Motley

Jim Benford **number 4, for FAPA 307 April, 2014**

I decided that this year I should be very selective about what I commit to. That's after having spent last year on a wealth of projects, (including the rollout of *Starship Century*, then 2 separate *Starship Century* symposia in La Jolla and London, the several other *Starship Century* events in California, the interstellar Congress in Dallas, being guest editor of the METI issue of *JBIS*, and a few other papers that I wrote last year. (See my website, jamesbenford.com) After 2013, I felt a bit burned out from both professional and vacation activities began being very careful about what to commit to.

Since the last mailing, I've been getting caught all up on the things I left behind in previous years. Thus far I have made a lot of progress in getting my affairs together. I've sold off or given away 100 technical books, freeing up several yards of shelf space. There are over 2000 books in our house here; they really need thinning out. Nevertheless I still have about 30 books to be read. I plan to deal with most of them this year. I gathered together in an looseleaf binders all of my papers to date, 149 of them, so that I can eventually donate all my technical papers and my science fiction writing to the Eaton Collection at UCR. Speaking of which, see below…...

Then there's the makeover my garden this spring and summer, a fairly major project, and of course vacation travel. (Recall that last year we went to 15 countries and did altogether too much.) Traveling this year: I'm going to want technical conference in May, spend 2 weeks with our son's family in Maryland, then fly to Bermuda for a week. We have no further travel plans for the year! However, for next year, we've arranged a cruise departing from Auckland and circumnavigating New Zealand, then sailing to Melbourne where we will spend several weeks with our daughter's family. So only 2 international trips in the coming 12 months, which is a lot less than the 3 we did last year. Will be traveling 60 days of the year, compared to 102 last year!

I decided that my major effort this year is to produce a 3rd edition of my textbook, *High-Power Microwaves,* for my publisher Taylor and Francis. The 1st edition came out in '92 as a technical monograph. It was quite successful, sold a lot of copies in English. It was pirated by 2 separate Chinese groups who published unauthorized translations into the Chinese. We decided to do a 2nd edition with a very different approach. We changed it from a monograph into a true textbook, more tutorial approach and problems for the student. We retained the technical material, so that the 2nd edition was substantially longer, 531 pages versus the 1st edition of 412 pages. We turned it in 2006. It too sold well, became the standard for the field. There is a Chinese language edition that sole even more. I recently used the Google citation site to see what works of mine are cited in the scientific literature. The textbook is far the most ahead, almost 900 citations in the literature, larger than the next, a paper with about 100. Taylor and Francis approached us to revise and update it and to produce a 3rd edition, which would pump up sales again.

This seemed a good idea to us; but I took a longer view. Since this book has become standard in the field in the 22 years since the 1st edition came out, we decided to turn it into a ' Brand'. I will probably not be interested in doing a 4th edition 5 or 10 years from now, so we arranged to have a 3rd author, a professor we know well at University New Mexico, Edl Schamiloglu, move up to be

the new lead editor. In the course of this 3rd edition I'm going to train him how to interact with the publisher, maintain a coherent schedule for production of the book, and ensure uniformity across the whole volume. (My co-author in this has always been John Swegle, who works for the Department of Energy, lives in South Carolina, works at Savannah River. He and I are going to take a backseat on this 3rd edition, 3 chapters each, and Edl will handle 5 chapters. We set a deadline of finishing by next February and I think will probably make it. I know I will.

There is a new book out about Greg's science fiction. It's written by George Slusser, who is a professor of comparative literature and longtime curator of the Eaton Collection Of Science Fiction, Fantasy, and Horror Literature at UC Riverside. The book is a detailed analysis of his work since the 1960s, with special attention paid to the Galactic Center series. (Greg has recently published The Galactic Center Companion, *available only online, for example at Amazon.) The book has the appropriate title,* Gregory Benford, *and is from the University of Illinois Press. At the end of the book there's a brief interview with Greg that addresses, among other things, his impression of the book.*

But the book contains only three quarters of the interview. Greg sent all of it to me, hoping to get the rest published. Some of the things that were cut out are a bit controversial, so I decided to include it in Motley*.*

Interview with Gregory Benford
George Slusser

The following questions are a follow-up on what I see as a long and successful career as an SF writer, exploring certain implications of your work, things left unsaid concerning your ultimate definition of SF and your sense of what SF has become and where it seems to be going. I also what to ask a few questions about SF as a literature of ideas, and what you see as the most appropriate narrative form for developing these ideas. I want to explore your "world view," how you see yourself, as scientist and writer, in relation to the great rationalist philosophers of science: Descartes and Pascal. Finally, how you see yourself as an SF writer in the future.

GS: Greg, after a lifetime reading SF, I firmly believe it is a genre created by science (the scientific revolution of the 17th century forever changed the paradigms by which we conceive our relation to the material world), therefore is inexorably linked to the advancement of science. The definition I find most satisfying is that of Robert Forward, "science writes the fiction." You, as a scientist and writer, certainly straddle these terms. Could you tell me, if you adhere to this basic definition, the ways in which you see science "writing" the fiction?

GB: I often begin by imagining how a scientist will confront a new scientific result, discovery, or idea. I then use what I know from long observation to elicit how scientists think, which may be my central theme – even when writing of events distant in time and space, as in the Galactic Center Series. Long ago I realized that I had one great advantage in fiction, since few write about scientists, yet science is the driving force in modern times. Writing SF seemed natural because I knew its genre labyrinths and could serve my apprenticeship within it while I learned. If I had chosen to write conventional fiction I doubt I'd have been accepted; even now, scientists seldom appear in ordinary fiction.

I took Bob Forward's *science "writing" the fiction* definition of SF as a short truth, though of course the method has many nuances. I usually start by roughing out a scientific idea, then let my unconscious play with it to see where it leads.

I've always wanted to render how scientists think while in their most characteristic mode—facing the unknown, ie, doing research. Vast steps forward, like the invention of quantum mechanics a century ago, show us that physics at least has a unique method. To make truly breakout discoveries, you can use elements that seem far from the old positivist ideas. For example, the aesthetics of equations (Dirac), the building of simple models that capture some of the ideas but miss many (Bohr), *gedanken* experiments (Einstein), and pure imaginative leaps encased in mathematics (von Neumann, Hawking). The same can be true in other sciences, and depicting how this can happen seemed an exciting way to make SF explore avenues other literary forms don't even imagine doing.

GS: Let's turn the question around: can you see, in a work of fiction that adapts and extrapolates from scientific concepts, fiction itself acting to "write" the science? By this I mean the idea Zola first expressed in his "Experimental Novel," where he saw the writer taking a scientific idea and creating a fictional "experiment" where he tests in a controlled manner what Asimov calls the "impact" of scientific and technological advancement on human beings. Zola saw such a novel having an impact on science in turn, at least in the sense of determining the degree to which we "matter" in terms of the physical universe. Your thoughts?

GB: The SF genre does serve as thought experiments useful in anticipating the accelerations and swerves of our times. (Fantasy seems to come from an earlier way to see the world, through animism.) *Gedanken* experiments come from physics, after all. The SF that emerged from the scientific/technological culture opening out in the 19th century was a natural, intuitive outgrowth. Novels to be truly novel at all must be experiments.

That said, I think the central deep question SF can address is *What meaning does human action have, if any?* Existentialists root all meaning in what we decide matters, as though we just made up things to care about -- but that seems to me to ignore our biological origins. We're the only form of chimp that got out of Africa, so rooted deep in us is a desire to expand human horizons. I think that's a fine, great mission, for through us the universe finally gets to fathom itself. We manifest that well in SF. Such longings to comprehend our world come from natural selection, and so arise from the world itself. Doing this gives us meaning because that's how evolution shaped us. If this universe is an experiment, we're the ones pushing it forward, trying to comprehend it. The experiment wants us to understand it.

GS: The next question deals with the possibility of science outpacing fiction. I was just reading Joe Miller's essay on life on Mars, where he details various scientific possibilities of bacterial life forms that could exist under extreme Martian conditions. What he presents are descriptions of possible life forms that, if they exist, would seem to have no relevance to humans except as pure object of observation and study. You fictionalize this possibility of Martian life in *The Martian Race*. To do so however, you resort to the time-honored formula for fiction articulated by Gerald Prince: when the cat sits on its mat there is no story; when it sits on the dog's mat, there is drama, hence story. To tell your story of the Martian biomats and their implications for the big picture of Life in general, you

use the vehicle of a Heinlein-style space race, and encompass the moment of scientific discovery in a mystery thriller. This is clearly a fictional necessity. But do you see here a danger of science and fiction going in opposite ways? Is there the risk of today's readers finding the scientific description itself more interesting than the story vehicle? To avoid this hiatus, do you have any plans for reviving the Clarke model you used in Against Infinity, where near-future humans struggling with space colonization stumble upon the Aleph, a door into infinity?

GB: Being provisionally true until the next, deeper description comes along, science is intrinsically more interesting that the arts, since it can and must evolve. This is seldom shown in fiction, though it is in SF. People often need a human entry into the sometimes austere lands of science. If readers start going after books on science, all to the good—and surely that's good for SF, too. Alien life is different, though—its mere existence implies so much. How we react to such knowledge is the core emotional arc.

Against Infinity is my favorite novel because it comes from my own growing up—a coming of age story with Faulknerian overtones that resonate with me, a southerner. It rode on its own melting, as Frost said of his poems. So easy to write!--and I could resolve the emotional issues intuitively, almost without thinking. Science is sometimes like this, a struggle with hard problems and niggling detail that suddenly breaks through to a new understanding. The moment of realizing something true and sometimes even beautiful, being the first to see it, is a deep satisfaction. I often try to convey that in fiction as a way to fathom what drives scientists, and why they think rather differently.

I used there not the frontier metaphors, quite, but those of the wilderness. The frontier looms large in SF as a place to be confronted, pushed against, defeated, expanded. The South was definitely not a frontier. Instead, from early on it was a wilderness already enclosed by the still-expanding nation. As a boy growing up in rural southern Alabama, the South was a great piney reserve holding unfathomed mysteries and a sense of a stretching past. I saw much of twentieth century literature as a conversation between the Southern sense of the wilderness vs. the Nawth'n image of frontier. Such subconscious elements have a deep influence on all the arts, often without our realizing.

In *Against Infinity* I wrote about humanity recapitulating an old mode: going out from their settlements to hunt the Aleph, a thing out of prehistory, alien and unstoppable and still coming, despite all human efforts to either kill it or understand it -- clearly, it didn't matter which.

They do indeed knock it down some and think it['s done. But the Aleph cannot be killed forever. It returns in the last pages of the novel, whose last phrase is "...and he knew he would remember." That's what makes it a Southern novel, amid all the high tech trimmings.

GS: But have we reached a point in scientific speculation where the world views implied by scientific theory are essentially "unnarratable"? Narrative describes a Newtonian world, can it present a quantum world? There are attempts to narrate quantum worlds, in works like Greg Egan's Quarantine. The telling however ultimately relies on conventional literary devices—here a God-plot and a cyberpunk private eye—which contradict the premises of the 'universe' being presented. You are on the cutting edge of science. Do you have any new strategies for telling these brave new worlds? Or do you think we have reached the limits of SF here?

GB: Certainly arcane fields like string theory and cosmology are hard to bring down to the human scale. So is mathematics; consider how Borges for example managed to use such concepts in his mannered, petite poems to cool reason.

My strategy often begins with a scientist meeting a problem, following a linear plot structure that opens up at the climax. A recent example story is "Bow Shock," which I had floating in my imagination for a decade. Another tack is to start in a strange situation and let the reader infer what's happening. This is risky, because I sometimes use extreme cases—such work is for the hard SF fan, mostly, just as the locked room problems were for mystery fans.

There is nothing especially hard about the quantum world if you see it as a mathematical theory and learn new intuitions from that. It's the substrate of our gross world of particles and waves. Using that particle-wave duality to describe quantum mechanics is just an analogy we can grasp; the actual quantum world is not remotely like ours, after all. A very stfnal experience, in all. I often sense a thinness in contemporary fiction about the way the world operates, making the conventional world primary when it's not. That's just a lazy habit. The universe science reveals to us is comically unrelated to what our primitive senses report, after all.

I feel that science and its Baconian link to technology is the quiet driver of most modern history, and we should realize that if we're to master our own times. SF speaks to and for the community behind that powerful driver. Most fiction evades the real power afoot in our times. I don't dislike conventional literature; I'm merely not a fan of naïveté.

GS: On to the question of anthropocentrism in SF. If science can describe life forms that are chemically different from ours, and places where we are not, is SF capable of crossing the anthropocentric barrier? We understand transcendence but appear unable to describe a transhuman condition. Clarke's Overmind comes from us but cannot communicate with us. Rosny's Last Man passes the last particles of carbon life to an iron-based form in its earliest stages of evolution which will assimilate all human accomplishments as culminating species, but as nothing more than a chemical reaction. These SF works are rare in their candor. And SF is the point literature in addressing this question. But if it has great difficulty with the N=1 question, can it deal with the transhuman question at all? Do you have any fictional ideas for negotiating Bernal's "dimorphic split"?

GB: I draw a parallel to quantum mechanics. Led by aesthetics, early TwenCen physicists groped their way to an understanding of the quantum world that no one could have fashioned without the guide of science's great dance—the waltz between theory and constraining experiment. That's how we may reach larger perspectives in fiction—trying in fiction to convey perceptions at the limits of our comprehension. Try out new ideas, see what it's like to walk around inside them.

That's why the last decade I've worked on geoengineering our planet to deal with the coming climate chaos. In its largest sense, geoengineering is not just an attempt to cool the planet's atmosphere or to make our agitated climate better for us. We're trying to extend the lifespan of the Holocene, our current geologic epoch (which began about 12,000 years ago)—so that humans and other creatures might last longer and better. That's how we grow as a species—facing the implications of our own deeds, learning to finally become stewards of the Earth, as Genesis

commanded us to.

Of course, some scientists call the current period since about 1800 the Anthropocene—the era of global, human-induced changes to the atmosphere and biosphere. If that's the case, then geoengineering is the ironic pursuit of vast technological means to return us to the Holocene. It's a form of technological nostalgia, too.

SF thinks about such grand scales--humanity as a species, not just a bunch of interest groups, cultures, faiths. Surely this is a grander prospect than class, race, sex and death as riddles for the thinking animal. In a century or two technology will have had more to say on these issues than our literature. Further, any writer's opinion on what everyone thinks are the big issues of our time is inevitably coarser than the texture of the writer's conjuring up of life as it comes at him or her. Writers often say more than they mean, thank God. To me, imagining the alien is "Effing the Ineffible," to quote the title of an Eaton paper I gave. You always fall short, but notable successes like Lem's Solaris, which also has deft satire of science at its core (a whole chapter of reading in the library!), show that it can be done.

GS: A related question has to do with where SF seems to be going today. We may agree that scientific extrapolation from the "big" transformative idea, is the essence of the genre. But much recent literature calling itself "SF" has simply abandoned science altogether. It seems instead that anthropocentrism is back with a vengeance. SF has become a label under which to explore identity politics, race and gender issues, all from a decidedly unscientific perspective. The result is that, flying under the SF banner, we have a mishmash of concerns that have little or no relevance to science. What does this bode for the future of SF? Genres have thematic as well as formal limits. Do you think that, in terms of issues, SF as genre is dying?

GB: Not dying, but changing. I like that some writers are increasingly concerned with making books that are not sloppy, that can be reread. But young writers are fools to follow a trend or theory. Sure you can illuminate identity politics, race and gender through the lens of SF, often by indirection; even *Star Trek* did that. SF is a big tent. I doubt most readers go for it as a mask over current social comment, though.

GS: Now let's give this change a positive spin. Some see the above as a "new SF," SF for a global age. They also see this tendency opening up a new, globalized, field of forms. For example, Carl Freedman's describes the work of China Mieville as "weird fiction," a blend of SF, surrealism, fantasy, magic realism, horror, and much more. Even more multicultural, Nalo Hopkinson, in her website, stretches the already vague "SF" label by calling it "subversive fiction." SF has become an open tent, and these writers want to be under it. How do you see this development? Can you live comfortably with it as a necessary transformation of the genre?

GB: There's nothing more subversive in modern times than the piston of science and technology. It transcends cultures and current fashions, liberating us from prior assumptions as it goes. Blending in new approaches is exactly what I wanted to do in the 1970s, and I'm happy to see others try. I never was a joiner of movements and dislike reading political ideas from fiction as though stories were operating manuals for life. I find "weird fiction" less attractive as a reader because I miss a sense of constraint in a story. If anything can happen, nothing's really going on.

GS: To change direction, let's talk about narrative form in SF. Reading your works, notably the novels, I find a common thread in space adventure. I argue that you have brought "space opera" into the realm of space epic. It strikes me that, of all the narrative forms of SF, space adventure may be central to the genre, for it offers the possibility of a powerful mix of advanced science, adventure, "sense of wonder," religion and, yes, even anthropocentrism—the inevitable homecoming. Could I have your thoughts on the potentialities of this form? Why should we be reading such fiction today, rather than just another dull "realist" novel?

GB: Plato noted in *The Republic* that bad characters are volatile and interesting, whereas good characters are dull and always the same. Definitely a literary problem for realism!

I like space adventure blending into epic, and without setting off to do so, wrote the 6 volume Galactic Center sequence because ideas kept coming forth. Space was the central image of the 20th Century, and I suspect its true emergence is coming only now, with commercial firms readying hotels in orbit. The long range future of humanity will be bleak without the resource reservoir of the solar system to tap. That's a fundamental truth, and SF was the first to see it; most don't even see it now. There are no truly strange places left on this world, and for a roving, over-the-horizon species, that's a troubling problem. But imagination can solve it.

GS: Let's turn to another form that SF does well—the short story. I have often felt that stories provide the other pole for SF, insofar as they develop, as in a laboratory, the ideas that give rise to longer novels. I especially like your stories, as they do two things: they locate the reader in the here-and-now of "doing science," while at the same time they open windows on mysteries of the cosmos, which become—given the difference in time scales—private experiences. Your stories also provide a solid template for "novelization"—for instance "Exposures" becomes Cosm. I would like your thoughts on the role of the short story, both in the development of SF in general, and in your own writing experience. Do you feel that these stories offer you a "lyrical" dimension, as opposed to the space epic?

GB: I doubt I ever thought that "Exposures" becomes Cosm. Maybe so. Cosm I wrote as a satire of academic/scientific life, and even attempted a black woman as the central figure. I got a lot of sour flak about even trying to do that. I actually modeled the woman after several people I knew.

Of course short stories in their compression and focus can have great power. They're fine for trying out ideas. I was amazed to find in one of my first fanzines, written at age 14, a 2 page story which clearly prefigures the concerns of Timescape! Plainly my unconscious has been mulling on these questions of time for a long while. I thought my interest came from a paper I wrote on tachyons while a Postdoc at Livermore, published in Physical Review and one of my most referenced papers. (Edward Teller contributed, too, but didn't want his name on the paper since people would assume he did all the work.)

So short stories are like experiments; novels resemble military campaigns, especially in the long hard marches in the middle. You can indeed wax lyrical in them at small cost; it becomes an "atmospheric" story.

I especially like short stories because I often wrote them in one sitting. Once I deliberately wrote a story in one hour just to see if I could. They resemble surfing, which I still do—forcing you to be in the moment.

GS: Now to your "world view." You have written essays such as "Pascal's Terror." In Deep Time, you reflect on ways in which short-lived humans might leave their "mark" on the vast expanses of time. In a story like "Mozart on Morphene" you openly meditate on the possible role of human reason in the face of infinity. All of this sounds very Pascalian: man as thinking reed, weak yet unique because it alone thinks. Your reflections on mankind's role in the universe occur in the context of science far "advanced" beyond Pascal. But do you think we have gone beyond Pascal's "human condition" today? Or will it forever be our enigma and limit?

GB: I suspect definitions of the human condition that focus on our limitations, since we keep transcending them. I also suspect genetics will make possible this century directed evolution of a nonhuman hominid, an epic moment. (I founded some genetic companies devoted to longevity, mostly because it's now possible to deliver results.) But I can see coming potentials that will test our definitions of ourselves through direct technological methods.
Still, our species has limits, though we know only vaguely what they are. My conservative side says, learn from these limits. My liberal, SF side says, transcend them. We amplify our abilities artificially, from eyeglasses to implants (my left shoulder is artificial) to the coming possibilities of mind/machine interfaces. It's hard to see how our exploding frontiers of the mind will ever fade; we're far too early in this game.

Our reason and talents come out of evolution, so perhaps we have enough to comprehend big issues like the origin, nature and destiny of our universe. Our incredible mathematical abilities are a generalization of abilities we developed for living as hunter-gatherers. On the face of it, that's amazing in itself.

GS: As you know, post-war French SF has moved in a dramatically different direction from American SF. Instead of exploring outer space, writers like Michel Jeury have turned their explorations to the mindspace, to problems of "subjective reality." There is here a clear resistance to neuroscience's attempt to fully map the functions of the brain, chasing out all residue of the Cartesian "ghost" as last vestige of the human self in the neutral world of neurons. This may seem reactionary, yet neuroscience today, experimenting with such things as telekinesis, is discovering there may be more to the problem of mind than physics. Do you see, after the vast cosmos, and the probabilistic "worlds" of quantum theory, neuroscience becoming a fertile area for SF extrapolation? Do you see a path here leading back to the metaphysics of the "self"?

GB: Of course neuroscience has plentiful SF implications. The self is a useful construct to order our interior models of the world and ourselves. It may be an illusion, but it's a useful one. But as Greg Egan and others show, there are many ways of doing that, and coming technologies will teach us more about ourselves than philosophy. Radio astronomy told us more in the TwenCen than thousands of years of philosophy, too.

GS: One notices throughout your career a continuous interest in the question of human longevity and scientific solutions to this question—geriatric medicine, cyronics. The question is basically an existential one—the preservation of our unique selves, mind and body. It has become a social, and now political issue—from the cyborgs of cyberpunk to recent EU treatises on the political issues of

"human enhancement." Please give me your most current thoughts on this question, which is one of mythic proportions.

GB: SF strives against limitations, and death is the big one. I founded Methuselah Flies LLC and Genescient to use genetics based on long-lived flies, all to ferret out human longevity genes. It's working so far, we have products that work, derived from genomics--and this is just the beginning of applying the genomic revolution to the real world.

Moral suasion has done little to improve human nature, though education is the best way to do it. You learn as you age, after all. Longer lived people make better, longer use of their education, particularly the hard-won fruit of experience--and bring wisdom to the table, then. Educating women improves society generally, for example, so Muslim societies see it as too radical an idea. Extending human mean lifespans has done wonders; the longest lived nations are the most advanced, liberal and educated. We don't much notice the steadily expanding lifespans and healthspans around us, as they're gradual. We've seen a 50% increase in mean lifespan per century for two centuries now. If we continue that, in 2100 the average person will live to 100. People might work productively into their 80s. This means a longer healthspan, too, because genomic processes can upregulate genes that carry out repairs.

Beyond that, cryonics is the ultimate act of faith in the future. The odds are low but the rewards immense. It's a gamble that will probably fail, but it does allow people to die with hope. Yet so far every major SF writer who wrote about cryonics—Simak, Pohl, Heinlein, Asimov—has turned down a free freeze. Hard to explain.

GS: Given today's critical and publishing climate, dominated by what I see as ideological issues, what direction do you see your writing career taking? Will it be more commentary on public science policy (the Benford-Rose blog)? Could you see yourself experimenting with the sort of encyclopedic alternate history novels being produced by a Neil Stephenson? Do you want to go back to the space epic, or turn to the short story? Please share your thoughts with us.

GB: My larger aims are already accomplished. I've written novels about how scientists live, love and work (*Timescape, Artifact, Cosm, Eater, Chiller*) and a space epic (Galactic Center), various fun novels, over 200 short stories, 3 nonfiction books… I have no desire to write mammoth books; my longest, CHILLER, under a pseudonym (Sterling Blake), was a mere 200,000 words.

I think we are rushing toward terrible times, with all pressures rising: climate chaos, resource depletion, overpopulation, the rats-in-a-cage frenzy of maddened crowds. So maybe pointing out ways we can best solve these problems by looking large is the best use of my time. I'd urge geoengineering, which is inevitable, use of space resources, a hard push for education in oppressed societies, and bringing down the remaining tyrannies.

To do that in fiction demands SF—plainly mainstream realist fiction doesn't grasp the problems, much less solutions. Proust, Joyce, Faulkner all saw novels mostly as arenas of technical and formal innovation. So they spoke of Paris, Dublin, Yoknapatawpha--cultures they knew. I could just write novels about scientists; plenty of room for improvement there. Science was the biggest influence in my life. But I side with Wells in his debate with Henry James. Our situation will get

desperate, and fiction writers can help by thinking through future societies. Stan Robinson has made this his life's work.

Mostly, though, as I turn 70 and look forward, I want to have fun doing whatever I choose. Writing allows a craftsman's intimate satisfactions. I've always written because I liked to, and if people read me, even better.

GS: Greg, Now that the book is finished and you have read the manuscript, do you have any comments to make, or anything that you would like to add? Do you feel that, taking into consideration space restrictions in this monograph, the choice of works to be discussed are central to your opus? The author should always have the last word!

GB: I found it surprisingly slow reading. Immersing in books and stories written decades ago draws one back against the currents of inexorable time. Revisiting those works returned me to ideas and emotions felt long before and very nearly forgotten. I also saw patterns I did not consciously construct but clearly are there, welling up from my unconscious. I found myself *living through* the process of creating them, a dense process I had not engaged ever before.

The centrality of the Galactic Center series in my work became manifest here, and its themes and leitmotifs surfaced again for me. Because I wrote the series over a quarter of a century, I deliberately did not reread the prior novels, for reasons I knew intuitively but cannot state even now. (When adding a new last chapter to Across the Sea of Suns for its reissue by Bantam, my editor Lou Aronica remarked on how I had kept the flavor of the rest of the novel, and obviously had carefully unified it with the rest of the novel…but tellingly, this remark startled me, for it had not even occurred to me to reread any of the book. That happened with each later volume.)

Your treatment of a few short stories was insightful. Some surprised me: is *Eater* (1999) clearly an expansion, on a massive scale, of the story "Exposures."" Yes, but I didn't know that until you said so. "Of Space/Time and the River" and "Mozart on Morphine" both came directly from my scientific life and began as notes written to get my experiences down before they faded, with no prospect of being fiction. Only later, awakening from dreams which used this material, did I see that I had somehow warped them into fiction. The stories were a breeze to write; all the hard work was done while asleep!

I liked your connections to philosophy, especially French thought, Descartes etc. (I've read a lot of philosophy, especially the Germans—though I'm not really a metaphysics type—and like Heidegger, whose ideas about *bestanden* etc. influenced me. As well, Heidegger's saying, "Man acts as though he were the shaper and master of language, while in fact language remains the master of man." Heidegger's student Herbert Marcuse I knew at UCSD, often sitting beside him and Angela Davis at lunch, as they spoke reverentially of Stalin (!) and deplored Tronsky. (Indeed, Davis later won the Lenin Prize and held a chair at UCSC. It took a while for me to disconnect these plainly stupid and evil ideas from the actual Heideggerian philosophy beneath.)

A writer is never an expert on his own work. I'm certainly not. Generally I found your insightful readings quite on target, and have now a different sense of my own work. I do not know what others will make of my writing, which has always been an embracing sidelight in my life, and I appreciate this attempt to see it whole.