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AFTERWORD

The Discovery of Truth in Context

COMMENTS ON FAIGMAN, KATSKEE, AND KEIL

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Truth is hard to come by, even in optimal circumstances where the criteria are explicit and clear, and where it can be objectively established whether those criteria have been met (at least in principle). Consider baseball. When a batter does not swing at the ball, the umpire must make the call. Is it a strike or a ball? The criteria are explicit: the ball must be within the strike zone. The batter knows this, the pitcher knows this, the fans know this, and the umpire, of course, also knows this. The criteria are clear. In principle, one could have the decision made by machine, as it is often done in tennis. Despite the empirical clarity and explicit decision rules, there are still three ways of construing the truth every time the umpire makes the call. The first might be called *objective realism*: when queried, an umpire who is committed to this position would say, "I call them as they are." The second, *subjective realism*: "I call them as I see them." The third, what might be called *declarative realism*: asserted by one of the greatest umpires of his time, Bill Klem, "It ain't nothin' till I call it."[1]

From my layperson's point of view, many judicial decisions, even those informed by scientific realism, seem to be somewhat akin to Klem's decisions. They are constrained by the relevant criteria and by the "objective" facts, yet they ultimately depend on human judgment. A case that comes to

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[1] *See* GEORGE SULLIVAN & BARBARA LAGOWSKI, THE SPORTS CURMUDGEON 164 (1993).

mind is a decision by the International Court of Justice. That court decided that the massacre of Bosnian Muslims at Srebrenica in 1995 was an act of genocide, but that Serbia itself was not guilty of the crime[2]. Judicial decisions such as this constitute a particular type of speech act. According to the philosopher of language, John Searle, there are roughly five kinds of speech acts: *assertives*, whereby we describe a state of the world such as "today is Friday"; *directives*, where we request something, such as "could you please hand me a glass of water"; *commissives*, whereby we commit ourselves to some course of action, such as "I'll have chicken tonight"; *expressives*, whereby we tell people how we feel about something, such as "I really enjoyed today's sessions"; and, most relevant to this discussion, *declarations*, whereby we accomplish something merely by saying something.[3] Bill Klem's shouting "Steerike!" defined that pitch as a strike, just as the International Court of Justice's declaration that genocide had occurred did not simply label an act, but also defined the 1995 massacre as an act of genocide.

These two examples illustrate not only the nature of declaratives, but also that most speech acts accomplish more than one thing at a time. In these examples of calling a strike and declaring an act of genocide, the speakers are not only describing a state of the world but characterizing those states. Calling a strike creates a strike and purports to describe a state of the world—the ball is asserted to have been in the strike zone. Declaring an act of genocide not only creates a new act of genocide, but also asserts that the act did *in fact* violate the United Nations Convention on Genocide.

I do not know if Professor David Faigman would agree, but it seems to me that the concept of scientific realism[4] and issues of factual "truth" share some of the properties of these examples. Scientific realism is the assumption that there is a real world independent of our minds that can be studied scientifically. At the very least, the notion of scientific truth should encompass not just fact finding, but also fact creation—not just asserting, but declaring that an act meets the criteria

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[2] Marlise Simons, *Court Declares Bosnia Killings Were Genocide*, N.Y. TIMES, Feb. 27, 2007.

[3] JOHN R. SEARLE, EXPRESSION AND MEANING: STUDIES IN THE THEORY OF SPEECH ACTS 12-20 (1979).

[4] For elaboration of this concept, see generally David L. Faigman, *Scientific Realism in Constitutional Law*, 73 BROOK. L. REV. 1067 (2008) (this volume).

for, say, genocide. This not only declares that a particular act meets those criteria, but also creates a new member of that category of acts.[5]

Faigman's discussion of scientific realism and the place of facts in the context of constitutional interpretation reminds me of the debates in economics concerning another kind of realism, "behavioral realism." Behavioral realism refers to the use of scientific knowledge about people to evaluate assumptions (often unfounded) about human nature. The work of such scholars as Amos Tversky, Danny Kahneman, and Richard Thaler,[6] among many others, raises important challenges to the concept of "rational man," culminating only recently in the establishment of behavioral economics as a recognized discipline.[7] While by no means universally accepted, more and more economists are recognizing the relevance of behavioral and social science findings to economic theory and practice. Again, from my layperson's perspective, scientific realism seems to be a necessity not only in economics but also in legal interpretation, especially in those contexts where abstract concepts such as equality and liberty must be instantiated anew as time passes and the world changes.

From a psychological/behavioral standpoint, people's understandings of abstract concepts are rarely, if ever, explicit. Instead, such concepts can be inferred by examining how they are instantiated in a given context. As Faigman clearly points out, as times and circumstances change, people's constructions of concepts such as segregation also change. The notion that segregation is inherently unequal provides a good example of unanticipated instantiation. Consider the problem of warring gangs in prisons: when gang members are assigned cell blocks on the basis of their race or ethnicity, is this an instance of "segregation"? Just as declaring that the murder of Bosnian Muslims was genocide, declaring that the concept of segregation is or is not applicable to the gang situation instantiates that concept in a new way. The transcendent concepts listed by

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[5] For elaboration of this view, see generally Richard B. Katskee, *Science, Intersubjective Validity, and Judicial Legitimacy*, 73 BROOK. L. REV. 857 (2008) (this volume).

[6] *See, e.g.*, AMOS TVERSKY, PREFERENCE, BELIEF, AND SIMILARITY: SELECTED WRITINGS (Eldar Shafir ed., 2004).

[7] Also culminating in a Nobel Prize in economics to Kahneman for his work with Tversky on heuristics and biases in decision-making under uncertainty. Daniel Altman, *A Nobel That Bridges Economics and Psychology*, N.Y. TIMES, Oct. 10, 2002, at C1.

Faigman, such as free speech, free exercise of religion, equal protection, and due process, may well be eternal truths, but those truths must necessarily be instantiated in concrete cases as people decide whether situation X is a case of free speech or due process or equal protection. Declaring or not declaring it so is analogous to calling a ball or a strike; in a very real sense, saying so makes it so. And because our world is dynamic and changing, such decisions must always be made anew (Justice Thomas notwithstanding). In short, Faigman's arguments are remarkably consistent with what we know in cognitive science about the nature of human concept learning, concept structure, and concept instantiation and application.

Because general concepts must be instantiated anew with every new context, there is ample opportunity for biases to shape and color each new instantiation. Faigman's analysis of biases in social science research is consistent with what we know of bias effects and how we try to minimize them. The opportunities for biases to affect the selection of problems, the definition of the subjects of study, determination of what to conclude, discriminating between fact and value, and assessment of the validity and applicability of evidence are virtually endless. The first step to minimize bias is to explicitly recognize that there is a distinction between fact and value. Further, and not incidentally, this requires explicit adherence to the proposition that there is a real world, independent of our minds, and that we can discover facts about that world. Then, as in all sciences, we must do what we can to minimize bias in every phase of our work. For example, in both behavioral and medical research, we employ double blind studies to minimize both observer and participant bias effects. We use placebos in medical research to isolate the effects of expectations from the effects of the treatment under investigation. As Faigman observes, even the "hard" sciences such as physics recognize the interactive effects of observer, observer position, and the phenomena under study.[8] I agree with his analyses and concerns, and with his conclusion: "Adhering to the scientific method . . . perhaps provides only a limited, and not entirely satisfying, check on [the effects] of researchers' biases. But, however imperfect the process might be, the benefits of scientific social inquiry are worth the effort."[9]

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[8] Faigman, *supra* note 4, at 1089-90.

[9] *Id.* at 1091.

Faigman points out that all scientists, not just social scientists, are subject to the biases that might be generated from one or another normative positions.[10] But I am not convinced that "a natural scientist's inquiry tends to be less inherently value-laden."[11] For starters, all scientists usually start off with a favored hypothesis, and natural scientists' commitments to their pet theories are no less strongly held than those of social scientists. When a hypothesis is firmly held, it makes not a whit of difference if the science is physical or social: observer error driven by bias must always be minimized by following appropriate procedures. A prime example is provided by Alfred Binet in his efforts to determine if intelligence is related to brain size. Binet firmly believed that children with larger brains were more successful in school than those with smaller brains, and his measurements of skull size (as a surrogate variable for brain size) seemed to confirm his hypothesis. As quoted by Stephen Jay Gould, Binet could not be more sure: "The relationship between the intelligence of subjects and the volume of their head . . . is very real and has been confirmed by all methodical investigators, without exception . . . we conclude that the . . . [correlation between head size and intelligence] must be considered as incontestable."[12] But he was too good a scientist to accept his first findings and conclusions. Two years later, he wrote:

> I feared that in making measurements on heads *with the intention of finding a difference in volume between an intelligent and a less intelligent head*, I would be led to increase, unconsciously and in good faith, the cephalic volume of intelligent heads and to decrease that of unintelligent heads.
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> . . . .
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> Suggestibility . . . works less on an act of which we have full consciousness, than on a half-conscious act—and this is precisely its danger.[13]

Note that skull measurement can serve either natural or social science purposes. If one's hypothesis concerns the relation between skull size and brain maturation, then it may qualify

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[10] *Id.* at 1082.

[11] *Id.*

[12] STEPHEN JAY GOULD, THE MISMEASURE OF MAN 176 (1996) (quoting A. Binet, *Historique des Recherches sur les Rapports de l'Intelligence avec la Grandeur et la Forme de la Tête.* 5 L'ANNEE PSYCHOLOGIQUE 245, 294-95 (1898)).

[13] *Id.* at 177 (emphasis added) (quoting A. Binet, *Recherches sur la Technique de la Mensuration de la Tête Vivante*, 7 L'ANNEE PSYCHOLOGIQUE 314, 323-24 (1900)).

as natural science. If the relation is between skull size and social skills, then it may qualify as social science. The opportunity for bias in measurement and for drawing conclusions is not inherently different in these two cases.[14] One need only turn to the controversy involving evolution and creationism to find another clash of values affecting data interpretation in a natural science. Fortunately, both natural and social science provide methodological safeguards to minimize bias in every phase of the scientific enterprise, from problem selection to measurement to drawing inferences and implications from data.

Parallel to the effects of bias in scientific research, Faigman makes a persuasive case for the effects of bias in courts' selection and interpretation of scientific findings to justify, or perhaps to rationalize, their decisions.[15] The use of neurological evidence that the brains of eighteen-year-olds are still developing to support a decision to exclude the death penalty for people eighteen or younger is a case in point.[16] But if the continuing development of the brain is the definitive factor, then twenty-five-year-olds should also be spared. But of course, scientific evidence is not the only factor to be taken into account. Surely there is a place for community standards, values, and ethics, in addition to facts, in legal decision-making. Distinguishing between fact and value does not necessarily mean that we should, or even can, exclude value as an important factor. But it is important to explicitly recognize the use of values and not pretend that it's "just the facts" that drive judicial decisions.

Professor Lawrence Solan provides revealing examples of how judges interpret language to serve their individual, value-driven positions on constitutional law.[17] One of the most striking examples is the interpretation of the word "use" in the context of illegal drug transactions. Prison sentences for those convicted of drug offenses are often longer if a gun was "used" during a drug transaction. In one case, a convicted person appealed his sentence by claiming that his "use" of a gun did

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[14] Still, there is the lingering intuition that social science is not as "hard" as natural science, as reflected in W.H. Auden's cynical remark, "Thou shalt not commit a social science." W.H. AUDEN, "Under Which Lyre," *reprinted in* COLLECTED POEMS 335 (Edward Mendelson ed., 1991).

[15] Faigman, *supra* note 4, at 1084-85.

[16] *See id.* at 1086-87.

[17] *See generally* LAWRENCE M. SOLAN, THE LANGUAGE OF JUDGES (1993).

not fall under the gun-use sentencing provision because he used the gun for barter, offering it in lieu of additional money to buy drugs during a sting operation.[18] In effect, he did not use the gun as a weapon, but as a bargaining instrument. The United States Supreme Court in a majority decision ruled that the term "use" covered any use of a gun, whether as a weapon or not, and declined to interpret "use" in terms of an inferred legislators' intent of use-as-a-weapon.[19] I am confident that Faigman could cite many such examples, and that he would not be surprised by this one.

On a related issue, Richard Katskee distinguishes between revealed truth[20] and scientific truth. I think that most of us would agree with his characterization that received truth and scientific truth are incommensurate. But that does not mean that a given individual cannot hold two sets of beliefs: one based on religion and the other on science, even when those two beliefs are glaringly contradictory. According to biblical teaching, the universe was created by God and the earth is at most 10,000 years old.[21] Young-earth creationists believe this. According to contemporary paleontology, though, the earth is hundreds of millions of years old, and events can be dated using fossil records and various other dating techniques. According to a recent Ph.D. dissertation, a species of marine reptiles, mosasaurs, vanished at the end of the Cretaceous era about 65 million years ago.[22] Palentologists believe this. What is intriguing about these two beliefs about the age of the earth is that one man, Marcus Ross, believes that both are true.[23] Ross is the author of the dissertation on mosasaurs, even though he identifies himself as a young-earth creationist. How does he reconcile his two completely different sets of beliefs? These views can coexist because, as Ross put it, he is "separating the different paradigms."[24]

Can people in general separate their religious and scientific paradigms, and if they can, will they then rely exclusively on the scientific paradigm in the legal and political

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[18] Smith v. United States, 508 U.S. 223, 227 (1993).

[19] *Id.* at 240-41.

[20] By "revealed" or "received" truth, I refer to truth given by one or another dogma, including religion, that is not subject either to logical or empirical test.

[21] *See* Cornelia Dean, *Believing Scripture But Playing by Science's Rules*, N.Y. TIMES, Feb. 12, 2007.

[22] *See Id.*

[23] *Id.*

[24] *Id.*

realm? When it comes to values and strongly held religious beliefs, I seriously doubt it; witness the perennial disputes about teaching evolution, providing information on sexually transmitted diseases, making abortion safe and available, even the inclusion of the word "God" in our pledge of allegiance. Separation of revealed and scientific truth is relatively easy in principle. Separation in practice may well be impossible—and for very good reasons. Scientific truth can adjudicate decisions on how to implement policies. But the policies themselves often stem from values and moral beliefs, and these are, in the end, not provided by scientific fact or theory. My guess is that the best we can do is recognize the differences between science and religion, and try to keep those distinctions in mind when evaluating conflicting views in the legal and political realms.

To whom do we turn when we are in doubt about either scientific or religious truths? Professor Frank Keil raises an important issue: when do we know that we do not know?[25] This question is the province of the field of metacognition, the study of how we assess what and how we know things. As Keil observes, people are not very good at assessing their own states of explanatory knowledge.[26] A few familiar household examples should suffice. What do people know of the operation of thermostats? In a study of how to get people to conserve energy in heating their homes, people were asked how they used their thermostats.[27] More than half the people interviewed set their thermostat five degrees higher than the temperature they really wanted in the belief that the house would heat up faster that way. Then, when the house was warm enough, they would reset the thermostat to the desired resting level. This invariably wasted energy because people rarely noticed when the temperature they actually desired had been reached or exceeded. In an informal follow-up to that study, I asked several people to explain how their toilets worked. Most had only the vaguest ideas, mentioning pumps, propellers, suction devices and the like. Yet most of us, including the people in these studies, feel that we know about thermostats, toilets, and other common household devices well enough. Only when our

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[25] Frank C. Keil, *Getting to the Truth: Grounding Incomplete Knowledge*, 73 BROOK. L. REV. 1035, 1035 (2008) (this volume).

[26] *Id.* at 1037-41.

[27] *See generally* Willet Kempton, *Two Theories of Home Heat Control*, 10 COGNITIVE SCI. 75 (1986).

knowledge is probed beyond mere surface level is our relative state of ignorance exposed.

Keil astutely points out the relevance of this lack of knowledge, and the lack of awareness of that lack of knowledge, in legal contexts.[28] What is common knowledge to experts and to some lay people is certainly not common knowledge to everyone. Even more important, what may seem like common knowledge to someone could actually have been learned very recently, even within the proceedings of a court case. Jurors can often learn something in the course of trial testimony and then, a few minutes later, be under the impression that they had known that "fact" all the time. This is a well-known phenomenon in cognitive and social psychology, the "hindsight bias."[29] Hindsight bias refers to the tendency of people who learn something new that seems commonsensical to come to believe, sincerely believe, that they had known it all along. This bias may have its roots in early childhood, where the analogous phenomenon is observed in a "false belief" context.[30]

In this context, a child, say David, is shown a candy box and asked, "What's in it?" David replies, of course, "Candy." The box is then opened, and lo and behold there are crayons, not candy, in the box. David is then asked what his friend Tommy will think is in the box if he is shown the closed box. David's answer? "Crayons!" This is hindsight attributed to another person. And, if we now ask the first child, David, what he thought was in the box before it was opened, he says, with great confidence, "Crayons!"

While not so extreme as this example, adults in the context of jury deliberations and decision-making will not only fall prey to the hindsight bias, believing that X is something they knew all along, but also that X is common knowledge, something that everyone knows or should know. For example, it is not common knowledge that using a racing (shallow) dive into a four-foot deep swimming pool can result in traumatic spinal cord injury and quadriplegia. This is because the neck can flex sharply forward if the diver's forehead hits the bottom

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[28] *See generally* Keil, *supra* note 25.

[29] *See generally* Baruch Fischoff, *Hindsight ≠ Foresight: The Effect of Outcome Knowledge on Judgment Under Uncertainty*, 1 J. EXPERIMENTAL PSYCHOL.: HUM. PERCEPTION & PERFORMANCE 288 (1975).

[30] *See* John H. Flavell et al., *Development of the Appearance-Reality Distinction*, 15 COGNITIVE PSYCHOL. 95 (1983). (The description in the next paragraph draws from this study.)

and does not slide. The weight of the diver's body moving down and forward can then break the neck and crush cervical vertebrae. A steeper dive poses a risk of concussion, but less of a risk of traumatic spinal cord injury. I served as an expert witness in a case involving such an injury. After an aquatics expert had explained the potential risks of shallow racing dives, the jury members seemed to understand the mechanics of spinal cord injury in that context. After a brief recess, an opposing witness testified that it was common knowledge that shallow racing dives were dangerous, and so the quadriplegic victim knew, or should have known, the potential consequences of his (obviously foolhardy) behavior. From the jurors' nods of agreement, it seemed to me that the hindsight bias was at work. Now that the jurors knew of the hazard, they felt that it was common knowledge and that everyone should know it. In cases like this one, expert testimony on the hazards of diving and the need for adequate warnings is not enough. Such testimony should be supplemented by a description and explanation of how the hindsight bias works and how it can lead to erroneous beliefs about what is common knowledge and what is not.

Keil nicely points out the hindsight bias in the context of how people decide whether or not something is or is not a legitimate area of expertise.[31] The legal community should be aware of these cognitive and metacognitive biases, both in terms of what they themselves believe and how these biases can affect jurors' beliefs and decisions. So, not only should expert witnesses be able to explain complex phenomena in their own fields of expertise to lay people, they should also be able to explain relevant cognitive and metacognitive phenomena as well.

In the end, what are we to make of Bill Klem's declarative realism, that a pitch is nothing—neither a strike nor a ball—until the umpire calls it? There is, after all, the assumption of scientific realism, which, as Faigman persuasively argues, is a necessary assumption. Katskee adds another important element concerning one aspect of scientific realism in the context of judicial decision-making: the critical importance of decisions seeming right and justifiable in the public eye, even when such decisions create judicial "truth."[32]

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[31] Keil, *supra* note 26, at 1043-45.

[32] Katskee, *supra* note 5, at 860-65.

Declarative realism, as exemplified by Bill Klem, is constrained by scientific realism—the call must appear justified by the ball's perceived trajectory in or out of the strike zone. Similarly, judicial decisions, such as the one described by Katskee concerning the teaching of intelligent design, are instances of declarative realism.[33] Nevertheless, like Klem's calls, they must be justifiable by the evidence and arguments presented. More important, perhaps, they must be *perceived* as justifiable by the legal community and ultimately by the public. Yes, truth is hard to come by, but both the legal and scientific communities have evolved principles and procedures to minimize bias and integrate declarative truth with scientific and, I daresay, judicial realism.

[33] *See* Katskee, *supra* note 5, at 873-76.