiction and a large proportion of both Utopian and anti-Utopian novels up through the turn of the century.

3. Speculative fiction: stories whose objective is to explore, to discover, to learn, by means of projection, extrapolation, analogue, hypothesis-and-paper-experimentation, something about the nature of the universe, of man, of “reality.” Obviously, all fiction worth considering is “speculative” in the sense that it endeavors to reach, or to expose, some aspect of Truth. But it is equally true—and irrelevant—to say that all fiction is imaginative or all fiction is fantasy. I use the term “speculative fiction” here specifically to describe the mode which makes use of the traditional “scientific method” (observation, hypothesis, experimentation) to examine some postulated approximation of reality, by introducing a given set of changes—imaginary or inventive—into the common background of “known facts,” creating an environment in which the responses and perceptions of the characters will reveal something about the inventions, the characters, or both.

It is in this last area that the essence of science fiction resides; it covers a great deal of territory, shading at either end into the first two categories. Clearly, there is hybridization all through the groups—as for instance in satire (such as *The Child Buyer*, or *Player Piano*) whose main devil actually is some specific aspect of science or technology.

For purposes of this discussion, I am not considering the space adventure story, the transplanted western or historical, as science fiction at all.

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In his introduction to *Future Perfect*, H. Bruce Franklin points out: “There was no major nineteenth-century American writer of fiction, and indeed few in the second rank, who did not write some science fiction or at least one Utopian romance.”

I doubt that a statement quite so all-embracing could be made for all of Western literature, but if you take fiction, for the moment, to include *all* forms of story-telling (other than the documented reportorial), and allow science its broadest (and I think truest) meaning—the conscientious seeking after knowledge of the nature of the universe, the

nature of man, and the nature of “reality”—then I believe Franklin’s statement can be applied with few exceptions to the major story-tellers of Western civilization, at almost all times in almost all countries.

One of the exceptional times-and-countries was America of the first half of the 20th Century. (There is, frankly, some question in my mind as to whether this period can claim any “major” writers. But within its own framework, it had accepted “greats”—and almost to a man, they shunned anything resembling either science fiction or fantasy—except such fantasy as clearly existed only in the mind of a character.)

My contention is that “realistic” fiction, rather than speculative or science fiction, was the transient oddity—as grotesque a product of nineteenth-century super-rationalism and mechanistic philosophy as Watson babies and the Stakhanovite movement. For nearly a half century, American writers were somehow impelled to choose, not only one *field* of writing (poetry, essays, journalism, drama, fiction, biography), but—within fiction at least—one *area*. “Serious” fiction writers wrote realistic fiction (with Cabell as the exception). “Slick writers” wrote “realistic” stereotypes for the glossy magazines; “pulp writers,” for the pulps. (They at least had some variety of subject, if not style, open to them.) Offhand, I can think of four notable names other than Cabell who broke the rules: Philip Wylie, Conrad Aiken, William Saroyan, and Stephen Vincent Benet. (When Santayana published *The Last Puritan*, he added an epilogue explaining that it was really a work of philosophy more than a novel.) But the Name Novelists—with the notable exception of Sinclair Lewis in *It Can’t Happen Here*—stuck to realism exclusively; or if they didn’t, their realistic work was all we saw. (I used a science-fiction satire of Farrell’s in a recent anthology, and met astonishment everywhere; the truth is, Farrell wrote the story almost fifteen years ago, and *wasn’t able to sell it*: it wasn’t “Farrell”!) Men of scientific or academic or professional standing who suffered from a compulsion to write fiction did so under pen names. Eventually, even the pulp adventure magazines broke up into “categories”: detective, western, sea, sports, science fiction, fantasy.

This was the unique—indeed, baroque—situation, when the first magazines devoted exclusively to fantasy and science fiction were published here in the mid-twenties. It was a time for extremes and bizarre combinations. The richest country in the world was enjoying its richest years—in the cities—while mortgages foreclosed and the Big Depression gained its first beachhead on the farms. These were the years of prohibition and gangsterism, Bix Beiderbecke and Isadora Duncan; the Scopes Trial in Tennessee and psychoanalysis in New York; bottle babies and “back to normalcy.” Heisenberg published his theories on quantum matrices the year after Coolidge’s election, and announced his “uncertainty” principle the year before the Model A replaced the Model T. Alfred Korzybski’s first book had been published here in 1921; Ruth Benedict and Margaret Mead were working with Franz Boas in the new field of cultural anthropology; Eugene O’Neill’s *The Hairy Ape* and T. S. Eliot’s *The Wasteland* had appeared in 1922, as had *Ulysses*, and the big American novel that year was *Babbitt*. In 1926, the “new criticism” was gaining adherents here, but Dali and Surrealism were still almost unknown on this side of the ocean; Goddard tested

his first successful liquid fuel rocket; while Lindbergh prepared for his non-stop flight to Paris; Rudolph Valentino died, and the first sound film was made; Hemingway (in Paris) published *The Sun Also Rises*, and became an important writer overnight.

The War to End All War had ended a way of life in Europe; here, we were still clinging desperately to certainties where we could find them, flinging out wildly when we lost hold. If Darwin, Freud, and Einstein had made Our Trust in God less than certain, Edison, Ford, and Marconi had given us back something *solid*. We did our speculating on the stock market—not in our fiction.

“Scientifiction” in its beginnings was a pure extension of the most mechanistic realism: tomorrow’s machines today. The early Gernsback magazines were confined almost entirely to the Teaching school of science fiction, and were further confined almost exclusively to technology in particular rather than science in general. (The exceptions tended to be pseudonymous works by scholars and scientists who had no other outlet, in the rigid framework of the academic Establishment, for speculation outside the sharply defined range of their own specialties.) John Taine (Eric Temple Bell) affords perhaps the best, though not only, example.

The others, such as *Amazing*, seem, in retrospect, to have contained endless exposures of technical, technological, technophilic, and Technocratic ideas, set forth in ponderous prose, illustrated with cardboard figures spouting wooden dialogue—yet at the time, it was exciting stuff indeed. Perhaps it gave us only more hardware, and gave it dressed in olive drab—but it was *tomorrow’s* hardware, and it was knowledgeably projected. There was vast scope for the reader’s own imagination to operate, in the cities and spaceships and satellites and time machines of the World of Science (Technology) and Progress to Come.

And of course, “scientifiction” was not the only game in town. For those who craved madder music and gaudier lights, there was always *Weird Tales* (established in 1923), where amid warlocks and werewolves one could still find a good supply of mad scientists, mutant plants, Unidentified Alien Objects, mysterious islands, hollow planets, hypnotized beauties, shambling neo-frankensteins, lost civilizations, and all the rest of the gorgeous panoply of Gothic romance—perhaps a bit worn from a century’s heavy use by Hawthorne, Poe, Mary Shelley, Wilkie Collins, Stevenson, Doyle, Haggard, Wells, *et al.* At times this Gothicism hardly showed the shabby spots at all in the bright purple and muted mauve lighting effects preferred by Lovecraft and Clark Ashton Smith—and was perhaps no less powerful in its symbolism than when it was first used.

Weird ran heavily to the Preaching school—allegory and fable, not satire—with the idea content almost exclusively limited to the Battle between Good and Evil. Technological or scientific novelties introduced were usually fully exploited by the author; they left comparatively little to the reader’s imagination. *But* the rare story (and they were probably no less rare in the fantasy magazines than in science fiction) that did contain some genuine speculative content was much more likely to be equipped with movable-joint characters and appropriate imagery in the background—plus a considerably more colorful and complex

prose style. (When they were good they were really quite good, but when they were bad, they were Gothic awful.)

What I have described is of course an extreme differentiating characteristic, not so much of two specific magazines as of the prevailing atmospheres associated with “science-fiction” and “weird” as sub-categories of the magazine specialty field of science fiction: Gernsback and Lovecraft (who dominated *Weird Tales*, though he did not edit it) as they look forty years after.

Actually, the near-total polarization imputed here was effective, if at all, only at the starting-point. Science fiction and fantasy of all sorts were still appearing regularly in a number of “all-story” pulp magazines in the twenties, particularly what one might call (absurdly) the “prestige pulps” (*Golden Book*, *Argosy*, *Blue Book*). And by 1930, there were two more specialty magazines: Street & Smith’s *Astounding*, and Gernsback’s *Wonder* (first *Air Wonder* and *Science Wonder*; later, combined in the single title; later yet, *Thrilling Wonder*). In the decade following the first issue of *Amazing*, the admixture of story types, and overlap of authors—and readers—was considerable. Although *Weird* retained its own distinctive flavor, several of its authors (Carl Jacobi, Clark Ashton Smith, C. L. Moore, for instance) adopting their styles somewhat, began to appear in the other magazines; other writers from the general pulp field, like Leinster and Williamson, made themselves at home, particularly in *Astounding* under Tremaine’s editorship; and new writers, science fiction specialists from the beginning, established themselves (John W. Campbell, Jr., Harry Bates and Clifford D. Simak and, from England, John Beynon Harris—now John Wyndham—and Eric Frank Russell).

In the thirties, or more precisely in October 1929, it became abruptly apparent, even to the most dedicated believers in Progress as embodied in Free Enterprise and the Survival of the Fittest, that all was not necessarily for the best in this most solid of all possible worlds. Yet inside science fiction, there was no serious questioning of the virtue inherent in machines, or of the inevitability of the accelerated growth of the super-technological civilization. (However blind the first viewpoint may have been, the second was absolutely clear-sighted.) The net effect, was simply to soften the Technocratic tone, and make the evangelical aspect less obvious. The problem-story took over from the treatise: how to use the machine, how to apply the techniques.

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When John W. Campbell, Jr. took over the editorship of *Astounding* at the end of 1937, the field in general, and *Astounding* in particular, had acquired a solid nucleus of steady contributors of true speculative science fiction: and I do mean “nucleus.” The number of thinkers capable of new ideas is never large; the number of those with even those rudimentary insights into human behavior and the story-telling knack that constitute the bare minimum capability of a writer of fiction is much smaller. There has never been any likelihood of *much* genuine speculative science fiction at any time: less so in a low-paid and low-prestige isolated enclave of literature. The *astounding* thing is, not

that the quantity was small, but that there was any noticeable quantity at all. Much more astounding was the rapid growth of that nucleus during Campbell’s first five years of editorship.

The list of new names in *Astounding* and *Unknown* in 1938 and 1939 alone contains more than half the important bylines of the first book publishing boom of the early 50’s: Asimov, De Camp, del Rey, Gold, Heinlein, Hubbard, Jameson, Kuttner, Leiber, Sturgeon, van Vogt. (Boucher, Fredric Brown, Hal Clement, George O. Smith and James H. Schmitz came along in 1941-3.)

Thus the field gained strength; yet John Campbell has taken a good deal of criticism these past years, from fans, writers, and critics inside the field; recently he has been subject to what might better be called abuse, mostly from people too new to the field, or too uninformed (i.e., Amis’s churlish comments in *New Maps of Hell*), to comprehend Campbell’s role as writer and editor, in the decade 1935-1945—or how much of what has happened since derived from his impact at that time. If he has been a damaging influence on some writers in recent years, the evil he has done is still far outweighed by the good—and one cannot but suspect, particularly considering Campbell’s working habits—that those writers who have been trapped in the *Analog* Formula these last years (or intellectually raped by Campbell’s enthusiasms) solicited the economic haven of the trap, and offered up their thematic honor more eagerly than otherwise. Since 1948, it has been easy for any writer who cared to, to resist Campbell’s pressure; before that, *Astounding* dominated the market so completely that a case might be made against the man for literary despoliation at that time—if anyone cared to. Certainly it is true that Asimov, Sturgeon, Heinlein, Leiber, were revived by the emergence of new and more literarily demanding markets in the fifties. But it is hardly reasonable to condemn Campbell for not improving things *enough*; the fact is, when he took over *Astounding*, the time was ripe for the qualitative, and quantitative, explosion that occurred. But it is equally true that Campbell was the right man for the right time—and perhaps as true that his peculiar limitations were as useful as his considerable abilities.

After the 1965 Science Fiction Convention in London, the *London Sunday Times Magazine* published a thoughtful profile of Campbell, by Pat Williams, who suggested:

... Life to Campbell is a gigantic experiment in form, and earth the forcing-house—an impeccable vision, but one not warned (in his theories, that is) by a feeling for the pain or personal potential of the individuals in the experiment. That kind of gentleness in expression seemed to disappear with Don A. Stuart.

So that, ironically, as SF becomes increasingly respectable, John Campbell, its acknowledged father-figure, can’t really claim his throne. He provides the continuity, he shaped much of the thought, he made many reputations. SF narrowed from the vastness of space to the greater complexity of “sociological” SF with him presiding.

But now it is narrowing towards the highly-focused, upside-down detail of “inner space.” The tone is personal and subjective, the quality of expression important. . . . None of this is Campbell’s style.

I think Mrs. Williams was exceptionally perceptive in her interviewing, and intelligent in her assessment; if she missed a stage between Campbell and "inner space," it is understandable, because British science fiction has not gone through exactly the same development. It was never effectively cut off, as the specialty field was here, from the main streams of literature and scientific philosophy. In England, they had Priestley, Huxley, Collier, Stapledon, Lewis, Heard, Kersh, Russell, through the thirties and forties. Here, we had Campbell—and eventually, Anthony Boucher and H. L. Gold.

It may seem self-contradictory to say that Campbell is the "sociological science fiction" editor, and add that his great limitation is his essentially *engineering* frame of mind: but this is precisely the "useful" limitation I referred to earlier. In the deepest sense, Campbell was the linear and logical successor to Gernsback. He was as technology-minded and application-oriented as the rest of the field in the thirties, with this difference: that he had a broader concept of the scope of "science" (technology and engineering); he wanted to explore the effects of the new technological world on *people*. Cultural anthropology, social psychology, cybernetics, communications, sociology, education, psychometrics—all these, and a dozen intermediate points, were thrown open for examination.

There were two immediately noticeable effects: better stories and more and better speculative development. A third effect came inevitably on their heels: one I do not believe Campbell was looking for, and may not have noticed when it arrived—better writing.

The thinking improved not only because there were vast unworked areas to explore, but because these particular areas attracted writers of somewhat more flexible intellectual inclination—and most of all, because the editor *wanted* clear thinking; he was honestly (at the beginning) interested in learning about human behavior; he genuinely lacked (as yet) any preconceptions, or even strong opinions, about how the answers should look.

The stories improved because they were required to be about things that happened to people, rather than just to have people in them. (Nor could they be *inside* people—and as the "mainstream" has painfully learned, psychiatric introspections make little good fiction.)

The writing gradually improved because the essence of good writing is clear observation, and you cannot project human responses accurately without observing some humans closely first. It also improved, I think, through hybridization: "scientification" had been pro-machine; the Lovecraft school, generally, anti-machine. There had been some overlapping before, but now there was fluent admixture of those writers from both areas who were least satisfied with their own sub-genre patterns. Treatise Drab and Poe Purple studied each other with interest, and adapted toward a common center. The general result was not anything that could properly be called literary style; but it approximated a tolerable narrative prose—determinedly matter-of-fact, slangy, colloquial, with a fair balance of color and economy.

There was even the beginning of characterization. In Asimov's robot stories an individual grew out of a prototype: Dr. Susan Calvin became more complex and believable in each story. And of course the robots were individuals: in fact, characterization for aliens, elves, androids and others hit the field awhile before living breathing humans arrived.

Some of Leiber's too-true witches may have marked the transition. Del Rey began to generate character in his protagonists. Simak was perhaps the first to do so with any consistency (in the *City* series). Sturgeon, at that stage, was creating memorable puppets: his characters were cut from no stock on which other authors drew, but the Sturgeon whole-cloth was no more genuine—just brighter colored and better designed.

In those first few years of Campbell's domination of the field, the basic pattern was set for the next twenty years: the application of technological development to human problems; the application of human development to technology.

And, my God, how the stories rolled out! *Beyond This Horizon*, *Gather Darkness*, Asimov's robots, "Microcosmic God," "The Gnarly Man," "Elsewhen," "Helen O'Lo," "Mimsy Were the Borogroves," *Slan*, "Pride," "Smoke Ghost," the *City* stories, "First Contact," *Universe*, "Etaoin Shrdlu," "Nightfall," "Killozer!", "Opposites—React!", "No Woman Born," "Nerves," "Adam and no Eve" . . . One could go on and on, and the sad fact is that with all but a few, remembering them is better than rereading them.

It was in those bright days—in 1941, to be precise—that I discovered the science fiction magazines. Ten years later, I could still re-read every story I've mentioned here, and a good many more, with almost undiminished renewal of experience: *I know this*, because I had cause to reread them, critically, when I began editing "theme anthologies" in 1952 (reading for reprint, you do not allow rosy memories to haze over the actual words). And by that time, there was some impressive new work to compare it with—some of it by the same authors, some by the next flood of new names of the early fifties—generally so much better *written* as to place great strain on the acceptability of the earlier work.

The stories I have mentioned did stand up to—that—re-examination. I tried some of them again recently, and will probably not do so again. They were every bit as good as I remembered—but it was not the prose (however good it looked by comparison at the time) or the characters; it was the ideas that were vivid and memorable—and they remain so; re-reading adds nothing. (There is not much of what we now consider good characterization in *Beowulf*, either. Idea-fiction, like pure myth, seems to work as well with solidly constructed prototypes—and there is a difference between a player's mask and a cardboard cutout, between Everyman and no-one-at-all. But when did you last re-read *Beowulf*?)

By comparison with the new work of the early fifties, the best of the 1940-period stories survived; they still do—on their own terms. But their terms have no more to do with today's science fiction than—let us say, *The Red Badge of Courage* has to do with *Gone with the Wind*.

* * *

I said earlier that Campbell's specific limitation was his "engineering mind," and that I thought this had been useful to him and to s-f. I think it was useful—indeed essential—for the role he played in his first years as editor; I think it was almost as useful—to the field as a whole, though not to his own position in the field—in its second phase.

A few months ago, I participated in a late night radio talk-program, on which John Campbell and two professors of physics from local schools were co-panelists. To everyone's surprise (particularly the M.C.'s) we got into a hot-and-heavy discussion of objective-vs.-subjective reality. In the course of one exchange, I accused Campbell of confusing logic with hardware. He replied that there is no logic without hardware.

I do not believe Campbell would have said this twenty years ago. And I offer it here, not in definition of what I mean by "engineering mind," but of what happened to Campbell's attitude—and thus to American science fiction, which, in the late forties, he dominated almost entirely.

An engineer is a man who converts scientific reasoning into functioning technology. (If the word "technology" confuses anyone if applied to the social sciences, I offer my apologies—but I know no more appropriate term. I do *not* mean machines, and I do *not* mean "hardware"—artifacts. I mean useful constructs derived from scientific concepts, but not requiring scientific training or understanding to use. Geometry is part of our technology, and so is algebra—and so is symbolic logic, and so are the "tools" of psychometrics—and the generally less tangible tools of psychoanalysis. Learning theory is part of the body of scientific knowledge and inquiry; teachers' colleges offer education courses consisting of the *technology*, the techniques, and the catalog of matériel, which apply learning theory to the teaching process. It is irrelevant whether the theory is sound or the technology is well-designed; the definitions are the same.)

The way a good engineer works is first to absorb the theory applicable to his job; then to investigate the technology already available for the purpose; determine what is useful to him, and what he needs, to design specifically for the job; try out (as much as possible on paper or in his mind—perhaps in model form) as many ideas as possible to *find out what will work best to do the job*—what offers the best combination of economy, durability, adherence to specifications, ease of operation, etc.; and then construct a pilot model embodying the most of the best of what he has learned. His objective is not learning-for-learning's sake, but the accomplishment of a particular utilitarian goal.

There is today a field called "human engineering," and when the first School of Human Engineering is opened, John W. Campbell will be entitled to the deanship; I doubt that the full extent of his influence, once or twice removed (through his own writing and that of the authors he attracted to what amounted to a "movement" in those early years of *Astounding-and-Unknown*), will ever be fully tabulated. Campbell did not originate the ideas; he did not stimulate the emergence of the field; he was one of its earliest and most productive engineers.

And as it happens, the first phases of an engineering job are almost indistinguishable from scientific research; the only significant difference is that side-tracks are less likely to be followed for any length. There may be something interesting at the end of one or another of the by-lanes, but as soon as it becomes apparent that what lies that way does not concern this *particular* job, it is set aside, or referred to the man who is working on that aspect.

Because Campbell thought like an engineer, because there was a specific kind of information he was after, rather than knowledge-in-general, he was able to give shape and direction to the science fiction of the forties, and it was precisely the shape and direction it most needed. Because he was a *good* engineer, he kept his mind entirely open about the nature of the answers he would find, except that he wanted things that *would work in practice*.

Problem: Human nature is such that it has changed the natural environment of humans and is continuing to do so at an accelerating pace. How to adapt human nature to its new environment?

It was when Campbell began to think he had found the answers that the "Golden Age" of *Astounding* was over. (I think, in retrospect, that Dianetics was the line of demarcation. There have been several other Answers since then, but from (at least somewhere about) that time, he has been in the second phase of the engineering job.) He stopped asking questions and examining the available equipment, and started making designs and building models. *Astounding*, quite appropriately, eventually became *Analog*; but long before that, Campbell had lost his real impact on the field. He remains the honored Senior Editor; most of the "big name" s-f writers of today started by selling, or trying to sell, to Campbell. Most of the younger writers, in America at least, grew up on *Astounding* and *Unknown*, and on the reject-overflow into other magazines. Mrs. Williams's characterization of John Campbell as "father-figure" is, I think, exact and precise.

But there is beginning to be—there already is, in England—a body of writers at work who are conscious of no debt at all to Campbell—indeed, know him only as the didactic and "increasingly magisterial" (Mrs. Williams's phrase) figure of the past ten or fifteen years. It is these writers, on the whole, who are making the new science fiction of the sixties, and what they are doing will prove, I think, a more radical and more exciting—intellectually and artistically—departure than anything up till now.

What they "grew up on" was the specialty s-f of the fifties, and the increasing bulk of s-f writing from "outside" sources.

At the end of World War II, *Astounding* was the only monthly in the field; *Amazing*, *Fantastic*, *Weird*, and *Famous Fantastic Mysteries* were bi-monthlies; *Planet*, *Startling*, and *Thrilling Wonder Stories*, quarterlies—four magazines a month altogether.

Bit by bit, the paper—and author—shortage came to an end. By the summer of 1949, *Amazing* and *Fantastic* were monthly, *Startling* and *TWS* bi-monthly. There were three new titles: *Fantastic Novels* (bi-monthly), *Avon Fantasy Reader* (three issues a year), and Forrest J. Ackerman's "semi-pro" *Fantasy Book* (once or twice a year)—seven magazines a month.

Then the Boom began. It seems appropriate to date it from the first issue of *Fantasy and Science Fiction* (Fall, 1949, as *The Magazine of Fantasy*—bi-monthly from January, 1951, monthly in August, 1952). *Galaxy* started one year later, a monthly from the beginning.

Other Worlds came November, 1949, *Imagination*, October, 1950. *If*, *Infinity*, *Science Fiction Stories*, followed shortly. Through the first half of the decade, new titles kept

appearing, old-new ones dropping out. Publishing schedules fluctuated wildly on the second-string regulars; it worked out to between eight and ten magazines a month, on the average. (There were now four s-f magazines in England.)

But the American specialty magazines were no longer an index of the health or popularity of the field. Science fiction was appearing, infrequently, but regularly, in such places as *Collier's*, *The Saturday Evening Post*, *Esquire*, *Blue Book*, *Good Housekeeping*, *Elery Queen*. Above all, there were books.

Before 1948, there were six anthologies of science fiction in print, all published during the forties: Phil Stong's *Other Worlds*, Wollheim's *Pocket Book of Science Fiction* and *Viking Portable Novels of Science Fiction*, Julius Fast's paperback, *Out of This World*, the Healy-McComas *Adventures in Time and Space*, and Conklin's *The Best of Science-Fiction*. In 1948-49, there were six more, including the first of the Bleiler-Dikty *Best Science-Fiction Stories* annuals. There were at least another six in 1950. 1951 was when the Book Boom began. (22 anthologies alone, if memory serves.) The same thing was happening with novels and short story collections. By 1950 or 1951, Doubleday, Simon and Schuster, Pellegrini and Cudahy, as well as most of the paperback houses, were all firmly in the science fiction business, and there were half a dozen specialty houses.

Those were the surface manifestations of a transformation inside s-f which was, within a few years, to make the genre, in the special form in which it had existed for thirty years, moribund.

Preface to *Mirrorshades: The Cyberpunk Anthology*

Bruce Sterling

This book showcases writers who have come to prominence within this decade. Their allegiance to Eighties culture has marked them as a group as a new movement in science fiction.

This movement was quickly recognized and given many labels: Radical Hard SF, the Outlaw Technologists, the Eighties Wave, the Neuromantics, the Mirrorshades Group.

But of all the labels pasted on and peeled throughout the early Eighties, one has stuck: cyberpunk.

Scarcely any writer is happy about labels—especially one with the peculiar ring of “cyberpunk.” Literary tags carry an odd kind of double obnoxiousness: those with a label feel pigeonholed; those without feel neglected. And, somehow, group labels never quite fit the individual, giving rise to an abiding itchiness. It follows, then, that the “typical cyberpunk writer” does not exist; this person is only a Platonic fiction. For the rest of us, our label is an uneasy bed of Procrustes, where fiendish critics wait to lop and stretch us to fit.

Yet it's possible to make broad statements about cyberpunk and to establish its identifying traits. I'll be doing this too in a moment, for the temptation is far too strong to resist. Critics, myself included, persist in label-mongering, despite all warnings; we must, because it's a valid source of insight—as well as great fun.

Within this book, I hope to present a full overview of the cyberpunk movement, including its early rumblings and the current state of the art. Mirrorshades should give readers new to Movement writing a broad introduction to cyberpunk's tenets themes, and topics. To my mind, these are showcase stories: strong, characteristic examples of each writer's work to date. I've avoided stories widely anthologized elsewhere, so even hardened devotees should find new visions here.

Cyberpunk is a product of the Eighties milieu—in some sense, as I hope to show later, a definitive product. But its roots are deeply sunk in the sixty-year tradition of modern popular SF.