Ian Hacking’s latest book deals with the issue of constructionism, namely the philosophical view according to which human concepts or categories (e.g. “gender,” “child TV viewers,” “whales,” “dolomite,” etc.) are the product of human creativity and concerns, rather than the unavoidable, world-constricted representation of the world around us. More precisely, Hacking is interested in exploring how much science itself is “constructed,” in spite of the alleged “objectivity” and “inevitability” that its devoted heralds attribute to it. The conflicting views of “constructionists” and “inevitabilists” are the source of what Hacking calls the “science wars”—phenomena that Hacking’s eight chapters are meant to explore, illustrate, and cast some light upon.

The “constructionist” party believes that science is a goal-oriented human artifact reflecting specific ends as well as determinate social and historical conditions. The “inevitabilist” party believes that science is a rather peculiar human artifact, insofar as its object of inquiry determines the shaping of the artifact itself. The body of knowledge called “science,” and especially the one labeled as “natural science,” is seen by this latter group as bound to be as it is because of what the universe is like, because of the inherent structure of the universe, and because of the “stuff” of which the universe is made. Given our universe and a curious mind, so the “inevitabilist” claims, any genuine, successful investigation of the former by the latter cannot but produce eventually the same Wissenschaft that we have. Any hypothetical, highly intelligent form of life in this universe (even the “green men” of Mars Attacks!) would be therefore fated to reach the same conclusions that Fermi, Turing, and Watson have reached on this planet.

The first chapter opens on the power of metaphors, with special regard to that of “social construction,” or, more simply, “construction,” for “most items said to be socially constructed could be constructed only socially, if they are constructed at all.” (39) In today’s Western world hundreds of things are said to be “socially constructed”: any internet search with this pair of parameters would generate an almost endless list of “socially constructed” entities (including cases as disparate as “the self,” “sex,” “literature,” “beauty,” “Chinese identity,” and so on). After all, Hacking remarks, any concept or category—any “what” or “X”—is generated within a “matrix” or
“womb” of other concepts and categories, i.e., the net of various linguistic practices endorsed by the particular human community considered.

Some of these “Xs,” and their surrounding matrix, may be so useful, old, widespread, and entrenched that they become “reified” into “essences.” In other words, certain “Xs” may be taken for granted inside their social web of origin; they may be assumed to be “out there” always and forever, independently of what we think or do. It is then the role of the constructionist to remind her human fellows that this is not always the case—perhaps, it is never the case. Quite corrosively, the constructionist plays the Socratic role of the polis’s “gadfly”: she buzzes annoyingly around the “lazy horse” of her fellow-citizens (namely, their most common linguistic usage) and asks “forbidden” questions. She does so in order “to raise consciousness” among the members of her polis and to let them see that what they consider as “inevitable” is not fundamentally so.

The spirit of the gadfly’s enterprise, which may be described as the “unveiling” of the community’s dogmas, can be more or less radical. Hacking distinguishes six forms of this unveiling: 1) historical (i.e. showing genesis and development of X), 2) ironic (i.e. showing genesis, development, and power of X); 3) reformist (i.e. showing genesis, development, power, and possible modifications of X); 4) unmasking (i.e. showing genesis, development, power, and hidden functions of X); 5) rebellious (i.e. showing genesis, development, power, hidden and detestable functions of X); and 6) revolutionary (i.e. showing genesis, development, power, hidden and detestable functions of X and invoking Y, with Y ≠ X of course).

Hacking wonders if the gadfly’s “unveiling” will work towards discovering a deeper truth (moral or scientific), or whether it will just produce an alternative construction. In an attempt to figure this out, Hacking distinguishes three ontological “layers” to which the problem applies: the layer of “objects” (i.e. the “stuff” of which the universe is made—people, states, conditions, practices, relations, material objects, etc.) (21), the layer of “ideas” (i.e. the linguistic practices of a community—conceptions, concepts, beliefs, attitudes, theories, etc.) (22), and the layer of the so-called “elevator words” (i.e. terms such as “facts,” “truths,” “reality,” etc.) (22—3). The third “layer” is particularly important, for it includes the “big terms” of epistemology and metaphysics. The “elevator words” are employed in higher level practices which intend to induce a “semantic ascent” to the deeper grounds of our world, either intellectual or material, or both. Such terms, which Hacking says are “circularly defined” (23), want to say something about the world as a whole and/or the linguistic practices as such. They are the “ladders” that we use to transcend contingent goals and “touch” the ultimate reality.
The entire history of philosophy, Hacking notes, could be read as the infinite reformulation of the relationship between these three “layers.” In certain cases, such as those of Berkeley or of linguistic idealism, all layers are ultimately reduced to the second one. In other cases, such as those of Schutz, Husserl, and Weber, the accent remains on the second layer, even if the first is not annihilated. In Hacking’s case, as far as it can be inferred from these few pages on the subject, the first and the second layers are maintained to be *practically* connected but *theoretically* separate, whereas the third layer is regarded as the seat of troublesome metaphysical hypotheses. Hacking claims, in fact, that objects (first layer) and ideas (second layer) are not the same, even if they may interact. Such is the case, for instance, of objects that can provide intentional feedback to the ideas applied to them, as in the case of those referring to individuals or human groups (viz. “disabled person,” “queer,” “proletarian”). On the basis of this consideration, Hacking suggests that we should distinguish between “interactive kinds” and “indifferent kinds.” (31–2) In fact, such a pair of “kinds” is what differentiates *Geisteswissenschaften* and *Naturwissenschaften*: the former is the study of interactive kinds while the latter is the study of indifferent kinds.

The second chapter introduces a further distinction. Hacking wants to keep the notions of “construction = process” and “construction = product” as separate as possible. He thinks that a “science war” depends on the conflation of these two aspects of the scientific enterprise. In truth, Hacking notes, one thing we can be sure of is that the social, economic, and cultural forces operating in determinate moments and milieux influence, direct, and mold the research. For instance, Galileo’s research was “socially constructed” (during his sojourns in Pisa, in fact, he studied the motion of bodies on behalf of the Florentine Prince, who wanted new military projectiles to be developed). Furthermore, the results of the same research are constructed as its generative process. What this means is that Galileo’s laws of motion, resulting from his very same research, are equally “socially constructed.”

Philosophers have often oscillated between these two positions, and Hacking mentions several authors whom he would describe as variously “constructionist,” at least with regard to the point that human ideas are exquisitely creative. Kant, Carnap, Russell, Quine, Foucault, Kuhn, and Rawls are the thinkers cited by the author. Furthermore, not only philosophers have defended this position: Danziger in psychology, Brower in mathematics, Mannheim in sociology, Fleck in the study of scientific methods have all stated similar opinions. Some have extended the same considerations to the layer of objects itself, even if most of them have generally preferred to adhere to some form of *nominalism*. In other words, most of them are constructionists with respect to the sole ideas, whereas they suspend their judgment when it becomes an issue of objects. Using an expression dear to
the analytical tradition, they try to limit their "ontological commitment," thus limiting also their use of "elevator words." Still, it is not difficult to envisage passages that are loaded with just this type of philosophical burden—the burden of asserting "what is actually there."

The third chapter tackles an additional issue of the "science wars": the scientists’s pretension of innocence. Many scientists, Hacking says, are ready to admit that there can be collusion between science and political interests at the level of scientific activity, i.e. in the material process of scientific research. However, this collusion cannot contaminate the level of scientific achievements, i.e. the products of scientific research—the eventual “collection of universal truths” (78) that science has as its constitutive, ultimate goal.

Hacking is interested in showing how pervasive science’s contingency is, and, consequently, how this kind of “innocence” can be dismantled. In fact, Hacking thinks that the role played by "construction" is too big to allow for a generalized attribution of value-neutrality.

In the first place, at the methodological level, science relies for its alleged "objectivity" on the "fit" between theory, phenomenology, schematic model, and technical apparatus. Referring to Pickering’s and Latour’s works on the subject, Hacking points out that at least two factors of this "fit" are eminently "constructed"—the technical apparatus (i.e., the instruments used to conduct experimental research) and the phenomenology (i.e., the analysis and interpretation of experimental results). They both reflect the specific interests and the general orientation that the world of science endorses in a specific time and place, and they cannot be predicted (only the subsequent experimental goals can be predicted). Consequently, these two factors manifest how deeply, contextually compromised science can be—and actually has been.

In the second place, those who claim that intelligent aliens would reach the same results as we have done, says Hacking, are blind to the more general contingency of our rational faculties. More precisely, any hypothetical science in an alien language should be translated into an earthly language in order for us to understand it. Hacking remarks that both Quine and Davidson have taught us to be skeptical about the supposed neutrality of our translations, insofar as these always rely on the “charity principle.” In other terms, equivalence between sciences can be granted only through a necessary and a priori conformation of one science to the other, thus begging the question by presupposing the very demonstrandum!

In the third place, Hacking warns the reader that what scientists hold for true—at a certain moment in a determinate place—is not necessarily a "fact." Things may be different, and scientific “revolutions” have already happened in the past—an earthquake in the realm of stability (viz. Darwin,
Plank, and Goedel). Moreover, the term “fact” itself comes from the Latin *facere*, namely “to make,” “to produce,” “to construct”—a perfect reminder of the risks of too much ontological commitment for science’s “factuality.”

In conclusion, Hacking says that we ought to be ready to approve much of Kuhn’s and Feyerabend’s corrosive spirit, for they defended just these three criticisms that he presents. A very important triplet, by the way, insofar as “contingency,” “nominalism,” and (anti-) “stability” are the three “sticking points” (p.68) around which much of the “science wars” orbit.

The fourth chapter deals with a dramatic case of scientific “construction”: *psychiatry*. The history of mental illness is rich with reformulations, changes, trials-and-errors, all accompanied by the authoritative voice of medical science. Hacking stresses the point that we still ignore most of the biochemical, neurological, and genetic factors behind the most common mental syndromes, say, “schizophrenia,” “depression,” and “autism.” Besides, even if we did succeed in knowing them, these syndromes might have to be dismissed, insofar as they were working as mere umbrella-terms for a myriad of radically different diseases. Moreover, whether we should keep regarding these biochemical, neurological, or genetic peculiarities as pathological, would still remain something for us to decide: behavioral or physical differences from “the norm” are not necessarily to be labeled as disorders. Similarly, the way in which we would classify and explain them would keep affecting people’s lives.

Psychiatric categories, as Hacking highlights them, deal with human beings, not with quarks or stones, and we can easily expect various forms of feedback between these categories and the related subjects. Patients are “interactive kinds,” not “indifferent kinds.” Significantly, this feedback is already taking place at the present moment, in a time in which we ignore the biophysical causes of mental illnesses. The categories we use have a huge impact on the patients and the patients’s families (viz. “hyperactive children,” “retarded children,” “refrigerator mothers”). Sometimes this feedback can enhance the chances for recovery—the “bio-looping” (109) between mind and body, as in the depressed patients augmenting their neurochemical activity via therapeutic colloquia. Other times it can worsen people’s lives, for they find themselves trapped within the psychiatric category—the “classificatory looping” between subject and medical definition, as the patient experiencing herself as mentally ill. Furthermore, the presence of the physical “lacks” or “abnormalities” may not be enough to trigger the illness itself; the physical “dysfunction” is just a predisposing cause. There must be some external, environmental pressure that works as an occasioning cause. Sometimes, it is the presence of the medical category itself that activates the pathology.

Then, Hacking concludes, the better approach to mental illnesses is a dynamic one, which sees the disease as a stressful, intricate, ongoing structure
of interactions between the patient and the environment. In this difficult context though, the categories are not fixed, and the patients have ways to restructure them and look at themselves as “normal” again. On the contrary, a mere semantic approach, which individuates necessary and sufficient conditions for a state of affairs to be labeled as a disease, is dangerously oblivious of the “looping” nature of the patient. This context sees the patient swimming unaware in the realm of ordinary existence, as a fish waiting to be caught within the pathology’s category-net.

The problems connected with semantics and disorders become even more dramatic in the fifth chapter, in which Hacking faces the notion of “child abuse.” He starts by referring to Goodman’s notion of “world-making,” i.e. the idea that by “making kinds” we “make the world.” “Child abuse” is just one example of “kind-making.” Hacking describes it as a “relevant kind,” in order to distinguish it from “natural” ones and stress the fact that such type of “kinds” are made for a purpose. By introducing this category on the scene, in fact, we create a completely new way to interact with children: law, science, everyday mentality, and pedagogy change because of it. Hacking does not intend to negate the “object” of “child abuse.” (he recognizes that children have been treated cruelly for centuries). Still, the idea that they were “abused” was not part of the picture. Whether “cruelty” was believed to be a matter of social and economic exploitation, widespread pauperism, and lack of education, “abuse” now refers to a medical term dealing with pathological domestic contexts, heavily connoted by sexual violence and incest.

It is true, Hacking remarks, that the introduction of this category has been liberating for many people. But it is also true, he continues, that it has also been catastrophic to many others. First, it has created a new social fear (e.g. “Child abuse is increasing!” “Abuse is everywhere!” “Most women have been abused!” etc.). Second, it has produced new medical and legal puzzles, for it is not easy to define, individuate, and cope with “child abuse” (viz. anal dilatation criterion, lack of care to fetuses, retroactive court sentences). Third, it has changed the way in which we look at our historical past (e.g. Alexander Mackenzie was a racist pedophile, Lewis Carroll was a pedophilic pervert, Louis 14th was sexually abused, Freud criminally denied the existence of child abuse). Fourth, it has changed the way in which we look at our personal past (e.g. I was abused because my father walked around home completely naked, I was abused because my gran ny played with my genitalia when I was an infant).

The sixth chapter returns to the issues of contingency, nominalism, anti-stability, and “science wars.” Hacking recalls the notion of “fit” characterized in the third chapter and points out that the scientists’s “fit” delimits the boundaries of their conceptual scheme, thus delimiting also the
sphere of questions that can be intelligibly asked. In other words, once a structure of concepts and practices is given, science cannot but generally move inside this frame, which defines what is sensible or "sinnig" (viz. interrogatives on new particles, new bacteria, new controls for artificial magnetic fields), what is wrong or "sinnlos" (viz. explanations contradicting Maxwell’s laws or DNA replication), and what is crazy or "unsinnig" (viz. elves, God’s interventions, Santa Claus).

In this manner, Hacking infers, an a priori structure is furnished, which represents the frame of the possible questions that can and may be asked. Still, science has a history, and revolutions cannot be excluded a priori: the a priori itself may change!

Moreover, moving now against the scientists’s claims of “innocence,” it is just in the historical production of this a priori framework that science shows its culpable elements of “construction.” Hacking cites five specific cases. First are the IQ tests. The Stanford-Binet standard is biased by misogyny, since the initial versions of the tests excluded all those questions for which women got a higher average score than men—on the assumption that women cannot be more intelligent than men! Second is endocrinology. The Nobel-worthy discovery of TRH is a representative case of “one-pass model of science inquiry.” (176) Researchers agreed that some specific substance had to play a crucial role in the mammals’s hypophysis activity. They synthesized in laboratory TRH and showed how powerfully it could influence such a glandular activity—and a huge pharmaceutical TRH production followed. Nobody cares that one ton of pig brain is required to collect as much as one milligram of TRH! Third are particle detectors. Donald Glaser’s Nobel-worthy “bubble chamber,” financed by the American Department of Defense, involved a completely new set of theoretical, phenomenological, and schematic tools to collect data, not to mention the immense costs and additional professional figures it involved. These tools meant also new scientific standards, which caused many other possible fields of research to become incompatible with each other—ergo obsolete. In conclusion, its impact on the world of high-energy physics has been enormous, but whether this impact has been positive is somehow suspicious. Fourth is the laser. The Second World War saw the birth of a new defense system: radars. The research for an offence system followed. This lead to the lasers of today, a completely new and artificial side-stream of optics, which has monopolized the available resources in the field. Fifth is missile accuracy. Donald MacKenzie’s studies show that the notion of “accuracy” depends on the destructive power of a specific type of missile; that it refers to the statistical average among missiles of the specific type selected; and that almost every manufacturer has its own standards. Thus, comparisons of missile accuracy are practically impossible.
Concluding, Hacking admits that some positive spin-offs from military research have taken place (e.g. medical uses of laser), that wars have always been a fertile ground for science (e.g. artificial rubber, beets sugar, rocketry, nuclear power), and that the same piece of knowledge can be employed in morally opposite ways. Still, military research has made only selected fields of research grow, “sterilizing” others—a limpid case of “contingency.” Of course, whether the direction taken by science under the Defense’s aegis has been good or bad is debatable, and debate is what Hacking hopes will follow.

The seventh chapter intends to support the previous one by showing how “constructed” rocks themselves can be. Hacking tells the peculiar history of dolomite, which is similar to limestone (calcium carbonate) but which is mostly magnesium carbonate. Since the very day of its “discovery,” traditionally attributed to Deodat de Dolomieu (1750—1801), this porous rock has reserved a number of surprises. First of all, in fact, Giovanni Arduino (1713—1795) had identified it several years before, but due to his academic isolation nobody had paid any attention to his studies, which revealed the curious chemical composition of this rock and explained the presence of magnesium as the result of a process of substitution for calcium. On the other hand, Dolomieu, who gave an erroneous chemical description of the rock (aluminum), was academically well connected, and the name “dolomite” proves it clearly enough. After the correction of Dolomieu’s error, decades of attempts to explain the process of “dolomite-formation” have been following.

All sorts of geological guesses have been tried, each of which become “The Explanation” in their own short authoritative life. Only 70 years ago a biological hypothesis appeared on the scene: bacterial activity. Very little credit was given to it, also because it implied leading experiments in some of the most inhabitable places on the planet, where the supposed anaerobic microorganisms that are deemed responsible for the formation of dolomite live. Still, the research went on, now sponsored by private corporations and state agencies, since dolomite is, incidentally, a perfect “oil-container” type of rock. No clear answer to the problem was found, though.

A few years ago, a young Brazilian researcher re-exhumed the marginal hypothesis of bacterial activity, conducting in first person very cheap, simple experiments in a sulfurous lagoon close to his place of origin. His eventual guess was that nanobacteria are at work, and the scientific community is now more and more prone to accept this hypothesis, which still contains very dubious elements, in so far as the existence of nanobacteria is not certain at all.

In Hacking’s eyes, dolomite’s history demonstrates, in an exemplary way, all the elements of “construction” that characterize science. In fact, all
forms of inquisitive method have been followed (he mentions induction, abduction, analogy, conjecture, verification, falsification); the importance of academic linkage has been playing a role since the beginning (see “Dolomieu” and “dolomite”); the pressure of practical “internal” factors has been surely relevant (as being laboratories more comfortable than inhospitable areas); the pressure of practical “external” factors has been even greater (see oil companies’s interest in the rock). The vicissitudes of dolomite are a further instance of how contingently (i.e. why studies on dolomite and not other rocks?), nominalistically (i.e. the “natural kind” at stake has been very different “stuff” in three centuries), and anti-stability-wise (i.e. myths and authorities have dethroned one another) science deserves to be regarded.

The eighth chapter deals with quite a different kind of “science war,” namely the death and “deification” of Captain James Cook in Hawaii. Two sides campaign against each other. Obeyesekere supports the thesis according to which Cook’s “deification” is merely a Western myth, whereas Sahlins defends the traditional view that such a post-mortem pagan “canonization” actually took place among the indigenous population.

Hacking suspends his judgment and revises the available material on the topic. In this way, he provides a synthetic account of what we know about Cook’s unfortunate last journey to the Hawaiian Islands, plus he sketches a complex scenario of Western and Polynesian prejudices that may have played a role in Capt. Cook’s “affair.” Eventually, Sahlins’s position is evaluated as the more consistent, better supported, and historically more plausible of the two.

There are good books full of bad ideas: they are consistent, well-structured, creating a nicely designed path of expression from beginning to end. However, the points they defend are frightening: Giovanni Verga’s *Mine & Yours* is such a book. And there are bad books full of good ideas: they are ambiguous, loosely homogenous, abandoning the reader in a midst of data and considerations. Hacking’s *The Social Construction of What?* is his second kind of book.

I state this because the reader of *The Social Construction of What?* can surely find a number of fascinating observations on several and diverse issues. Yet, it is much more difficult to find an argumentative path that links the chapters to one another and helps the reader to get an overall understanding of Hacking’s position on the “science wars.” Initially, in fact, Hacking would seem to side with the “constructionist” party—quite bravely and rather surprisingly, for Hacking was known in the 1980s as a “realist.” His adherence to this group becomes less certain as early as the second chapter of his book, and it seems to collapse in the third chapter. Yet, when the reader reaches the end of the book, Hacking’s identification as an “inevitabilist” is not clear at all. Nor can he be said to stay on a “middle
ground” of some sort, because Hacking does not provide it either, since “[M]y strategy is the exact opposite of Sergio Sismondo. He is a peacemaker,” (68) while Hacking goes to war. Against whom, though?

Hacking elucidates what the “sticking points” are like; namely, “contingency,” “nominalism,” and “stability.” However, his position on each of these points is undecided. “Score yourself from 1 to 5 where 5 means you strongly stick on the constructionist side,” he says, and “Here are my own scores,” namely “#1 Contingency: 2; #2 Nominalism: 4; #3 External explanations of stability: 3.” (99)

Yet the many comments given in the book could equally lead to a very different set of values, at least with regard to the first pair of the triplet. In truth, a 3 or 4 in “contingency,” and even a striking 1 for “nominalism” would be likely to be drawn out of his text by an honest reader. In the first place, most of Hacking’s distinctive concepts seem to highlight how volatile, malleable, and easily influenced science has been in its recent history. Notions such as “world-making;” “dynamics” vs. “semantics,” inaccurate “missile accuracy,” and “dolomites” could be sensibly seen as supporting such an opinion. Besides, had the reader enjoyed Hacking’s previous two works, namely Rewriting the Soul and Mad Travelers, both dealing with the history of medical science, this interpretation would sound even more plausible. In the second place, the 1 in “nominalism” could be equally defended, in spite of Hacking’s own pleas in favor of it. In fact, Hacking repeatedly defends the idea that there are objects “out there” which are “indifferent” to the shifts in the use of the terms through which we refer to them. It is my opinion that a real nominalist should avoid making any consideration on “objects” that “are not aware that they are [what they are] and are not altered by being qualified as [so-and-so].” (32) Furthermore, to add confusion to the already present ambiguity, it must be stated that the term “nominalism” itself is quite mysterious. It appears in the book while Hacking tries to pin down the constructionist notion that “Facts are the consequences of ways in which we represent the world,” whereas the “inevitabilists” say “that the world has an inherent structure that we discover.” But to a philosopher, who could still recall names such as Roscellin and Ockham, or the more recent debates on sub-atomic particles, this application of the term is hard to understand. To an old-fashioned “nominalist,” much of the talking by “constructionists” would seem to be an idle flatus vocis, whereas the “inevitabilists” would at least highlight the ontological force of the physical world.

Anyway, in partial reply to the general indecisive spirit of the book, it must be recognized that Hacking wants to open a debate, not to close it. This is a position that he claims to be taking with regard to the use of the specific category of “child abuse,” but which well reflects the overall character of the entire work. Not that this dialogical atmosphere justifies the
absence of clarity with respect to Hacking’s real stand, but at least it can explain it.

More difficult to explain is the stand that Hacking takes on the mechanism of “construction,” which is strongly objectionable as a result of the idea that concepts “can be constructed only socially.” (39) Where is the subject, then? Where are the individuals? I do not want to recall Kant, Husserl, Popper’s “three worlds,” or Davidson’s “triangulation,” but an important element in the mechanism of “construction” is clearly evident (and neither Bloo nor Rorty seems to have envisaged this desaparecido in their reviews of Hacking’s book). Categories, concepts, kinds, theories, and linguistic games are not passively endorsed by the speaker. Moreover, sense data, stimuli, needs, and urges do not take the same shape in all individuals. The role played by each subject in “constructing” anything cannot be underestimated, not to say forgotten! Such an absence should be justified somehow, at least explained, but nothing of this sort is the case in The Social Construction of What? Quite a puzzling absence, above all if one recalls Hacking’s works on psychiatry and medicine, and the important role therein played by single patients to the generation, processing, and understanding of ideas.

A final critical remark is needed to warn the potential reader that not all eight chapters are equally useful to scrutinize the two major problems at stake, namely “construction” and “science wars.” While the fourth, fifth, and seventh chapters are illuminating on the complexity of social determinants lurking behind scientific categories, and the third and sixth chapters do touch sensitive spots in the “science wars,” the first and the eighth chapters are somehow frustrating. In the first chapter, Hacking indulges in long considerations on the semantic aspect of “constructionism,” which are going to be dealt with in a more systematic and precise way in the fourth chapter (and which should have been limited to that alone). Nonetheless, it is still in the first chapter that Hacking introduces the ontological distinctions between “objects,” “ideas,” and “elevator-words,” without clarifying their mutual relations or in which way we can make sensible assertions regarding the first and the third group.

In the eighth chapter Hacking jumps from the natural sciences to a historical and ethnographic case; namely, the “war” between detractors and admirers of Captain James Cook. Considered per se, this chapter is well written, entertaining, and interesting, but its relevance to the rest of the book is dubious. It would hardly work as an appendix, but as a final chapter it is rather perplexing. In truth, after all his discussion of natural sciences and scientific categories, this commentary on ethnological diatribes looks suspiciously like a last-minute remedy for the absence of a synthetic conclusion. In other words, the last chapter seems to be meant to take us away
to the exotic shores of Hawaii, so that we may forget to ask for a comprehensive, cohesive conclusion. Thus, we are left sailing among the myriad of Polynesian islands, which are as many and irreconcilably diverse as the inputs so interjected by Hacking into his book.

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