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Bruce Sterling's *Ascendancies: the Best of Bruce Sterling* is a collection of 24 science fiction stories. It is one of the great single-author collections of science fiction.

Why does that matter? It matters because the software engineer often has a freedom that the typical engineer – let us say the civil engineer or the chemical engineer – seldom, or almost never, obtains. How so? A civil engineer may have great freedom in design, and may need great imagination; however, a civil, or chemical (or even an electrical) engineer, seldom decides *what* to create. *How* to create, yes; *what*, no.

Because software engineering requires less capital, less infrastructure, less social and institutional (and often, even political) support than any other kind of engineering, it offers a greater freedom: many software engineers build things simply because they want to build them. The world of GitHub is full of potent, complex code produced, in many cases not as an obligation for work, or an assignment for school, not for hire, not for civic duty, but simply as a the product of some software engineer's private obsession. There are too few civil engineers who simply build a bridge for fun, or indulge in an aqueduct for the evening, to matter; there are too few chemical engineers who have a basement workshop with a working distillation column for such people to be a real factor in our world; and yet, there are too many software engineers who do the equivalent things for us to easily count them. In one world, the hobbyist is non-existent and irrelevant; in the other world, the hobbyist is ubiquitous and a topic of endless discussion and even academic study (imagine a conference paper on the demographics of hobbyist contributors to civil infrastructure).

Where there is more freedom, there is an attendant need for even greater imagination, and it is imagination that the best science fiction offers the software engineer. All engineers help build the future, but software engineers perhaps have more ability to decide the future. To make wise, or at least interesting, decisions it helps to have a vision. This is where great science fiction comes in, to bring us back to the beginning of this column.

Bruce Sterling was, from approximately 1980 to 2005, one of the most inventive, influential, and exciting writers in the science fiction genre. He is still writing, but most of his key work is from this timeframe. To "computer people" he is likely best known as, with William Gibson, one of the founding fathers of cyberpunk. With Lewis Shiner, Sterling wrote the "sci-fi samizdat" *Cheap Truth* (http://www.joelbenford.plus.com/sterling/ct/ct.htm), a provoking and hilarious assault on the pieties of "humanist" science fiction that cyberpunk sought to dethrone (the punk was always more important than the cyber, in cyberpunk). One of the keys to understanding Sterling's work is to understand that he's *funny*, while most pop-culture "cyberpunk" is dreadfully earnest: Sterling in person is slightly crazed, like a good stand-up comic, and he cares enough about P. G. Wodehouse to have titled an enjoyable but failed humorous novel *Heavy Weather*. Gibson and Sterling are also known to computer scientists for an alternative history novel, teh proto-steampunk *The Difference Engine*, in which Babbage's machine becomes a reality; I don't

much care for it, but your tastes may not be mine.

Sterling probably *should* be known to computer scientist for *The Hacker Crackdown*, an early look at the culture, legal aspects, and technical details of cyber-crime, hacking, and telecom mischief, and for the Dead Media Project, an effort (starting in 1995) to catalogue "media that have died on the barbed wire of technological advance, media that didn't make it, martyred media, dead media…" famously preceded by Sterling's claim that "I'll personally offer a CRISP FIFTY-DOLLAR BILL for the first guy, gal, or combination thereof to write and publish THE DEAD MEDIA HANDBOOK." *The Dead Media Handbook* never came about (presumably Sterling still has his fifty bucks), but there is a gigantic and desultory, but very interesting, *Dead Media Notebook*, free for download. I have a special place in my heart for this doomed project, because I, as a naive but eager undergraduate student, sent Sterling (or the mailing list, I forget which) a promise to write up a grand history of dead programming languages, which are one kind of epitome of dead media. I never got around to it, and the *Dead Media Notebook* contains only a little list of languages and a suggestion to read Wexelblat's *History of Programming Languages* (and this little bit is from Dan Rabin, not Alex Groce). If you don't see why the Dead Media Project is of particular possible interest to software engineers (hint: bit-rot), I wash my hands of you; read no further.

Now that we've gotten rid of the riff-raff, let's continue. Sterling wrote a number of well-liked novels, including the superlative early space opera *Schismatrix*, the humane and profound *Holy Fire*, and the more "computer-y" *Islands in the Net*. These, especially the first two, are well worth reading. However, his greatest impact came with a series of pyrotechnic, extremely diverse, and compulsively readable short stories. *Ascendancies* contains most of the best of these, and therefore is a tankful of high octane fuel for the software engineer who wants to invent a new future.

The stories are broken into five sections. First is a set of stories set in the same milieu as Sterling's *Schismatrix*, the Shaper/Mechanist future. These are (far-)future space opera, set in a Cold War-ish setting where mechanists (builders of software and machines: our people?) vie with shapers (bio-engineers) for power. Rather than the somewhat simple-minded dichotomy that description suggests, these are rich, detailed, complex and dizzying stories, sometimes funny and sometimes tragic, of a realized future. They take inspiration from Olaf Stapledon's proto-SF tales of the far future, but mix that grandness of vision with actually compelling narrative.

As good as the shaper/mechanist stories are, the next section "Early Science Fiction and Fantasy" is probably the best of Sterling. "Green Days in Brunei," "The Compassionate, the Digital," and "Our Neural Chernobyl" in particular are the most relevant for software engineers (I won't spoil any of them by explaining how), but the other five stories are equally inventive, startling, well-written, and head-exploding. These stories are all very different, both from each other and from most other science fiction or fantasy written before or since (though "Our Neural Chernobyl" is arguably something Stanislaw Lem might have written if he were American

(Texan, even) rather than Polish).

The third section, the Leggy Starlitz stories, contains the least interesting Sterling output, in my opinion, but is still good fun and full of future-shock of the best sort. Arguably, these stories are highly relevant to our current zeitgeist, where murky geo-politics meets smooth, and crude, business operators and con-artistry (though, perhaps, every zeitgeist looks like that, under the hood).

Part four has another realized future, one that software engineers will find compelling and surprising, with a do-it-yourself focus that makes GitHub or "maker" culture look positively Victorian. And, finally, the last section contains Sterling's final output before this collection's publication date of 2007. Again, while not as good as his best early work, these stories show how the coming of the future that is our today changed Sterling's created futures, and offer rich material for the software engineer interested in extrapolating our non-determinism into the branching-time structure of what is yet to come.