The legendary computer scientist Alan Kay once criticized *SimCity* as “pernicious . . . a black box” that “children can’t look at, question, or change.” The problem for Kay is that the game makes assumptions about the world—say, what causes crime—and obscures them within a closed container of compiled code. A commonly used concept in science and technology studies, a black box is a system we understand, as Langdon Winner puts it, “solely in terms of its inputs and outputs” (365). Its inner workings remain arcane and unknowable, what Apple might call “automagical.” A great deal of work in the digital humanities and related fields such as media archaeology and platform studies has concentrated on opening computational black boxes, exposing previously hidden logic, transactions, and histories. Tara McPherson’s excavation of race in the history of Unix, Lisa Nakamura’s recovery of the labor of Navajo women in semiconductor factories, and my own dive into the algorithms of crime in *SimCity* come to mind (Sample, “Criminal Code”).

There is a different kind of black box, of course, a real one: the flight recorder aboard every commercial aircraft that tracks the plane’s location, altitude, velocity, and other flight data. These black boxes are visceral reminders of what Paul Virilio calls the “integral accident” (32). Every new technology makes possible a new kind of accident, he explains. The invention of planes, for example, made plane crashes possible. The “integral accident” describes a failure so devastating—the plane crash—that designers build the technology, the plane, with its eventual catastrophic failure in mind. The future accident is integral to the technology itself. As Paul Benzon observes in a media archaeological history of flight recorders, a flight recorder’s “singular purpose is to record and retain information when all else around it is damaged or destroyed.” Benzon expands on this paradox between presence and absence, between legibility and inaccessibility, noting that “the black box and its informational content only ‘appear’ in the case of dysfunction and destruction.” We only remember the black box on a plane after a plane crash. We avoid thinking
about it up until we cannot. And then it becomes something like a bloody fingerprint at the scene of a crime, mere evidence to reconstruct past events.

What can the (actually, orange) black box of the flight recorder tell us about the (metaphorical) black box of complex technological systems, whether *SimCity* or Unix? And what does it matter to the digital humanities, where we tend to approach the black boxes of technology with what Matthew Kirschenbaum calls a “forensic imagination”—recovering the past through artifacts and inscriptions often too microscopic or encoded to be seen or deciphered with the unaided eye (251)? The black boxes of our studies are the aftermath of history.

But what if we took black boxes not as the endpoint of history, but as an inception point? What if the digital humanities understood black boxes—both literal and metaphorical black boxes—as a site for future-looking inquiries instead of a way to reconstruct the past? This reversal is an implicit challenge of Steven Jackson’s remarkable essay, “Rethinking Repair.” In a meditation on what he calls “broken world thinking,” Jackson asks what happens when we take “erosion, breakdown, and decay, rather than novelty, growth, and progress, as our starting points in thinking through the nature, use, and effects of information technology and new media” (221). Evoking examples as varied as the Bangladeshi shipbreaking industry and Apple’s MacBook Pro, Jackson calls on us to prioritize care, repair, and maintenance ahead of innovation and design. Broken world thinking shifts us from the question, “How did they make that?” to the more subtle question, “How do they keep it running?” Extending this broken world thinking to the realm of the digital humanities forces us to reckon with black boxes before they become the wreckage of the past.

Digital humanities as a community is already heeding Jackson’s call. Describing herself as a “caretaker of systems” (2), Bethany Nowviskie powerfully demonstrates in her “Digital Humanities in the Anthropocene” what is at stake on an existential level for the humanities—not to mention, humanity—with regard to care and empathy. More recently Lisa Marie Rhody poignantly critiques one strand of digital humanities that playfully privileges breaking, which she finds at odds with her own experience making “sure that nothing breaks” with public DH projects. To allow projects such as Zotero to break would violate the public’s trust, a tragedy no less devastating than a brick-and-mortar library shutting its doors.

But I wonder whether there is some middle space between maintenance and breaking where the ethics of care can coexist with what I have described as the deformative humanities (“Notes”). This is what I mean by suggesting that black boxes can engender future-looking inquiries in addition to reconstructions of the past or revelations about the present. Imagine a twist on Jackson’s broken world thinking. Call it speculative care. Like the plane designed with its eventual crash in mind, speculative care builds new digital work from the ground up, assuming that it will eventually fail. Technology will change. Funding will stop. User needs evolve.
It is ideal for DH projects to launch with sustainability strategies already in place; speculative care demands that there also be obsolescence strategies in place. Speculative care goes beyond what Bethany Nowviskie and Dot Porter call the “graceful degradation” of DH projects. Whereas graceful degradation focuses primarily on weathering the vagaries of personnel or funding — changes external to the work itself — speculative care embeds broken world thinking into the digital tool or project itself. In other words, what integral accident can we design into our work? Like Nick Shay in Don DeLillo’s *Underworld*, a novel obsessed with hidden systems, who “saw products as garbage even when they sat gleaming on store shelves, yet unbought” (121), speculative care expects digital work to eventually break and imagines what breakdown will look like, what functions it can serve, and how digital scholarship and digital creativity can still be useful when broken. “We didn’t say, What kind of casserole will that make,“ Nick recalls in *Underworld*. “We said, What kind of garbage will that make?” (121). *What kind of garbage will our digital work become?* That is the question of speculative care. Speculative care in this way joins Kari Kraus’s typology of subjunctive practices: conjectural methods that let us explore and infer the unknown.

In this conjectural context, black boxes serve not merely as grist for our forensic imaginations, set on with clinical precision. Rather, they provide sustenance for a different kind of imagination — the compassionate imagination that seeks to understand and care for the future, *now*, before it is broken, busted, wrecked, or beyond repair. Designing a digital world with its integral accident in mind is the task that lies ahead for the digital humanities.

**BIBLIOGRAPHY**


