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Response to Ginev, "Scrutinizing Scientism from a Hermeneutic Point of View"

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Dimitri Ginev describes scientism, *prima facie*, as "the postulation of the natural sciences' norms, standards, and criteria of objectivity as an absolute system of reference in recognizing and resolving global social problems" (73). Scientism has been under ferocious attack for a long time at the hands of philosophers of science including Rorty, Habermas, and Heidegger. Yet, Ginev argues, these attacks are defective because of their 'essentialism;' that is, they assume, though in different ways, "invariant norms of theorizing, methodological devices, cognitive aims, goals, and values" (68).

Rorty, for instance, identifies scientism with the view that science has a distinctive method that has come to be celebrated as a superior paradigm of rationality. Rorty then sets out to eradicate that cognitive distinctiveness so as to be able to deny science's "privileged status in modern societies" (70). The Rortian strategy that interests Ginev involves the antiessentialist point that a culture not divided up into disciplinary areas whose foundations are provided by cognitive essences is fully equipped with resources to refuse granting priority to scientific knowledge or making it the model for all epistemological inquiries. Yet Ginev finds this strategy to conflict with Rorty's embrace of the theory-dependence of science's empirical base. This, according to Ginev, in effect imports a kind of essentialism back into Rorty's critique, and fails to recognize the full dynamics of scientific research.

Habermas goes along with Husserl in regarding scientific knowledge and its alleged objectivism as based on the pre-scientific reality of the life-world. Habermas, however, finds that Husserl failed to see that scientific knowledge is also based on "the layer of the basic conditions of human life's interest structure" (73). Husserl, that is, overcame one kind of objectivism but succumbed to another. Where Habermas goes wrong, according to Ginev, is in claiming that "research processes in the natural sciences are pre-determined by technological interests" (76), failing to recognize that there are "a plurality of knowledge-constitutive interests in natural science" (72). Ginev, drawing largely on Habermas's early works such as *Knowledge and Human Interests,* says that this, too, fails to do justice to the dynamics of scientific research.

Heidegger, meanwhile, views natural science research as intrinsically preceded by and opened up by a "mathematical projection" that is independent of and prior to the rest of science. For Heidegger, as Ginev puts it, experimentation is "a dimension of mathematical projection" (77). This enables Heidegger to claim that "modern science's way of representing pursues and entraps nature as a calculable coherence of forces" (78). Ginev finds this, as well, to mischaracterize scientific research.

A genuine philosophical account of science, Ginev says, would not seek to impose norms on science to ensure that it is used for progressive ends, nor would it assume that science requires a theoretical framework "whose formal essence … determines the way of constructing theory's empirical base" (71). Ginev seeks instead to give an account of science "in terms of a certain interpretive doctrine of meaning constitution" (71). This

will preserve the "genuine distinctiveness of science as an intellectual enterprise" (70), describe its proper cognitive authority, and provide "a more articulated picture of the intrinsic dynamics of scientific practices" (71). Ginev calls the result "cognitive existentialism" (68).

Ginev's approach involves a serious engagement with the significance of interpretation and hermeneutics for science. Questions could be raised about his readings of Rorty, Habermas, and Heidegger; these thinkers are not so much engaged in giving serious accounts of science as in trying to liberate philosophy from its tendency to model all epistemological activities on science. They focus, that is, less on scientific practice than on the cultural understanding and impact of science. In my response, however, I shall limit myself to four remarks. These remarks have to do 1) with the cultural presence of scientism; 2) with the role of history of science; 3) with experimentation, and; 4) with Heidegger's resources for a study of science such as the one Ginev proposes.

The Cultural Presence of Scientism

Is it really true that scientism, as Rorty, Ginev and others characterize it, is dominant in the modern world? A 21st century United States citizen could be forgiven for thinking otherwise. It is not merely that Presidential candidates have denied evolution, that Vice-Presidential candidates have denied global warming, and that legislators charged with overseeing the U.S. scientific research program have denied robust scientific conclusions concerning health care, how the human body works, the age of the earth, the causes of cancer and autism, and other issues about which there is nearly universal consensus in the scientific community. It is also that debates about things like genetic engineering, fracking, and the detection and treatment of major types of breast cancer turn far more on ideology and emotion than science. Someone claiming that scientism is a dominant cultural force is surely standing in the 1950s, not in the current century — or thinking perhaps of its impact on academic agendas.

Pielke draws the distinction between "Tornado Politics" and "Abortion Politics." In Tornado Politics — making a collective decision, say, about an oncoming tornado — participants share a common objective, the scope of choice is limited, and "scientific information is critical for decision-makers to evaluate and compare decision alternatives" (Pielke 2007, 42). In Abortion Politics — making a collective decision, say, about what to do about abortion — there may be no shared commitment to a specific goal, many approaches guided by different values are possible, and "arguably no amount or type of *scientific* information about abortion can reconcile the different values," meaning that "the relevant information is not scientific information about abortion" (Pielke 2007, 42). Pielke points out the strong desire "to turn Abortion Politics into Tornado Politics," that is, to frame the debates in terms of widely shared values (health, say) that seem decidable by scientific experts, rather than in terms of values that are not widely shared (what constitutes personhood). If such desires are successful, it might indeed be considered an indication of scientism. But the cases mentioned above — genetic engineering, fracking, and treatment of breast cancer, not to mention the reality of global warming — are just

the reverse: cases where scientific voices should but do not play a large role, with ideological voices dominant.

What is involved in such circumstances is not uncertainty about the way that knowledge is produced, nor with uncertainty over the recognition and legitimation of expertise, nor even with the dynamic of trust and deference between producers and consumers of expertise. Rather, what is involved concerns how voices recognized as expert are "heard." In some cases, expert voices are heard clearly and authoritatively, while in others expert voices are drowned out. To describe what is happening requires considering what I call the *acoustics of expertise.* In the 21st century, discussions about scientism need to be supplemented with the recognition that the scientific, expert voice has no privileged or intrinsic audibility, and with an account of the acoustics of expertise.

History of Science

My second remark has to do with the role of the history of science. Quite simply, claims about the theory-dependence of science's empirical base do not stand up to close study of the history of science. Here I will limit myself to referring to the work of historian of science Mara Beller on the founders of quantum mechanics. Beller challenged the neat picture of the development of quantum mechanics as involving a paradigm shift in which the scientists had to jump from one theoretical "boat" to another. Carefully examining the correspondence, lectures, and papers of the founders, Beller found that they thought about experimental data with different incompatible theories, and could not have progressed in their thinking had they done otherwise (Beller 2001). What they were responding to was laboratory findings, with theories up in the air. They thought by walking between several boats, so to speak — sometimes even in the same paper — with the findings giving them the confidence to do so. The theory-dominant picture of science is simply not how science works.

Experimentation

Ginev's project focuses on understanding scientific research as hermeneutically fore-structured within horizons of possibilities projected by interrelated practices. As I have argued, however, such a project requires a specific treatment of experimentation (Crease 2003, 1993). As Ginev has described, science is a form of inquiry with a hermeneutic structure — in the famous hermeneutic circle — with a tripartate structure. Its first moment involves an inheritance of an existing set of involvements and abilities that provide a grip on the world. Its second moment is a vague sense of dissatisfaction; the sense that one can get a better grip, something 'more.' Its third moment is a sense of how to get that 'more' from what one already has. The hermeneutic point is that this is not a stepwise process, or an 'inverted U' that moves from data to theorizing to verification, but a continuous motion of all three moments. In some forms of inquiry, however, it is not enough to consult what one already has — to read more books, say, or to talk to more people — but to stage an event, to enact a material happening, to create a performance. We call these events or happenings or performances made in the service of an inquiry 'experiments.' An experiment is an action that has been planned and programmed on the

basis of a certain theory, but can give 'more' back than what we put it; it can disclose things, even wholly unanticipated things, that may cause its creators to change that theory. That's why we do them! An account of experimentation is an essential idea for any identity of science; otherwise, we wind up running the risk of over-textualizing science.

Heidegger

Ginev seeks to develop an "alternative philosophical identity of science" (74), that treats scientific praxis "as a mode of being-in-the-world projected upon possibilities" (74) in such a way that even theoretical entities are regarded, not as idealized entities, but as "open horizons for possible intervening in research situations" (74). Here is one place where I think he underestimates the resources that Heidegger offers. I have argued, for instance, that the "intrinsic dynamics of scientific practices" can be spelled out effectively by using Heidegger's notion of formal indication (Crease 2009), however strange it may sound to apply an idea developed for pre-theoretical experience to the context of scientific experimentation. What makes it appropriate is that formally indicating a phenomenon, even a laboratory phenomenon, leaves open the possibility that that phenomenon may appear concretely in different ways in different contexts. Formally indicative language does not make something present as the thematic object of a theoretical account, but gives it free play — sees it as a 'being-possible.' The formally indicated phenomenon is not worked out and characterized fully in advance as a "cognitive essence" (74), but something always already interpreted and anticipated, and able to be further explored. This is clearly remote from Heidegger's intentions; he thought formal indication was useful to think about things like care and death, not about things like cells and atoms. Still, as I argued (Crease 2009), understanding how scientists spoke about the phenomenon of a "cell" over four hundred years seems more formally indicative than theoretically representative. The scientists responded to the phenomenon during that time, not to the concepts. They responded to what was coming to them through their instruments, and changed how they related to that phenomenon as it came at them differently. Utilizing the concept of formal indication seems an excellent way of pursuing a cognitive existentialism.

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