BOOK REVIEW

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Latour, Bruno. Aramis, or the Love of Technology. Translated by Catherine Porter. xiv + 314 pp., illus., figs., glossary. Cambridge, Mass./London: Harvard University Press, 1996. $45 (cloth); $19.95 (paper).

To understand Aramis, American readers first need to understand some things about France, Parisians, and trains.

Since the 1950s, France has invested enormous sums in key infrastructural technologies such as nuclear power, the Concorde, the Minitel — and guideway public transit. The strategy in each case has been to leapfrog existing technology, defining a new, world-class, but specifically French state of the art. The French are justly proud of their extraordinary rail network, with its 300 km/hr TGV bullet train. The Paris Métropolitain — the rail system's crown jewel — is probably the best urban subway in the world. State-supported high-tech projects like these not only serve pragmatic functions but also, as Gabrielle Hecht has shown, constitute unique assertions of French national identity.

Despite its relative excellence, the Metro leaves a lot to be desired. The easily aggravated Parisians like to groan and waggle their wrists over rush-hour crushes and crosstown trajectories that can involve changing trains up to four times. Strikes by employees' unions of the RATP, the public company that runs the Paris regional transit system, can — and regularly do — paralyze the city. Nevertheless, the French depend on public transit to a degree almost unknown in the U.S..

This context helps explain the Aramis project's profound appeal. Begun in the late 1960s, Aramis was one of several competing visions for a new transportation paradigm known as "personal rapid transit" (PRT). The goal of PRT was to carry each passenger directly to his or her destination, without any intermediate stops or train changes, thus combining the infrastructural advantages of trains with the speed and convenience of automobiles. Aramis's quasi-independent cars would travel together in "trains," but these would not be physically linked. Instead, a "non-material coupling" scheme employing software and various sensors would allow each car to follow the one ahead of it very closely, yet without touching. As the "train" approached track junctions, each car would take the branch offering the shortest route to its destination. It would then join a different train, finally peeling off to stop at the desired station. A dense, many-branched guideway network would allow stations to be spaced even more closely together than in the existing Metro. Yet the lack of intermediate stops would make travel on the system much faster and immeasurably more convenient.

Matra, a major French high-tech firm with military, transportation, and telecommunications arms, spent 17 years and over 400 million francs ($80 million) trying to prove the Aramis concept. Most of the money came from the RATP. Matra completed a series of prototypes at two Paris test sites, with mixed success. Some system trials were promising; others failed dismally.

Political support waxed and waned. The RATP finally ceased supporting Aramis in 1987, and Matra abandoned it.

On one level, Aramis is a post-mortem sociological analysis of a quixotic socio-technical dream. But the book is much more than this. Part novel, part history, part philosophical and literary experiment, Aramis is the strangest and most intriguing work of one of science studies' most original and creative thinkers.

A variety of interwoven voices tell the 20-year story of the Aramis project. A first-person narrator carries the book's main thread. He is a young engineering student, assigned to assist a sociology professor named Norbert with solving the mystery of Aramis's "death." The narrator expects their task to be straightforward: interview the suspects, evaluate the documentary record, and apply sociological categories (interests, power, etc.) to assign praise and blame. But the Columbo-like Norbert keeps telling him to forget his categories. In fact, Norbert claims, the actors will do the sociology for them. If he and his student listen carefully enough to what the participants say, do, and write, everything will come clear. As they forge onward through dozens of interviews and documents, possible explanations for Aramis's failure proliferate at an astonishing rate, as do possible versions of the Aramis system. As the answer to their question continues to elude them, each character in turn becomes discouraged and confused. They disagree a lot, but end up helping each other muddle through. Their wrangling is entertaining, but also rewarding, as the tension between them both shapes and echoes the reader's experience of the sociological and philosophical problems they encounter.

Another voice is the traditional Author, who generates, applies, or criticizes sociological theory. The voices of project participants — Matra executives and project leaders, RATP officials, politicians, and engineers — are represented by extensive interview transcripts and document excerpts. A final voice, initially mysterious, turns out to be that of Aramis itself. Likening itself to Frankenstein's monster (and frequently quoting Mary Shelley), Aramis laments the failure of its progenitors to finish the creative process they began. From Aramis's perspective — as from Frankenstein's monster's — this is ultimately a failure of their love.

It's completely impossible to summarize this book. Fortunately for the reviewer, however, that's part of its point. For one of its key themes is that technological projects always begin as fictions — concepts, narratives, texts — seeking to become real. As they gather commitment and financial support, they "gain reality." Successful projects produce fully real objects; once this happens, participants tend to agree on a single account of that object's creation and its nature. By contrast, the technological objects envisaged by failures like Aramis ultimately "lose reality." Without a stable object to unify the viewpoints of the participants, their accounts never converge. Latour's quasi-fictional writing technique, in which a cacophony of voices contend without much resolution, mirrors this reality gradient.

It's easy to scoff at Latour's contention that Aramis's failure can't be definitively explained. Higher Superstition recently did just that, claiming that budgetary crisis, pork-barrel politics, and technical problems easily accounted for the project's demise. Undeniably, there were major unsolved problems. Aramis's tiny cars posed passenger security risks. Software became awesomely complex. Scaling up from the already unstable prototype — from three pairs of cars to 600 — was clearly going to pose enormous problems. Finally, it would have been extremely expensive.

After a couple of hundred pages, though, you'll stop snickering. For it rapidly becomes clear that none of these problems were ever seen by any majority as coffin nails. The extensive document excerpts and interview transcripts reflect the viewpoints of all the major players. Their

accounts of the project's history and its failure are amazingly different — yet each one seems fully credible. (This drives Norbert's student crazy.) The differences among accounts sometimes extend to diametrical opposition: one says Aramis was a technical triumph that failed for lack of political support, while another claims it was a political success that proved technically impossible. These aren't glib or politically calculated statements, either, but the well-reasoned reflections of the best-informed project participants. So the mystery remains.

Norbert and his student do finally adduce one major reason for the project's failure. They observe that after more than 17 years — during which hundreds of alterations to the original PRT concept were proposed — Aramis's basic structure remained unchanged. They conclude that the project failed because too-rapid movement toward development eclipsed its nominal "basic research" agenda. Had Matra separated the research mission from the development phase, the system concept would necessarily have evolved. In the process, problems would have been solved, alliances stabilized, and political and financial support ensured.

Aramis builds on themes Latour has been developing throughout his career: reality gradients (e.g. in scientific fact-making), actor-network theory, and the circular emptiness of many traditional sociological concepts. Focusing on technology allows Latour to emphasize some of his more recent concerns, such as the co-construction of technology and society, the transfer of human powers to artifacts, and the idea that "contexts" can't be explanatory, since they are always framed (in effect, created) by interested parties, e.g. engineers, project leaders, and sociologists. Aramis masterfully demonstrates another important Latourian theme, namely the vast sociological and political acumen of engineers. This marks a welcome and notable shift from the disingenuous bugs-in-boxes approach to scientists and engineers sometimes characteristic of science-studies scholarship.

This book is so crammed with fantastically creative ideas that it seems almost petty to criticize it. Still, some of its arguments are ultimately unconvincing. Is reality really a matter of degree? Certainly a design or a project plan is "fiction," but not in the same sense in which Frankenstein is fiction. We evaluate designs and projects by much different criteria from those we use for novels, as Latour himself has done here; I see neither ontological validity nor analytical utility in the reality-gradient idea. Similarly, engineers do give artifacts decision-making powers. But it does not follow that we gain ontological or analytical rigor by calling machines "actors." One of several major differences is that humans constantly alter their decision-making processes, while machines — even computers — make decisions mechanically.

Because it so neatly stages the complex relationship between argument and evidence, I predict that Aramis will become a popular teaching text. It's a brave and brilliant experiment, an instant classic, that will feed the field for years to come.