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Making Transparencies: Seeing through the Science Wars

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## Making Transparencies

### SEEING THROUGH THE SCIENCE WARS

It is a logic of transparency that underlies the introduction of the fetal image into pro-life political activities.

—Faye Ginsburg, *Contested Lives*

**Sarah Franklin**

#### Introduction

It is no coincidence the Science Wars have erupted in British and American academic circles close on the heels of the Culture Wars preceding them: they are both about cultural values. The politics of knowledge at stake in both chapters of intellectual change are the same. In both skirmishes, the foundations of scholarly inquiry have been subjected to critique on the basis of their purported universality, formulaic absolutism, and exclusivity.

These challenges were inspired by several converging trends. One is the rise of poststructuralist, deconstructionist, psychoanalytic, and post-modern theory. These are the so-called traveling theories identified by Spivak, through which a decentering of many of the givens that previously structured assumptions about knowledge, its objects, and its subjects is effected. The new interdisciplinary fields of feminist theory, postcolonial theory, critical race theory, and queer theory are all areas of contemporary scholarship derivative of a move away from previous conventions of objectivity, neutrality, and canonical tradition. One way to define cultural studies in the United States is simply as the space in which discussions motivated by all the above changes can take place. It is both a popular and a contested arena. In general, the U.S. academy tends to observe strict disciplinary boundaries, whereas in Britain disciplinary boundaries are often more diffuse. In both countries, some disciplines operate as more of a “closed shop” than others. The significant decrease in public funding for higher education in both the United States and Britain during the past ten years has had the tendency to exacerbate tensions between the post- and interdisciplinary movements and their more discipline-bound corollaries.

All of this has raised the suspicions of traditionalists, who see in the rise of multiculturalism, ethnic and women’s studies programs, cultural

studies programs, and the anticanonical stance of many prominent contemporary intellectuals the decline of the American and British university systems. These traditionalists fear the loss of standards, conventions, tradition, continuity, and moral values that they believe to be essential to democracy, liberal humanism, rational inquiry, or simply the nation itself.

More recently, this same pattern of critique and countercritique has begun to gain momentum in the context of the Science Wars. Long enshrined as a kind of apex of rational knowledge production, so powerful as to remain largely immune to the vicissitudes of social change, science is now up for deconstruction just like all the rest of the Western canonical fare.

Scientists have become very agitated about this development. They, like the rest of the academy, are experiencing a downsizing in terms of public funding for research, and this fuels their anxiety. E. O. Wilson (1994) put it bluntly: "Multiculturalism equals relativism equals no supercollider equals communism." This is the central dogma for critics such as Gross and Levitt (1994), who argue that the academy is suffering from a "leftist infestation" they describe as "perspectivism": the idea that everything is merely a point of view. Indeed, critics such as Donna Haraway (1988) have explicitly advocated that knowledge be understood as always-already situated (somewhere), and that even objectivity itself is a located perspective. Haraway argues that this situatedness has consequences, and that these consequences must be taken account of in the deployment of knowledge. But this is precisely the view that has caused such a furor among scientists who view such an argument as incompatible with the search for unmediated knowledge about the natural and the physical world.

As Haraway and many other feminist science studies scholars have argued, the privilege accorded the value of objectivity is based heavily on a conflation between seeing and knowing. Detached observation, accurate description, and value neutrality in the pursuit of understanding are the key components of the objectivist epistemology at the heart of modern science (Jordanova 1989; Stafford 1991, 1994). Central to this constellation is the will to transparency, the idea that things can be known in and of themselves through a method of observation and description that does not leave a mark upon its objects: they are to be rendered transparently (Phelan 1993). As Latour (1987) has argued, nothing is ever strictly transparent in the context of scientific investigation, which depends on a representational and interventional apparatus with its own codes of visibility or clarity. Measurement, instrumentation, recording and monitoring devices, even the conceptual structures guiding data acquisition all bear the marks of particularity rather than of transparency (Hacking 1983). But the will to transparency refuses such critical deconstructions. The value of objec-

tivity is what anthropologists might describe as a “symbol that stands for itself”: it is as much an article of faith as a rational precept.

The guarantor of this faith is its instrumentalism, its practice, its efficacy. If science isn’t “true” because it is “objective,” its power is nonetheless manifest in *what it does*. Richard Dawkins (1994, 17) expressed this view when he declared in the pages of the Higher Education supplement of the *London Times*: “Show me a relativist at 30,000 feet and I will show you a hypocrite.” The power of science, of scientific objectivity, of the experimental method, of rational empiricism, is that *it can do things*. In turn, these accomplishments authenticate their origins through the very power of their presumed self-evidentness. But what is so self-evident about the fact that planes can fly? This feat could as easily be described as sophisticated tool use instead of as an indicator of epistemological certainty. And as certain as the fact that planes can fly is the fact that their design is constantly evolving, that experiments such as that of the Wright brothers have as much to do with desire as with established scientific principles, that some airlines show prayer films during take-off to invoke the aid of Allah in order to remain safely airborne, and so on.

The will to transparency is founded on the desire to remove things from their context. To know a thing in itself is the equivalent of radically decontextualizing it. The scopic instruments of scientific investigation depend upon the limitation they impose on their field of vision: the microscope, the telescope, the laparoscope, the endoscope. The effect is of looking through a toilet paper tube: it is an effect of being radically blinkered. Disciplinarity is defined by what is excluded, and so is detached, objective observation. The idea is that you see through a tunnel to the thing itself, the object to be known, the entity which is “thrown before” the gaze, as the etymology of “object” suggests. Both tunnel vision and disciplinarity rely upon not seeing “the rest of the picture” so it does not distract from the object in question. Like objectivity, disciplinarity is about screening things out.

Put this way, it is very obvious why both objectivity and disciplinarity have been keyed to power effects: insofar as they rely upon exclusion and the establishment of a privileged, partial perspective, they operate like spotlights highlighting the main event. It is the hypocrisy of asserting that so partial a perspective *is not a perspective* that attracts the critical eye of other observers. The history of knowledge practices—especially authoritative ones such as science—is a history of perspectives.

There is never only one perspective, and theorists of knowledge as a form of perspectivism point this out quite empirically. Marilyn Strathern (1992a, 3), for example, whose insightful anthropological reading of Euro-American knowledge practices as cultural effects is certainly among the most elegant formulations on this subject to date, argues that “culture

consists in established ways of bringing ideas from different domains together.” Culturally, understanding is not composed of single perspectives but of their contrast *and their relations to one another*. A technical term for this is *analogy*, and much has been written on the history of the use of analogy in science to direct its inquiry. Donna Haraway’s early work, for example, on the history of modern embryology, tracks the competing analogies at stake in the study of embryonic morphogenesis. Mechanism, vitalism, and organicism depended upon the use of specific analogies, for which her book is entitled: *Crystals, Fabrics, and Fields* (1976). The work of these analogies is not merely metaphoric, like so much window dressing. Analogues are central to both the information and the life sciences: they are tools of reasoning. Analogy itself is defined as a form of logic, and in science it is a powerful means of directing inquiry.

My contribution to this special issue of *Social Text* is also guided by analogy. The analogy is taken from Gross and Levitt’s *Higher Superstition* (1994), which is the main text critiqued in this account. In defense of the scientific way of knowing, Gross and Levitt invoke an analogy to life itself: it is the unmediated character of the relation between science and its objects, they argue, which is its “lifeblood”(17). I argue here that this is no rhetorical flourish but rather a core analogy to their defense of science. Through a brief historical anecdote on the relation between genius and generativity, I explore this conflation of knowledge with reproductive substance and argue that a particular reproductive politics informs their work. In turn, I make the claim that their pro-life defense of science is not unrelated to other Right-to-Life campaigns in current American politics, particularly in its reliance on a notion of transparency.

### **Vital Principles**

For Gross and Levitt, the privilege of scientific perspective derives from its unmediated relationship to reality. They have no doubt that “reality” is “out there” as an “ocean of truth” awaiting scientific discovery. Would that it *were* socially constructed, Gross and Levitt propose, for if reality could be bought, influenced, pressured, or bullied into toeing the line, science would be a wholly different undertaking! In their view, it is precisely the fact that scientific knowledge *cannot* be imposed on reality that created the inherent, progressive virtue of the scientific enterprise. And reality, in their view, is far from passive. Using a string of animated analogies, they argue that reality is “the overseer at one’s shoulder, ready to rap one’s knuckles or spring the trap into which one has been led by overconfidence”; it is “the unrelenting angel with whom scientists have to struggle.” It is reality that “creates the pain as well as much of the delight of

research” and holds “even the boldest imagination” hostage to its authority (234). Embedded in this description of the reality principle as they see it existing for scientists is the image, as Phelan (1993, 3) describes it, of the “Real-real” as a powerful force, or even as a domineering figure. It is the reality principle that keeps scientists on their toes. It keeps them honest, modest, and true. It brings them pain and it brings them pleasure. Reality is a disciplinarian: “an overseer” who is “unrelenting.” Reality’s authority is absolute, even divine; it is “an angel” in their midst.

What is most important about this complex relationship, according to Gross and Levitt, is its unmediated character. Science may be “influenced” by culture and politics, but it is ultimately a “reality-driven enterprise” (234). This is the bottom line—the point past which the vicissitudes of particular location of identity do not hold. Reality is Reality is reality, and, as the anthropologists say, “it’s turtles all the way down.” In Gross and Levitt’s view, the character of this relationship is not one of give-and-take, but rather of right-or-wrong: when scientists get it right, they are able to match the nature of reality with the precepts of rationality, and this is the distinctive power of the scientific enterprise. It is in turn the nature of this relationship through which scientific knowledge is depicted by them as a source of virtue: there is no playing fast and loose with the Real-real. “God does not play dice with the cosmos,” they insist. And, “since individually and collectively we are not God . . . we must inevitably regard the universe as a kind of crap game” (262).

Such statements explain the intolerance of Gross and Levitt, among others, for the claim that science is a cultural or political endeavor. The stern taskmaster that is their figuration of the Real-real ultimately holds the cards, and the best scientists can do is to read them with greater or lesser precision. Science is not a game scientists can ever “win”: it is only one they can get better at playing.

The point at which science studies scholars and traditionalists like Gross and Levitt part company is in the matter of what difference it makes to construct knowledge as relational. No amount of rational argumentation, historical documentation, or cultural interpretation is capable of dislodging their view *because it is ultimately one that positions knowers as less powerful than the reality they describe*. At the same time, they argue, scientists have a privileged access to this reality because of the knowledge practices they employ—and, as they see it, it is this relation which has a life of its own.

This is not the view of either knowledge or of its objects espoused by many cultural theorists, for whom knowledge is relational in a much broader sense, invoking different relations of power and authority. For cultural critics too, knowledge may be measured by what it can do, by its power to inspire, to convince, to bring about change, or to defend a point

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of view. That knowledge relations are fixed in an authoritarian, hierarchical relation of knower to known, a relation which itself exists in some hermetic dimension of unlocated, disembodied, and acultural time and space, can only be accurately described as a very particular way of understanding what it means to know. Above all else, the view that knowledge is only authenticated by a distant, knuckle-rapping, cipherlike agency, with powers commensurate to those of a divinity, can only be described as itself a perspective. According to Gross and Levitt, this construction cannot be interrogated as a metaphysical, cultural, or historical question, which would, by definition, be unscientific and thus insubstantial. Effacing their own perspectivism, science defenders describe their own knowledge practices as the only route of legitimate access to the empirical reality they describe, thereby reentering the loop in which a presumed definitional function of empiricism affirms its own tenets. That there are many forms of empiricism is itself an empirical fact, but not one that makes sense from Gross and Levitt's or Dawkins's perspective. What is most left out of their account is precisely what defines it, namely, a specific perspective on the relation between knowledge and its object. "Perspective," as Phelan (1993, 24) points out, "is essentially a theory of relationships."

### Contested Conceptions

Untrammled by a holy ghost analogous to Gross and Levitt's unrelenting angel of authority, cultural studies scholars move in a different "ocean," more accurately described as fluidly metaphoric than as filled with "truth." "Truth" for most cultural theorists is a contextual entity: it comes in many varieties. As Adrienne Rich (1987, 27) writes of truth, "There is nothing simple or easy about this idea. There is no 'the truth,' 'a truth'—truth is not one thing or even a system. It is an increasing complexity." A different way to consider the arguments presented by the *indignati* of the Science Wars is to invoke a comparison.

The comparison that comes to mind is of a different field of contestation—of reproduction, and of reproductive politics. As Zoë Sofia (1984, 48) so wisely put it, "Every technology is a reproductive technology," and this must also be said for disciplinarity. Gross and Levitt know this all too well. The reproductive implications of the peril they perceive are quickly and literally rendered. Early in the book they warn that "the manifestation of a certain intellectual debility afflicting the contemporary university" threatens "the future of our descendents and, indeed of *our species*" (1994, 7; emphasis added). *Species* is a reproductive term, for species are defined, in large part, by their reproductive borders. The threat to our species posed by the "attacks on science that grow out of a doctrinaire political position" are, significantly "misconceived." The

attacks are the result of ignorance—an “ignorance even more profound” than the “self-satisfied ignorance” of the classicists and historians “exco-riated” by C. P. Snow at midcentury. This ignorance threatens not merely the scholarly credentials of future generations but our species itself.

Reproductive imagery is liberally sprinkled through Gross and Levitt’s text. The aforementioned “ocean of truth” available to science is described as its “lifeblood,” its “vital principle.” In turn, this uncontainable vitality brought forth “the birth of Western science” and likewise “the birth of its prestige as a uniquely reliable and accurate way of describing the phenomenal world” (17). These and other images convey an organismic impression of knowledge practices that is consistent with a long-standing association between epistemic and organic conceptions.

Historically, such “conceptual” associations have often been remarked on in relation to the notion of scientific “genius,” long associated with the “seminal” arguments of the “founding fathers” of the “hard” sciences. The history of exclusion of women from science on the grounds of the “polluting” influence of their reproductive capacity is also well documented (Schiebinger 1989, 1993). Academic life remains terminologically heir to such traditions, with its bachelor’s and master’s degrees, its seminars and testimonials, and its other androcentric remnants. The convention of copyright, protecting the property of the author’s individual inspirations, is modeled on the proprietary rights of other paternal emissions, and authorship is itself closely indexed to paternity. Christine Battersby, in her illuminating study, *Gender and Genius* (1994), describes this as the Virility School of Creativity, and its reference is clearly procreative.

This reference has an ancient pedigree, documented by classicists and historians across two millennia. Richard Onians offers an intriguing portrait of the ancient Greeks’ ideas about creation and conception:

There is varied evidence that the head was holy with potency by which to swear and make appeal and was thought to contain the life. . . . Homer and his audience knew that during life and for some time after death the brain is a fluid mass. . . . It had nothing to do with ordinary consciousness (perception, thought and feeling being the business of the chest and its organs), but instead was the vehicle of life itself, of that which continues and does not die. But life does not persist in the individual; it issues forth. This is the greatest miracle, the holiest mystery. . . . It was natural and logical to think that the “life” issuing from a man must come from the “life” in him, from his head therefore, and, helping that location, to see in the seed, which carries the new life and which must have seemed like the very stuff of life, a portion of cerebro-spinal substance in which was the life of the parent. It will indeed appear that this interpretation of the cerebro-spinal substance as seed is vital to the whole thought. (1951, 109–10; Greek terms omitted)

Referring to changes in the latter half of the fifth century B.C., Onians describes the importance of popular beliefs about the “mindful generative marrow,” which was applied to the brain and its fluid as well as to that of the other bony cavities. “For Democritus the ‘life’ was bound and rooted in the marrow,” especially the “divine marrow” of the head. “The seed is enclosed in the skull and spine and explicitly identified with marrow, or, as it is once called, ‘generative marrow,’ and flows thence in the propagation of new life. It breathes through the generative organ. This appears to be original popular belief” (119; Greek terms omitted).

For the Romans, as H. J. Rose (1923, 135) argues, “the genius is the life, or reproductive power, almost the luck of the family. . . . It is one, and one only, for each *gens*.” This leads Onians to conclude that the Greek conceptions of life and mind directly influenced those of the Romans.

It has been generally recognised that [the Roman view of the head] was used as loosely equivalent to “life”. . . . I suggest what does not appear to have been suspected (is) that it was thought to contain the seed, the very stuff of life, and the life-soul associated with it. . . . The use of our *caput* (our ‘capital’) for money which produces interest can now be seen to arise from this thought; ‘interest,’ what the ‘head’ produces, was ‘offspring,’ *fenus* which the Romans rightly thought to have the same origin. (105–6, 124)

Speculative though such classical accounts may be, the broad parameters of connection between genius, generation, gender, and the *gens* are clearly established, as their etymological proximity in English already makes evident. The links to modern English usage in relation to blood are also evident in antiquity, as they are in Old English.

These linkages have a number of implications not only for the gendering of knowledge as creativity, linked to the notion of the male seed, but also to definitions of kinship and property. In turn, the importance of the concepts of genealogy and consanguinity—so essential not only to Darwin as a means of unifying nature, or life itself, as a system of descent, but to Morgan, Frazer, Taylor, and Maine as a means of theorizing social organization along evolutionary lines—becomes apparent. The definition of species itself, of *Homo sapiens sapiens*, of “modern man,” shares this derivation. “If *sapere* meant originally ‘to have sap, native juice,’ and was applied to the chest, that accords perfectly with what we shall find, that the Greeks and Romans related consciousness and intelligence to the native juice in the chest, the blood” (Onians 1951, 62–63).

This “juice” has been significant to more than genealogy. As the earlier reference to capital suggests, it has also had important implications for definitions of property. Writing of the origins of copyright in the early eighteenth century, Mark Rose describes the protestations of Daniel Defoe against the “plagiarists and pirates” who traded in the (then)

unprotected literary works of authors such as himself. Building on the Latin meaning of *plagiary* as kidnapping, Defoe equated such literary appropriations with child stealing:

A Book is the Author's Property, 'tis the Child of his Inventions, the Brat of his Brain; if he sells his Property, it then becomes the Right of the Purchaser; if not, 'tis as much his own, as his Wife and Children are his own— But behold in this Christian Nation, these children of our Heads are seiz'd, captured, spirited away, and carry'd into Captivity, and there is none to redeem them. (cited in Rose 1995, 1)

As Rose notes, this analogy rests on the likeness between “own” in the kinship sense (my own flesh and blood) and “own” in the sense of property, as in “ownership.” What is also evident in these debates occasioning the “birth” of literary property is the importance of the analogy to paternity, and its equation with propriety, in the older sense of rights to property. It is the relation of father to child, modeled on the Judeo-Christian (or Greco-Roman) concept of paternity as *begetting*, which is, according to Rose, “the most common figure in the early modern period” to represent the relation between authors and their texts.

The same pedigree applies for science. From the Aristotelian model of “the seed and the soil” has developed a consistent tradition of privileging the generative power of the male seed, thus uniting procreative acts with the power to create in general (see Delaney 1986, 1991; Laqueur 1990). As Rose points out, William Harvey expressed this principle again in his famous refutation of the Aristotelian model of conception, which had held sway more or less intact for two millennia. In “Disputations Touching the Generation of Animals,” based on his experiments with the King's Royal Deer in England in the mid-seventeenth century, Harvey drew an analogy between artistic and biological conception: “The generation of things in Nature and the generation of things in Art take place in the same way. . . . Both are first moved by some conceived form which is immaterial and is produced by conception” (cited in Rose 1995, 5).

As these historical examples make clear, it is not “merely metaphoric” to speak, as Gross and Levitt do, about the “lifeblood” of the scientific endeavor, or about its “vitality.” Invoking reproductive substance to do service for the inviolability of knowledge practices and depicting this potency as the lifeblood of the scientific enterprise, the protection of which is essential to species survival, is not to make an idle comparison. It is rather to invoke a well-established Western idiom of creation, of which the examples given here provide no more than the most cursory of indications. Gross and Levitt's descriptions of science studies arguments as misconceived are consistent with this same tradition, as are their references to the “degeneracy” that will ensue if such criticisms take greater

hold. It is only a small step from such claims to the “future of the species”; as the very notion of the species—the continuity of the germplasm, the consanguinous universe that is the post-Darwinian model of Nature or life itself—is based on the same elementary analogies. From this point of view, the threat to knowledge-as-we-know-it, to its potency and propriety, is rightly perceived as a reproductive threat, and overdeterminedly so.

### **Transparent Values**

The relevance of a comparison to other contemporary American reproductive struggles becomes apparent through the explicit representation of the Science Wars as a vital matter of reproductive rights and wrongs. In her now-classic ethnographic monograph on the abortion struggle in the United States, Faye Ginsburg (1989) presciently noted the importance of the fetal image as a symbol in the war against abortion. The aggressive deployment of this image by antiabortion campaigners since the early 1970s is based on the premise that if women had accurate (scientific) knowledge of fetal development, they would not choose abortion. As Ginsburg notes, “A popular quip summarizes this position: ‘If there were a window on a pregnant woman’s stomach, there would be no more abortions.’ It is a logic of transparency that underlies the introduction of the fetal image into pro-life political activities” (104). Specifically, Ginsburg notes that “the Right-to-Life belief that conversions will take place after seeing the ‘truth’ about abortion relies on the way knowledge of the fetus is constructed” (105). In other words, the “truth” about the fetus which will have the desired effect of “converting” new members to the Right-to-Life position has to be constructed in a particular way so as to appear logically as well as visually “transparent.” Ginsburg describes the formal dimensions of pro-life imagery constituting their central moral and political message:

Right-to-Life visual material offers two representations of the fetus that are continually “active together.” The principal subject is the magnified image of the fetus—for example, floating intact inside the womb, or focussed on tiny, perfectly formed feet held between the thumb and forefinger of the adult. These pictures are usually in warm, amber tones, suffused with soft light, rendered more mysterious by their separation from the mother’s body. Juxtaposed to these photographs are gruesome, harshly lit, clinical shots of mutilated and bloody fetal remains “killed by abortions”—what pro-life activists refer to as “the war pictures.” (150)

As Ros Petchesky (1987, 286) argues, the fetal form has acquired a “symbolic import that condenses within it a series of losses—from sexual inno-

cence to compliant women to American imperial might. It is not the image of a baby at all, but of a tiny man, a homunculus.” The message of the Right-to-Life fetal imagery is clear, and its aim is to convert. “Once a potential convert witnesses a certain ‘truth’ and comes ‘under a conviction,’ there is only one path to follow” (Ginsburg 1989, citing Harding 1987, 105).

Like the unmediated truth sought by scientists (according to the model of knowledge espoused by Gross and Levitt), the relation of the American public to Right-to-Life fetal imagery is premised on transparency, on the removal of interfering context (the woman’s body), and on the direct apprehension of “truth” by modest, righteous witnessing. Like Gross and Levitt’s relentless “angel,” this truth is a disciplining force: it is simultaneously awesome, mysterious, and “clear.” The point is that the relationship between the knower and the “reality” to be known produced in both contexts, both of which hover between secular and religious experience, is identical. Barbara Duden, in her cogent discussion of the abortion debate in Germany, uses the term *visualization-on-command* to describe this means of apprehension. Structured by the rigid dictates of specific representational practices, the eye is disciplined to “see,” as it were, “what we are shown” (1993, 17).

### Conclusion: The Politics of Perspectivism

What is at stake in the politics of making transparencies is the politics of perspective. It is not that science assumes a perspective which is seen to be iniquitous or false by science studies scholars. It is instead the denial that such a perspective is a perspective which is seen to carry the most significant political and moral consequences, for it is this denial that attempts to render invisible and inaccessible to scrutiny or questioning exactly how that perspective works, what it includes and excludes, and how that inclusion or exclusion is itself a cultural effect. It is not inappropriate for scientists to rely upon disciplined conventions of apprehension or analysis. It is not odd or out of place that they should assume a certain position in relation to the object of this gaze, embedded as it is in at least two centuries of dedicated refinement of such observation techniques. It is, as Gross and Levitt claim, in fact very impressive what such a relationship can do, what it can produce, and what it can enable its practitioners to deduce about the world. I, for one, am in no need of convincing on the point that there is “something special” about scientific ways of knowing. This point is particularly well argued by John Moore in his book about the history of the life sciences, entitled *Science as a Way of Knowing* (1993). But this title says it all: science is *a* way of knowing. It is not necessarily *the* way of knowing by which everything under the sun should be

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judged for all time because it “works” for scientists. It does some kinds of “work” as a form of understanding; it most certainly does not do other kinds. And, most important, the fact that this perspective depends on an analogy of transparency does not mean that it is itself so self-evidently “clear” as to need no further explanation.

Gross and Levitt accuse their critics of a panoply of evils: from envy, arrogance, and “sheer puffery” to weak-mindedness, debility, and ignorance—and much else in between. To correct the shortcomings of their critics, whose work is most often dismissed by them as merely “silly,” and which, by their own admission, they often do not understand, they propose two basic principles. One is that they are not prepared to accept any discussion from nonscientists about the scientific enterprise until those critics know science “in itself,” that is, as a scientist would. This principle, as stated in their chapter on feminist critiques of science, reads as follows: “*We would have to be shown that there are palpable defects due to the inadequacies of male perspectives, in here-to-fore solid-looking science and that the flawed theories can be repaired or replaced by feminist insights*” (112; original emphasis). The principle here expressed is that the *only* criterion for evaluating science studies is its ability to improve existing science. It thus rigidly excludes any attention to the conventions that structure scientific criteria, or the relationships constituted by scientific perspectivism. It insists on working *within* criteria as the *only* means of assessing their validity.

The second principle elaborates upon the first, in the form of their advice to social scientists:

What we wish to emphasize . . . is that the underlying strategy that guides the intellectual enterprises of Smith, Diderot, Locke, Gibbon, Herder, Hume, Jefferson, and (what was until recently) a pantheon of others remains as an ongoing tradition that is unlikely to disappear within the imaginable future. This is simply, in its most naked [*sic*] form, the strategy of taking the social order, per se, as the object of one’s critical investigations, seeing it as describable, in large measure, on the basis of discoverable first principles. It is to be implemented by combining careful and exhaustive attention to solid empirical fact with the construction of a more or less rigorous deductive model.

At their very best, such theories yield chains of propositions which themselves may be regarded as confirmed insights into the social organism, or as tentative hypotheses to be tested in the hard world of experience, as a trial of soundness of the fundamental postulates of theory. (18–19)

Scientific methodology, as these two principles suggest, is not merely for the “hard” sciences. Social scientists too should reconstruct their object of inquiry as an “organism” and their method as the hypothetico-

deductive model derivative of the experimental method. Insofar as either social scientists or science studies scholars do not conform to these dictates of the reality principle hypostasized by science, their contributions are not only illegitimate and degenerate, but unscholarly and venomous.

To police and maintain these principles within the academy, Gross and Levitt exhort their scientific colleagues to abandon the gentle tolerance and openness they have shown in the past, and to wake up, smell the coffee, and get involved in tenure decisions. Don't be afraid to speak up, they encourage their would-be converts. Take a stand against the fatuous, self-inflated pomposity of the antiscience zealots, with their glamorous self-presentation, their "cult status" shenanigans, and their dubious pretensions to have anything to say about scientific subjects they clearly do not understand.

The righteousness of this invective, its firm conviction as to the one, true path before us, and its depiction of our species, our nation, and our technologically advanced way of life as threatened by the totalitarian aspirations of the "absolute relativists" clearly comprise, as Gross and Levitt are fond of saying, a species of reactionary demonization. Like Gross and Levitt's origin story for the science troubles, which roots the current generation of "leftist academics" in a state of petulant denial over the failure of social movements of the 1960s and the decline of socialism internationally, these criticisms are as knee-jerk traditionalist as they are fruitlessly *ad hominem*.

With their "war pictures" out in front of abortion clinics, the Right-to-Lifers continue to wage a battle against the legal right to abortion, which remains a legal option for American women. With the conviction of their singular perspective, and their through-a-toilet-paper-tube cameos of still-life fetal forms, they assert transparency as truth from the standpoint of a radically decontextualized claim on the realities of reproduction. As Phelan (1993, 30) notes, "By displaying the fetus as the single image within the triangulation of reproduction, Operation Rescue attempts to ignore the dilemma of the pregnant woman entirely and to leave unmarked the freedom of (invisible) paternity." But like other forms of truth, the realities of reproductive decision making are not so clear. There is not a singular perspective on pregnancy, any more than there is a singular perspective on anything else. Making the womb "transparent" does not make the problem of unwanted pregnancy disappear.

Gross and Levitt's *Higher Superstition* is a "war picture" for their fellow academicians. It too is a form of Operation Rescue based on the trope of imperiled progeny. Through a careful juxtaposition of imagery aimed at making their message perfectly clear, they exhort their compatriots to rally to the cause of a singular path. Like other conversion stories, theirs is based on a lengthy testimonial of witnessing the threat within. Like Ran-

dall Terry and the Operation Rescue campaigners, Gross and Levitt espouse a paternalistic Right-to-Life discourse concerning the vital essence of the scientific ethos, and the importance of its salvation on behalf of our children's futures. They are confident that the will to transparency is the only source of knowledge "hard" enough to see our universities, our nation, and our species safely across the millennial divide, and beyond. Their certainty is especially impressive given that paternity has never been the celebrated context for exactitude or conviction that certain other knowledge practices are said to offer in its stead.

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