We tend to assume that nature is understandable and that it is understandable in terms that we have at our disposal. We have also tended to believe in progress. Our axioms were true, self-evident, god-given, obvious. Deduction and inference are true methods… logic is true and nature is logical.

In Euclidian geometry, the shortest distance between two points is a straight line… [Gregory rather flippantly assumes that people in the past assumed that this was applicable to physical reality too. My experience is that past philosophers were quite specific that Euclidian geometry was Platonic… and reflected a perfect world of rationality, not necessarily a the imperfect world of shadows. …so is the shortest distance between two places in the physical world also a line?] [Gregory’s use of the immobility of the earth is also problematic… from a relativistic or coordinate shift standpoint. Gregory is a historical moron, so far as I can tell.]

Truth, Gregory claims, in the SciRev, became based on observation and quantification rather than based on tradition and religion. The SciRev successes led to positivism… Condorcet (1743-1794) saw a positive advancement from darkness to the light. Mill, Herschel, and Whewell all reflected on the philosophy of science… Bacon had promoted inductive reasoning based on observation [and the vexation of nature.] Mill et al. believed that laws were discovered, not invented.

Gregory claims that GR, SR, and Quantum messed up the concrete positivistic expectations for scientific advance. Where mathematics used to describe phenomena and make it more understandable, now math led the way and phenomena was less understandable but more mathemitized. [the cart leading the horse?] [It seems to me that the fact the Schrodinger and Heisenberg both came up with the same formulae but in radically different vocabularies is an interesting counterpoint.]

The new sciences led to new philosophies of science: scientific theories as “economies of thought,” or as simply conventions, or as instruments to manipulate nature. Positivism, a steady march towards Truth, was less and less credible, even to the more conservative philosophers.

Some philosophers even assume that scientific belief systems are based on the irrational. This high level of relativism makes people uncomfortable.

Gregory is very limited in this essay… he discusses relativism of truths and how modern physics had thrown a wrench into the mechanismic, positivistic view of sience, but he doesn’t include any discussion of the ethical issues that “progress” has not factored into this discussion. The march towards more and more knowledge of truth has also led to some rather powerful technologies: namely nuclear power, nuclear bombs, chemical conveniences, and chemical
warfare (gunpowder to mustard gas), genetics, and the total disregard for long term consequences of the consumption of all sorts of natural resources. I tend to think that these issues are currently more prominent than all the nerdy agnosto-wonder over GR or Quantum Entanglement. Also, on another rant semi-unrelated to Gregory, the whole argument over how to distinguish science from technology is more or less pointless. Who cares! Science and technology are clearly related... I know not which causes which, and anyway, this can only be sorted out on a case by case basis, and even then it cannot be fully understood. The relevant point is that science and tech have become very very powerful in some instances and out philosophical brain power might better be spent discussing the ethics. Similarly, the philosophical discussions over progress should really be over how to define progress, not about truth or normal science or all this esoterica. Is progress the ability to raise sea levels until Holland cries, “Uncle?” Is progress just the ability to transmit information instantaneously in some sort of quantum game of Alice and Bob? What is the goal of progress? A paperless society? Yeah right. The 3-day work week, because we are so productive, we don’t need to spend 5-days working? Will we use our new found time to write symphonies and novels? Will we use our surplus of grain to feed the world? Will we use all the energy we produce to make the planet better... or just to light up Times Square and your porch at 4 am or that flashing 12:00 on the VCR that you use once a month at most?

Hull: Studying the Study of Science Scientifically

p. 208 [numbering reflects markings in the .htm file]
A little Kuhnian intro...quoting Bloor, quoting an anon. philosopher at a conference who claimed that scientists in 2 different paradigms could not communicate with one another. Hull claims that philosophy of science is the most removed from science, more so than sociology and more so than history. [I'm not so sure....what he even means. It seems like a rather flippant starting point.]

1. Planck’s Principle- old fuddy duddies have to die off in order for new ideas to flourish. Hull uses Darwin and Mendel as examples... discusses precursoritis and how precursors just didn’t have all the goods. We write for present-day readers using the vocab of our day. “...publishing a book on sixteenth century Italian science in sixteenth century Italian would be a waste of time.” “Even the most anti-presentist historians now see the need for what they term "legitimate anachronisms" (Lightman 1997, p. 10).” Whewell coined the term “scientist” in 1833 and then rejected it in 1834. It caught on anyway about a half century later. What about studying the reception of science that didn’t win... like phrenology. How was that received by the old fuddy-duddy scientists. Just defining what is sufficient for Darwinism is hard. Hull concludes that it is not so much all older scientists resist change, but that the established leaders of the old school resist change since the attack is personal... they are loosing the King of the Hill game. “Elite scientists reacted negatively to the views of Planck and Darwin, not because they were old but because they were the authors of the views that were under attack.” [Planck misidentifies the causality... it is not age... it is investiment.]

2. Sulloway’s Birth Order Thesis: First borners prefer continuity, order, causality, hierarchy, and essentialism (and conservative theories- whatever that means) whereas laterborners prefer
discontinuity, chaos, acausality, equality, and populaton thinking, (and more radical theories-whatever that means). Different times have different defs for conservative and radical. Some find this study unattractive because it studies what one might think ought to have no effect on theory acceptance.

3. Novel Prediction: if a theory is constructed that explains an anomaly that hadn’t been noticed when the theory was constructed initially, then it is more persuasive than a theory that explains an anomaly which the theory was constructed to deal with. [Then it isn’t really an anomaly if it is readily explained by the theory inadvertently. We now need to define anomaly. Hull does not use the word anomaly, he uses the word phenomenon.] **Whig historians, positivist historians, love “rational reconstructions.”** [Physics 101 history. Kepler’s Ast. nova is certainly not a rational reconstruction, for example.] Sometimes old anomalies are transformed into new ones because of a change in a theory… and thus it is difficult to determine whether they are novel or not. [The retrograde motion of Mars as explained by Ptolemaic theory would fit into this as a theory built ad hoc to fit this phenom. So it is not a novel prediction.]

Conclusions:
Ad hoc is used at every level. Only in retrospect can an ad hoc theory be identified as such.

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**Hull’s - Planck’s Principle Article from 1978**
Do younger scientists accept new scientific ideas with greater alacrity than older scientists? -A test using Darwin’s theory of Evolution.

p. 717
line between sci and extrasci beliefs is not sharp
Some philosophers of science believe in purely socioeconomic reasons for sci belief.

2 theories popular in late 19th c.
Younger scientists converted more quickly than older ones
or
Among scientists, Darwin’s theory conquered quickly and completely.

aside… Hull introduces Feuer’s Mosaic theory of ideology without any explanation… Here are my thoughts on Feuer from a paper I wrote in 2003 or there abouts.…

"Feuer treats ideologies as static entities, and he analyzes them in a Baconian reductive manner to the point where he distills from them his "three ingredients." The first and most distinctive "ingredient" is the Mosaic myth. Feuer claims that all "ideologies" metaphorically follow the Moses myth: a young non-oppressed revolutionary intellectual, moved by selfless...

1 Ibid., pp. 1-10. Feuer writes "ideologies" but seems to also mean "ideologists" or "ideological stories." His argument, though interesting, is ultimately is a bit weak due in large part to his careless choice of words, a criticism that you can't level at Geertz no matter what you think of his ideas.
idealism and generosity takes up the cause of an exploited people. He leads them to the promised land but the people are incapable of appreciating the new opportunity and need to be lead by a dictator for tutelary purposes. The young revolutionary becomes a benevolent dictator and then eventually dies and is glorified. The second ingredient is essentially a dialectical model of philosophical cycles and the third the existence of a chosen people to be acted upon. Given this relatively rigid definition of what constitutes an ideology, it is just a matter of finding the historical characters and situations that seem appropriate, and then to proactively read their stories within his scheme. Feuer illustrates his concept with the usual suspects of Hitler, Lenin, Marx, Mao, Castro, Che Guevara and some interesting applications to ancient Greece and Rome. Feuer's method is hopelessly flawed. In his desire to be scientifically rigorous he ignores the fact that his "three-ingredient" identity is circularly derived; he looks at ideologies to distill the characteristics of ideologies in order to identify ideologies. He would have done better to just define ideology and leave it at that.

explain Hume’s problem with induction.- assumes uniformity of nature…

Hume: The Problem of Induction

Argument 1:

-In past experience, all Fs have been Gs.
Therefore, All future Fs will be Gs, or the next F will be a G.

Problem 1: Argument 1 is invalid. To make Argument 1 valid, we need an additional premise, such as UN (Uniformity of Nature or: “The future will be like the past”). This gives us a valid argument, such as:

Argument 2:

-In past experience, all Fs have been Gs.
-If in past experience, all Fs have been Gs, then all future Fs will be Gs, or the next F will be a G.
P: Therefore, All future Fs will be Gs, or the next F will be a G.

Problem 2: But how do I justify UN (Uniformity of Nature or: “The future will be like the past”)? UN is not a relation of ideas, it is a matter of fact. So it cannot be justified by reason; hence it must be justified by experience. But then I must appeal to an argument like Argument 1 or Argument 2 in order to justify it. But an argument like Argument 1 will be invalid, whereas an argument like Argument 2 will depend on a premise like UN, and therefore it will be circular. Therefore Argument 2 will also be circular. You must assume UN to prove UN.

From this Hume reasons as follows:

2 Ibid., pp. 1-3.
1. Neither an argument like 1, which is invalid, nor one like 2, which is circular, can provide a rational justification for beliefs about future matters of fact.

2. But arguments like 1 and 2 are the only possible ways reasoning could justify beliefs about future matters of fact.

3. Therefore, there can be no reasoning that justifies any belief about any future matter of fact.

Some conclusions Hume wants us to draw from the problem of induction (and similar skeptical doubts):

a. Our beliefs about future matters of fact are based not on reason but on a non-rational principle of human nature, which he calls custom.

b. Inquiries like that into the problem of induction show that the human understanding is very limited in what it can know and also limited in what it can justify by reason.

c. In order to understand why we hold beliefs about future matters of fact, we should pursue an empirical science of human nature, that discloses the vital importance of non-rational principles such as custom.

d. All the sciences, including the science of human nature, depend not only on reasoning but also on principles of human nature, such as custom. We should accept that non-rational principles of human nature as well as reason are required for science. We should therefore not expect rational justifications of all our beliefs and inferences.

e. We must nevertheless use our faculties of knowledge (both rational and non-rational) within their limits, as human nature dictates, proportioning our beliefs to the evidence.

f. We should resign ourselves to the limits of reason, and inquire after those limits as befits reasonable creatures, despite the skeptical perplexities and frustrations we encounter when we do so.

Hull doesn’t include extreme internalism or extreme externalism…

Does rejecting a new idea suggest that a person was threatened because of affiliation with a particular theory or philosophy or worldview?

p. 718: Planck’s Principle
Planck claimed that new science triumphs because old scientists die.
Lavoisier’s quote to the same effect.
Darwin’s quote to the same effect.
T. H. Huxley (Darwin’s Bulldog): “men of science ought to be strangled on their 60th birthday.”
Kuhn and Feyerabend both cited as incorporating Planck’s Principle in their theories.
The inertia of older scientists may be good… they act as a filter against half-baked theories: Merton.

p. 719

Generally thought that Darwin’s theory was fully adopted within 10 years of Origin’s publication in 1859.

Regional studies show that Darwinism was indeed adopted quickly. [What is Darwinism? Evolution? Nat. Sel? Random Mutation?…]

But a bit slower in Russia and France… [perhaps partial to their nationalistic own?] France was really quite entrenched against Darwin.

The Hull study limited to scientists. Victorian scientists less well defined than now. Also generally limited to those sciences that deal with Darwinian issues.

Hull study set limit to scientists who were at least 20 in 1859.

p. 720

Darwin focused his efforts on the big whigs of his day.

Hull acknowledges that the winners (Darwinists) have better preserved records than the losers of this debate. An interesting petition signed by 700 antiDarwinists would have been great evidence if only any of the signatories had more information on them… but, alas, they are virtually anonymous entities.

How to define what constitutes a Darwinian…

p. 721

Actually few scientists accepted Darwinian theory as Darwin laid it out.

Darwin was a gradualist and saw no progressional direction

He was also slightly believed in acquired characteristic believer [as he got older], but the prime mover was Natural Selection.

The popular version of evolution in late 19th c. was saltative, directed towards a goal, progressive.

Huxley even saltative.

Turns out that some of Darwin’s critics held the same beliefs as his supporters… just depends on how you define Darwinism.

Only Darwin was a strict Darwinist, [and even he is not terribly consistant.] If Darwinism allowed for smorg. apporach, then most everybody was a Darwinian.

Hull’s study defines Darwinian as simply evolution. Natural Selection was very controversial and his views on acquired characterics were generally accepted [though considered wrong now.]

Many anti-Darwinists accepted the concept of evolution, but no Darwinists rejected the concept.

First conclusion: acceptance of D’s theory was not as fast as generally thought. Still a sizable percentage not convinced in 1869. [article implies about 25% critical]

p. 721
Average Acceptance Age: 39.6
Average Rejector’s Age: 48.1
about a 10 year difference.
… other stat analyses… concludes that age is a definite factor in acceptance as Planck suggested.
One method suggested that only about 10% of the variation can be attributed to age.
Speed of mind changing showed no age influence.

p. 722
Conclusions:
Contrary to general belief, not all scientists were converted by 1869.
Also, converts were converted with relative ease regardless of age.
Rejectors still rejecting after 1869, tend to be older.
Age accounts for less than 10% of variation in acceptance, implying that 90% of the reason for acceptance is something else, perhaps internalist reasons… just a reasonable theory.

Of course, Hull admits, this study describes a theory that has succeeded, not one that failed like phrenology, mesmerism or flat earthers.

Planck’s Principle is overstated.

Baum: Popper, Kuhn, Lakatos Notes

p. 275
In 1962 Kuhn’s SSR questioned the rationality of science.
Einstein’s SR questioned the rock solid foundations of Newtonianism… Hume’s crit. of induction became relevant.
Theories are not true or false as a function of their utility. [Ptolemy is a good example.]
“Instrumentalism” – laws and theories were instruments, not truths in themselves. [I call it models]
p. 276
… all these fucking instrumentalist, relativist hippies… ENTER Sir Karl. POPPER.
Popper wanted to get back to solid ground and also get rid of the logical positivists [inductive groupies] who were so annoying. Popper saw induction via Hume’s criticism. There can never be enough anecdotes to make a universal statement. Scientific tests were just anecdotes. But if a test failed to verify a theory, then the theory was falsified.

Kuhn called falsification a theory only useful in science textbooks, but not really how science worked.

p. 277
Eg. the perihelion of the orbit of Mercury was seen as a puzzle to be figured out by the Newtonians, not as a falsification that ruined his theory.
Change for Kuhn, paradigm shifts, also didn’t use falsification because of the issue of incommensurability. Shifts from one to another were more akin to religious conversion… or so states Baum. Kuhn also denied the assumption that science was in any way inching towards truth… [it just changed to fit the environment like evolution].
Feyerabend much liked Kuhn’s “counterculture” thesis. Feyerabend saw science as totally relative… even outlandish theories were worthy of respect.

p. 278
Popper, predictably hated Kuhn’s thesis… the relativism that imperilled modern civ.
Kuhn accepted that some theories are more successful than others… but he insisted that theories have nothing to say about reality. Baum jumps in to say that the implications are that Einstein=Newton=Ptolemy=flat-earthers. Kuhn doesn’t go so far as Feyerabend with his ‘all theories deserve respect, man.”

Weird ending with Baum mentioning Man’s superiority over the beast due to reason.

Me:
Kuhn seems less weird if we look at it in a Darwinian way.
The scientific paradigm that we have now is suited to our environment. It solves the questions and fills the needs that we have at this point in time. We want satellites, we have universal gravitation theory. We want DVDs, we have optical theory and computer binary code.. etc.
When the earth becomes too polluted or ruined or economically devastated, perhaps our scientific theories will head towards different goals?...

Popper-Science_as_falsification- Notes

On and on about Freud, Alder, Marx, and Einstein… etc.
How the theories of these men are constantly verified (by those inclined to do so.)
Einstein’s theory (GR) was different.
Gravitational lensing could be measured during a solar eclipse. Popper impressed with the confirmation from 1919 eclipse… [data was actually rather inconclusive and fudged…]

This principle is used to explain the gravitational lens effect. Light from, for example, a very distant quasar (high luminosity object) that passes a massive galaxy closer to Earth can be bent to produce double (rarely triple) images. In other words, gravitational attraction causes a slight but measurable curvature of the path of a light beam wherever the beam passes near a massive object. Sometimes the distant object's lensed image is spread out in an arc pattern. This Hubble Space Telescope image shows an example of this effect.

Popper’s conclusions…

1) Theory confirmations are a dime a dozen.
2) Confirmations should only count if they are novel predictions.
3) Good theories have forbidden zones… The better it fleshes out forbidden behaviors the better the theory.
4) Good theories must be conceivably refutable. If they are not, then they are likely bad theories.
5) Theory tests are falsification tests.
6) Failed tests at falsification can count as confirming evidence.
7) if falsified, then ad hoc fixes are a major detriment to the theory.

“One can sum up all this by saying that the criterion of the scientific status of a theory is its falsifiability, or refutability, or testability.”

II
The 1919 grav-lens theory was ripe for falsifiability, but the test it confirmed the theory.

Astrology, on the other hand, always accepted confirmation, but ignored refutations. To escape falsification (a definitive killer of a theory) the astrological theory was designed to be not testable.

Marx’s theory of history was altered when it was refuted and as a result the theory became less testable and thus, less truthy.

Popper claims that Alder and Freud are totally untestable, since all behaviour seem to fit into the theories. This doesn’t make their work invalid, but it makes it nonscientific.

Weird analogue to Parmenides’ unchanging universe to Einstein’s supposedly fully determined universe.
Notes on Boghossian and Alland on Sokal’s Hoax

You’ve been Punk’d

Boghossian- Sokal Hoax notes

p. 265

The Hoax shows three things:
1) Modern academia has embraced the idea that truth is relative… at least some have.
2) The consequences of relativistic truth are too obvious to mention [????]
3) The above two claims are not political … particularly not conservative. [what does he mean?]

Bogossian’s three points are worded in such a way as to be basically unintelligible.
B outlines Sokal’s article… reality is relative… quantum and GR have underlined our ability to know an objective reality… reality is a linguistic construct. He throws in a few quotes by Heisenberg and Bohr to back up his ideas and off he goes.

[My skimming of the opening descriptions of quantum and GR in Solak’s essay are all fine and good… nothing earth shattering…]

p. 266
But Sokal takes this modern physics of the very tiny and applies it to political and cultural issues.

Sokal writes after reasonably summarizing various very difficult physical theories, summaries that I cannot imagine most sociologists or literary theorists would understand, “At this point my summary of developments in physics must stop, for the simple reason that the answers to these questions—if indeed they have univocal answers—are not yet known. In the remainder of this essay, I propose to take as my starting point those features of the theory of quantum gravity which are relatively well established (at least by the standards of conventional science), and attempt to draw out their philosophical and political implications.” [Sokal, p. 226]

From then on it is all pretty hard to follow… lots of big fancy words and long quotes from pompous types.

Sokal makes lots of puns on the words “linear” and “discontinuos.” Language is abused.

Sokal writes…

… and I glaze over…. He later claims that complex number theory is a new theory….. [it clearly dates to 19th c.]

46. A minor quibble: it is not clear to me that complex number theory, which is a new and still quite speculative branch of mathematical physics, ought to be accorded the same epistemological status as the three firmly established sciences cited by Markley.

p. 267
Sokal [Sokal, p. 231] relates various mathematical ideas to political ideas…
So why was it published? What were the editors thinking? Did they find meaning in his sentences, sentences which he later admitted didn’t mean anything? At least this would mean that the editors were honestly impressed, though deceived. Or... did the editors have no idea what Sokal meant but they didn’t really care [They had a good rhythm, they cited actual editors, appealing to their vanity, and they quoted all sorts of heavy weights.... and Sokal is a Ph.D. physicist. How cool is that!]

B. puts in this crazy quote...

Choice in abortion... axiom of choice... absurd.

p. 268
B is appalled at how stupid the editors must have been. B claims that Sokal went out of his way to make it obvious that he was Punk’ing them. B is appalled by Social Text’s science envy and their priority of politics over intellegibility.

p. 269
Complaints about how objective truth has been relativized. B is appalled at how frequently he encounters such mumbo-jumbo.

B’s example:
NYTimes story form 1996: link
Zuni creation.
Hairs were found, archeologists wanted to analyze them… Zuni tribe said no. They denied the 10k BP timeline.

from the article cited:
"We never asked science to make a determination as to our origins," said Sebastian LeBeau, repatriation officer for the Cheyenne River Sioux, a Lakota tribe based in Eagle Butte, S.D. "We know where we came from. We are the descendants of the Buffalo people. They came from inside the earth after supernatural spirits prepared this world for humankind to live here. If non-Indians choose to believe they evolved from an ape, so be it. I have yet to come across five Lakotas who believe in science and in evolution."

Archeologists claim that Native Americans came across the Bering Straight over 10,000 BP. Zuni tribe claim that their ancestors have been on earth since they emerged from a subterranean world of spirits.

p. 270
Boghossian complains that some archaeologists are playing both sides…Roger Anyon writes, “Science is just one of many ways of knowing the world…[The Zunis’ world-view is] just as valid as the archaeological viewpoint of what prehistory is about.”

Boghossian hates this… “just as valid” really makes him nuts. He sees 3 options:

1. both claims about origins are equally true – not possible since contradictory. B. suggests some sort of Kantian universal relativism. My truth, your truth.. b.s.
2. both claims are equally justified given available evidence – this is not the case here. Archaelogical evidence is plentiful is well supported. [Although I sincerely doubt that any archeologists seriously even considered looking into the mythical situation.] But even if both claims were scantily justified, can both still be correct? One can still evaluate the quality of evidence, B argues. Not all evidence, scant though it may be, is necessarily equal in value.
3. both are valid but answer different questions. Archaeological story is about science and history, whereas the Zuni myth is about culture and society and anthropology. B. finds this to be unsatisfactory because “just as valid” in his mind demands head to head competition.

[This problem, it seems to me, is currently evident in TV political shows. If one guest says that eating babies is bad, they will find some crazy to argue the opposite and label him a “baby-eating-expert.”]
For me, this is the crux of B.’s argument. He is hung up on “just as valid.” If Anyon had instead said, “Science is just one of many ways of knowing the world…[The Zunis’ world-view is] just another aspect of human understanding which complements as valid as the archaeological viewpoint of what prehistory is about.”

p. 272
Stanley Fish’s argument: reality may be real, but our descriptive tools, vocabularies, are relativistic.

So.. B asks, …How did postmodernism become identified with progressive politics?... and how did it become so acceptable.
[I would argue that conservatives, particularly neo-cons, have actually used the postmodern ideas the most… not liberals. Compassionate conservatism. Peace from war. Social justice through the destruction of social assistance. A Men created equal, but inheritance is untaxed?]

p. 271
The reality is that Christian fundamentalism has been respected whereas Zuni fundamentalism has been trashed. How does that support the supposed liberal progressive ideal?, asks B.

Sokal’s hoax has become a “flashpoint” over standards of scholarship and intellectual responsibility.
Alland’s essay on Sokol’s book, Fashionable Nonsense.

p. 1026
Ross and Robbins, the editors of Social Text, who allowed Sokol’s hoax to get published argued that science has become a “civil religion” and has aided in racist, sexist policies and dominates nature with its theories. The French [continental] philosophical scene saw it as an affront… and they were ready for the impact of the publication of Sokol’s book *Impostures Intellectuelles*, the French ed. of *Fashionable Nonsense*.

The book warns of lazy science envied philosophers, using science to prop up their relativistic theories of reality.

p. 1027
The authors that Sokal hits are: Lacan, Kristeva, Irigaray, Latour, Baudrillard, Virilio and Deleuze-Guatteri… also some hits on Lyotard and Serres, but they are not featured. Authors NOT featured are Bourdieu, Derrida, Foucault, or Levi-Strauss… they are considered innocent of the crimes that Sokal and Bricmont charge against the others. The book also has analysis of Popper, Kuhn, Feyerabend.

Alland provides a nice juicy example from the book:

> If the identity of the human subject is defined in the work of Freud by a *Spaltung*, this is also the work for nuclear fission. Nietzsche also perceived his ego as an atomic nucleus threatened with explosion. As for Einstein, the main issue he raises in my mind, is that, given his interests in accelerations without electromagnetic reequilibrations, he leaves us with only one hope, his God. It is true that Einstein played the violin: music helped him preserve his personal equilibrium. But what does the mighty theory of general relativity do for us except establish nuclear power plants and question our bodily inertia, the necessary condition of life. . . .

> Quantum mechanics is interested in the disappearance of the world. Scientists today are working on smaller and smaller particles, which cannot be perceived but only defined thanks to sophisticated technical instruments. [Irigaray 1993:204–205]
Sokal and Bricmont respond to this quote as follows:

About the Spaltung, Irigaray's logic is truly bizarre: Does she really think that this linguistic coincidence constitutes an argument: And if so, what does it show?

Concerning Nietzsche: the atomic nucleus was discovered in 1911, and nuclear fission in 1938; the possibility of nuclear chain reaction, leading to an explosion was studied theoretically during the late 1930s and sadly realized experimentally during the 1940s. It is thus highly improbable that Nietzsche (1844–1900) could have perceived his ego “as an atomic nucleus threatened with explosion.” . . .

The expression “acceleration without electromagnetic reequilibrations” has no meaning in physics. . . . It goes without saying that Einstein could not have been interested in this nonexistent subject.

General relativity bears no relation to nuclear power plants. Irigaray has probably confused it with special relativity, which does apply to nuclear power plants as well as to many other things (elementary particles, atoms, stars . . . ). The concept of inertia certainly appears in relativity theory, as it does in Newtonian mechanics; but it has nothing to do with human beings’ “bodily inertia”, whatever that is intended to mean. [Sokal and Bricmont 1998:108–109]

p. 1028
One French critic compared Sokal to Kenneth Starr.

Sokal and Bricmont, clearly state that they don’t discount the social science… only that they need not use the physical sciences for their case studies.
They also see the merits of postmodernism… correction to progressivism/positivism, Eurocentricism, and scientism. Their criticisms are almost always on the fringe postmodernists.

Sokal and Bricmont are lefties… attacking radical lefties, but not on their politics, but on their scholarship and rhetorical integrity.

The 3 sins of postmodernism:
1) wastes time
2) obscures rather than clarifies
3) hurts causes of the left by being so bad
Furthermore it has created an “anything goes” academic standard in some places…

p. 1029
Sokal and Bric’s advice:
  1) know what you are talking about
  2) obscure is not necessarily profound
  3) Science is not a text [Bacon’s Idols of the Marketplace]
  4) science envy is bad [sort of Idols of the Theater]
  5) arguments from authority are suspect [nullius in verba] [Idols of the ?]
  6) there is skeptical and then there is Pyrrhonism
  7) ambiguity used as subterfuge

Science used as an argument for authority.
metaphor should be used to clarify not obfuscate.