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## Productive Illusions: Kuhn's *Structure* as a Recruitment Tool

I do not know who the many readers of *Structure* are these days, but it is safe to assume that historians and philosophers of science or science studies practitioners are not many among them. I believe I am expressing an opinion common in our field by saying that *Structure* was history-making and, half a century later, has itself become history. In the terminology of Ludwik Fleck (an author whose work inspired the young Kuhn) *Structure* started as an esoteric book studied by few people but quickly became an exoteric one, read, cited, and appropriated by an extraordinarily wider set of audiences, reaching more people and languages than any history and philosophy of science book ever has. *Structure* no longer frames the research agenda of the field, and yet it is a field it helped create. It is credited for having brought (or having tried to bring) the history and the philosophy of science together, and for creating important openings for the sociology of scientific knowledge to join in the action. It also recruited new students into the field by making it look intellectually exciting—perhaps more so than it actually was. Having been one of those students, and having subsequently talked to incoming students from the other side of the generational fence, I want to look at this less-discussed dimension of *Structure*: its remarkably effective role as a device for intellectual recruitment.

*Structure* gave the field an extraordinary amount of visibility—vastly positive at first and less so later on, during the Science Wars and the “relativism scare” of the nineties. It did not, however, function as a paradigmatic exemplar. The book had cult status but, as far as I can tell, nobody directed his/her students to follow it as a research template, either in terms of questions or style. In some

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ways that may have been a responsible piece of professional advice—who could get tenure in the eighties or nineties with a 200-page big-picture book with virtually no footnotes? But there was more to it than that. Behind a widespread public admiration for its author, most historians of the previous generation had an ambivalent stance toward *Structure* and its commitment to pursue philosophical questions through detailed historical research.

While *Structure's* philosophical ambition (though not the methodology) is still found in some science studies literature and among those who pursue “historical epistemology,” it has always seemed irrelevant to most rank-and-file historians of science. Perhaps perceived irrelevance was masking the field’s opposition to all things theoretical or its difficulties tackling them, but, be that as it may, it was not uncommon to hear that, when he engaged in “serious historical work” in the later *Black-Body Theory and the Quantum Discontinuity*, even Kuhn no longer sounded too Kuhnian.<sup>1</sup>

Institutional trends only hastened the eclipsing of *Structure's* role in the discipline. Following the near-complete failure to institutionally integrate the history and the philosophy of science and the nearly complete migration of the history of science into history departments, the field either stopped asking philosophical questions altogether or started to frame them through the methodologies it borrowed from other disciplines—disciplines it had rarely interacted with before, such as European sociology, cultural anthropology, cultural history, gender studies, and so on. The “turn to practice” only sealed (but in my view did not cause) the increasing drift of *Structure* away from the research agenda of the field. For example, Andrew Pickering’s *Constructing Quarks* and Andrew Warwick’s *Masters of Theory* indicate that the differences between Kuhn’s framework and that of the sociology of scientific knowledge were not insurmountable if one was willing to engage in some translational work.<sup>2</sup> There were differences but no incommensurability, drifts but no revolutions.

And yet, despite evidence of the increasing irrelevance of *Structure* to contemporary history of science (and even doubts about its historical impact on the field), it is not uncommon, even today, to read the statements of students applying to graduate programs in the history of science citing Kuhn’s book as a factor in their interest in the field. What made *Structure* into such a powerful

1. Thomas Kuhn, *Black-Body Theory and the Quantum Discontinuity, 1894–1921* (New York: Oxford University Press, 1978).

2. Andrew Pickering, *Constructing Quarks* (Chicago: University of Chicago Press, 1984); Andrew Warwick, *Masters of Theory* (Chicago: University of Chicago Press, 2003).

recruitment tool? I have a few guesses but very little evidence, much of that autobiographical.

My encounter with *Structure* was quite dramatic and literally life changing. I was not planning to become an academic and did not even know that the history and philosophy of science existed as a discipline, but things changed very quickly after I read Kuhn's book. Largely out of curiosity, I took a philosophy of science graduate seminar with Henry Kyburg at the University of Rochester. I had no idea what I was getting into—my last philosophy course had been in high school—and Kyburg's seminar confronted me with an uncomfortably steep learning curve. I ended up doing a class presentation contrasting *Structure* with Isaac Levi's *The Enterprise of Knowledge*, survived the terrifying experience of being a photographer talking to philosophers, fell in love with Kuhn's book (less so with Levi's), and spent the rest of the semester reading Hanson, Popper, Lakatos, Feyerabend, and the various (typically critical) philosophical responses to *Structure*.<sup>3</sup> As a probability theorist, Kyburg was as analytical as they come, but, with a rich parallel life as an Angus beef rancher, he also had a pretty good grasp of what "practice" meant. (The steaks he shared with the students who made the trek out to his farm had no intellectual connection to his seminars, except that they were equally delicious.) Perhaps because of these extracurricular activities, Kyburg was, unlike most of his fellow analyticos, genuinely intrigued by Kuhn's socio-historical approach, at least as a methodology worth discussing. After giving me a vintage photocopy of *Structure*'s index (the original edition had none, and handmade versions circulated samizdat-style), he sent me to take a course on the scientific revolution with Ted Brown (a former student and colleague of Kuhn's at Princeton). That turned out to be a great piece of advice. Ted was a truly superb teacher, and reading Kuhn's *Copernican Revolution* in a history class after having read *Structure* in a philosophy seminar made the picture a little more complicated and less straightforward, and therefore even more addictive.<sup>4</sup> The next Fall I was saying goodbye to photography and applying to graduate programs in history and philosophy of science. A year later I was in Berkeley, working with John Heilbron and Paul Feyerabend.

I have subsequently realized that several other graduate students joined the history and philosophy of science as a result of having read Kuhn. The

3. Isaac Levi, *The Enterprise of Knowledge* (Cambridge, MA: MIT Press, 1983).

4. Thomas Kuhn, *The Copernican Revolution* (Cambridge, MA: Harvard University Press, 1957).

recruiting role of *Structure* was especially common among students who came either from the sciences or other nonhistorical disciplines—students who had little or no empirical knowledge of the history of science but were fascinated by Kuhn’s model and its philosophical implications. That’s perhaps comparable to the way later generations of students joined science studies after reading Haraway’s “Cyborg Manifesto” or Latour’s “Give Me a Laboratory.”<sup>5</sup> What grabbed them was the intellectual challenges projected by those texts and the field whose existence they intimated, not the much less sexy challenge of researching and writing a dissertation or the much more depressing prospect of job hunting after that.

*Structure*’s function as a recruiting tool is quite different from that of being a discipline’s canonical text (which, I would argue, *Structure* never was). Fleck had neatly captured this kind of role in his discussion of how certain scientific texts were particularly effective in casting a discipline as credible precisely because they were somewhat distant from that same discipline’s research literature.<sup>6</sup> Fleck’s model needs to be tweaked a bit, however. In that model the distance between research literature and popular science construed the credibility of a scientific field by shielding lay readers from the uncertainties and disputes that still affected some of its claims. In the case of *Structure*, however, the relevant distance was the one between the present and the possible future of the field. *Structure* was an attractive “forward-looking statement” about what the history and philosophy of science could be, not an example of what it was already.

It would have been difficult to recruit many new students into the history of science from the sixties to the early eighties based on the exhilarating nature of the bulk of its literature. (Most of this issue’s younger readers may not have a clear sense of how small and marginalized the history of science was in the decades before they joined it.) That’s why the history of science needed somebody like Koyré and, subsequently, Kuhn to direct students toward it. Some seduction was necessary.<sup>7</sup> Koyré’s and Kuhn’s methodological orientations were

5. Donna Haraway, “A Cyborg Manifesto,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 149–81; Bruno Latour, “Give Me a Laboratory and I Will Raise the World,” in *Science Observed*, ed. Karin Knorr-Cetina and Michael Mulkay (London: Sage, 1983), 141–69.

6. Ludwik Fleck, *Genesis and Development of a Scientific Fact* (Chicago: University of Chicago Press, 1979).

7. Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore, MD: Johns Hopkins University Press, 1957).

very different, but they played substantially similar roles to different generations of prospective students: they got them through the door by giving them examples of the exciting work the discipline might produce—except that, by and large, the discipline either did not live up to those exemplars (in relation to Koyré) or did not particularly care to (in Kuhn’s case). This was not a case of false advertisement but rather, as Fleck would have put it, of “harmony of illusions.”

Those of you with some teaching experience can probably testify to the disturbing experience of seeing one of your brightest undergraduates coming to office hours to tell you about this super-exciting text they are reading or course they are taking in sociobiology. The model seems so neat and powerful to them that it appears to explain everything, or almost everything. As Aristotle had done for two millennia, sociobiology helps students pose questions and derive allegedly excellent guesses as answers. Typically, these undergraduates do not grasp the conceptual limitations of their beloved reductivist models, but are drawn to them precisely because they are smart and curious and get frustrated when every answer “depends on the context.” For people who are interested in social science questions but were not born historians or quantitative sociologists, it takes training to appreciate how empirical details make all the difference. One needs serious motivation to go through any kind of training, and being engrossed in a model may provide such an incentive (even though that training may end up dissolving the student’s interest in the model). *Structure*’s “precession of paradigms” model provided some of these mobilizing illusions, but in a much more open-ended fashion than sociobiology. While framing pretty tightly the main blocks of the trajectory—normal science, anomalies, erosion of old paradigm’s authority, revolution, new paradigm, and return to normal science—*Structure* left a lot of the answers open. Even better, it told us that some of the answers were bound not to be the same at different times and places.

*Structure* introduced students to what used to be called the internal-external or discovery-justification dichotomy, and then made us see it in a new, counterintuitive light. Being told that there was not one single kind of reason to go from paradigm A to paradigm B made us look for those reasons in specific cases—a move that was as unwelcome to philosophers as it was intriguing to more empirically oriented scholars and aspiring scholars. Different students got hooked on different aspects of *Structure* (mine was a fascination with incommensurability, which actually survived graduate training). But what mattered the most was *Structure*’s ability to excite students and direct us to a field

that, with hindsight, was small and somewhat marginal—both institutionally and intellectually.

As with Fleck's harmony of illusions, those elicited by *Structure* were distinctly constructive—they produced scholars and their fields even though they may not resemble the intellectual and philosophical program laid out within its pages. I have no doubt that while I ended up doing research that has virtually nothing to do with *Structure*, taking Kuhn's work very seriously was crucial to getting me started on the twisty trajectory I am very happily pursuing. So, thank you, Tom.