



**Michigan Law**  
UNIVERSITY OF MICHIGAN LAW SCHOOL

PUBLIC LAW AND LEGAL THEORY WORKING PAPER SERIES

WORKING PAPER No. 125      OCTOBER 2008

JOHN M. OLIN CENTER FOR LAW & ECONOMICS

WORKING PAPER No. 08-017

**ON THE FUTURE OF TOTAL THEORY:  
SCIENCE, ANTISCIENCE, AND HUMAN CANDOR**

*JOSEPH VINING*

ERASMUS INST. PAPERS 1999-1 (UNIV. OF NOTRE DAME, 1999)

THIS PAPER CAN BE DOWNLOADED WITHOUT CHARGE AT:

MICHIGAN JOHN M. OLIN WEBSITE

[HTTP://WWW.LAW.UMICH.EDU/CENTERSANDPROGRAMS/OLIN/PAPERS.HTM](http://www.law.umich.edu/centersandprograms/olin/papers.htm)



## ON THE FUTURE OF TOTAL THEORY SCIENCE, ANTISCIENCE, AND HUMAN CANDOR

Since we will be talking about science and antisience, let me begin by recalling the work of Erasmus Darwin, grandfather of Charles Darwin.

Erasmus was a naturalist like his grandson. He was distinguished in his time and is well known still in his own right. But he wrote scientific works in verse, even what might be called poems. One of them was *The Botanic Garden*, and the best known and most effective part of it was entitled *The Loves of the Plants*.<sup>1</sup> It was full of imagery from the classics and from biology, full of metaphor and play. Our noticing this blending of science and poetry and the absence of any sense of alienness one from the other, under the name Erasmus, may be the best way to start our inquiry here.

I want to ask this afternoon, with you, three questions about the grand visions of our time.

Is the truth of science that science itself, viewed scientifically, is but a passing creature of history? We have all heard perhaps of the contemporary "science wars," popularized recently by the Sokal hoax, the "wars" being the challenge by sociologists and historians of science to the cumulative and definitive quality of scientific insight, sometimes called its "objectivity." These wars began in a serious way with that most-cited of modern books, Thomas Kuhn's *The Structure of Scientific Revolutions*.<sup>2</sup> But the challenge

This is the first question I want to raise — at least raise — whether it must be true that science is a passing product of cultural process as the mayfly is the passing product of processes, and is no more the truth about the world than the mayfly is the truth.

The second question is this: Must belief in science lead eventually to atrocity? This is a shocking question to scientists, more troubling that it should even be asked than the so-called postmodernist challenge to objective truth. It is not part of the “science wars” of today. It proceeds rather from the 19th-century rise of positivism and logical positivism and the denial of the existence of value as such. But it is very much connected to the claims for and against the reach and objectivity of the scientific vision of the world.

This second question is also connected, through the special experience of our century, to the third question that has been pressing itself on me. That question is equally shocking, indeed might be treated as insulting to good scientists, and it is whether there is a connection at the root between total theories of the nature of the world currently being sought and taught, “final” theories they are sometimes called, “unified” theories, and the *total* in totalitarian social and political theories which are distinctive to this century. This third question is in a way heuristic, for it combines the first two in the particular context of our own history.

These three questions comprise the general question of the future of all-embracing theory, truly cosmological theory, in academic and popular thought and discussion: whether science dissolves into history or, as it were, swallows itself when viewed scientifically; whether allegiance to or belief in science must lead eventually to atrocity; and whether there is a connection between totalitarian social and political

thought and total theory of a mathematical, physical, or biological kind.

**T**otal theories are not peculiar to this century or the last, but fascination with them is something of a mark of our time. They have acquired for many the quality of an ideal, an engine of work and thought and argument, striving and fight. Think of Stephen Hawking at the end of *A Brief History of Time*,<sup>3</sup> anticipating choosing a “complete theory” from “a small number of complete unified theories ... that are self-consistent and allow the existence of structures as complicated as human beings.” And total theories are fascinating. An all-embracing theory, total in its reach, circles back and explains the theorist proposing the theory as well as those to whom the theory is proposed. A total theory reaches out to explain challenges to the theory, to explain even the very language in which the theory is expressed and urged, and, as may appear, believed. With nothing outside it, nothing partial about it, with those who think, talk, and argue about it included within its terms, it is ultimate, final, closed.

I say total rather than comprehensive — thought or vision that seeks to be as consistent as it can and keeps to the hope of coherence is another matter. “Totalizing” might serve as well because of the active quality of a total theory, stealing like Newton’s sleep over the theorist. And total theory need not be what is called “materialist reductionism,” declaring the reality and sole reality of what working scientists assume for purposes of their investigations. “Historicists” who challenge the objectivity of science may be total theorists, as may social scientists who draw science into the

subject matter of their analysis and students of culture who make science a subject of cultural studies. They may be ambivalent about whether belief and idea are natural objects. But whatever their ambivalence on this, they move, as theorists, to depersonalize, define, and objectify belief and idea and work with them as the product of processes and "no more than" the product of processes.

Academic or nonacademic, I think all know when they are personally or vicariously in the vicinity of a theory that is a "theory of everything," or total. It will be remembered how objections to Freudian explanation became the clinical condition of "resistance" to Freudian explanation. Challenge to the conspiracy theories of 19th-century antisemitism only showed that the challenger was part of the conspiracy. Opposition to Maoist theory was evidence of the truth of Maoism and provided grounds for the elimination of the objector. These and the like are part of common lore, sources of dark jokes easily caught; and caught in them is the flavor if not the essence of total theory. Whether benign or not benign — and the Freudian was meant to be liberating, as indeed is Maoism meant to be — total theory absorbs the listener to whom it is propounded.

But equally essential, and especially for what I want to suggest here, it applies to the theorist propounding it. "I am this," he cries, and dives in; and if he believes it, he becomes *it* and is not seen again. At that point he cannot judge it and cannot escape it by judging it, because he *is* it. If he were even open to argument about it, it would not be total for him.

What is also common, what signals the presence of a total theory today, is absence of value, significance, meaning, purpose large and small. Common is the absence of

substance, when our word "substance" takes meaning by contrast with "process." Common is the absence of the person, and of the individual which is not quite the same, of the sacred, of course, and mystery, of course, and doubt, of course — and with the absence of the person, what strikes at the very possibility of human law: absence of transcending the here in space and the now in time, absence of faith and good faith, and, ultimately, of authority and mutual deference, for totalizing is a flight from an open-ended responsibility toward a closed and final certainty. The sense of *system* and the sense of *coldness* together convey these absences, in both "materialist reductionism" that universalizes the working language of modern science, and in the social science, the philosophy, and the history that do not now use that working language but still proceed with their own units of reference on the axiom that human experience can be captured.

I myself am brought to the general question of the future of final theories, unified theories, theories of everything, cosmologies modern and postmodern, for two reasons. One is that, as I have indicated, I do not believe legal authority, or human law, can live if any total theory is true or believed to be true. And second, the legal mind and ear — not just mine — are especially and immediately intrigued with the statements of total theory made by those who make them, because of the working premise in law, which is not necessarily a working premise in propositionally based disciplines, that thought and action are connected. This working premise points the lawyer (and I think there is a lawyer in us all) to the humanity and the behavior of the scientist as a person, though this person is speaking in the grandest or most cosmological way.

And aside from the reading of action — what the cosmologist does and refrains from doing — and with regard just to what is said in script and sound about the nature of the world, the legal instinct or working method is similarly to listen to a person's testimony as a whole, all that is being said, in and around the cosmological, before concluding what any part of it including the cosmological might mean. The legal instinct is to listen to the whole evidence presented before concluding what, indeed, any of the words might mean in which theoretical propositions are couched.

I am drawn to total theory and its future for these reasons. And drawn to the questions it poses, I may say that I myself, now, do not believe that anyone need be pushed to deny truth to science, to see it as a passing phenomenon, a natural object like the mayfly. Nor do I think that scientific method and the embracing of science, demanding as it does such trust and devotion transcending generations and time, must lead to dehumanization and atrocity — I think that there is the scientist in each of us just as there is the lawyer in each of us (though some of you may regret the latter).

But, for this to be so, I think that total theory must be given up, the dream of it, the very possibility that it might be true. One of the reasons that encourages me to think this (if "encourage" is not too nice a word in this context) is that I do suspect there is a deep connection between totalitarian social and political thought with its consequences that we now know so well, or in the view of some we are only just beginning to face, and total theories of the nature of the world that so many feel pushed now to espouse in school, polemic, book, article, review, or provocative conversation.

Some examples of the total or totalizing: The first, from a legal context, points also to that connection, echo, similarity, between the totalizing in cosmological thought and in social thought that I suspect and fear and at the same time would draw out to question whether those who espouse total theory mean what they seem to say.

*The American Bar Association Journal* recently highlighted a symposium of experts brought together to discuss "a pair of questions: Is human behavior and, more specifically, criminal behavior, the result of social factors, biological factors, or a combination of the two? And if it's the latter, what combination of factors makes up the mix, and in what proportion?" The answer, the *Bar Journal* reported, was that "What we do know is that human behavior appears to be governed by a complicated and ever-changing mix of biological and environmental factors."<sup>4</sup> The formulation is a common one. You will note the word "govern" in this answer stating "what we do know," and you will note that there is no third participant in this government. The person is missing from this analysis. The person may be assumed or implied — there are references to "we" elsewhere in the *Bar Journal* report. But, in what is said, urged, and taught that is in the background of the analysis, this absence is made explicit — there is nothing outside or beyond the analysis of biological and environmental factors. It is all-embracing and it is exclusive. And when the absence of the person is thus made explicit in analysis that is meant to be all-embracing, there is proffered a world view.

Lawyers struggle daily with such a world view in administering the insanity defense and in making use of expert testimony to determine criminal responsibility. In that



world view including all, there is always an invitation to see law as system and those in law as systems rather in the way administrators working in harsh conditions see offenders whom they deem sociopathic, which is the way sociopaths are seen to view their victims, all as subjects for manipulation and intervention, systems all, which manipulation and intervention are themselves part of the workings of a system. There is no place for cruelty in it, just as there is no place for authority. The question of cruelty, like the question of respect, does not arise, cannot enter the mind, when what is seen is ultimately only a system, nothing but and nothing more than a system. There is no one speaking and no one listening, only "governance" by forces operating.

If we move to a more general level, a representative example of theorizing of a total kind — one of many that could be chosen from many disciplines — is the contemporary work of the well-known and distinguished American philosopher John Searle. In *The Rediscovery of the Mind* (1992) and *The Construction of Social Reality* (1995)<sup>5</sup> Searle speaks of "what sort of place the universe is and how it works" and a world view that is "so well established as to be no longer optional for reasonably well-educated citizens of the present era." "Basic to our world view is the idea that human beings and other higher animals are part of the biological order like any other organisms. ... [T]he biologically specific characteristics of these animals — ... their capacity for language ... their capacity for rational thought, etc. — are biological phenomena like any other biological phenomena. ... [L]ike it or not, it is the world view we have. Given what we know about the details of the world ... this world view is not an option. It is not simply up for grabs along with a lot of competing world views."

He observes, "It would be tricky to try to define the notion of a system, but the simple intuitive idea is that systems are collections of particles where the spatio-temporal boundaries of the system are set by causal relations. ... Babies, elephants, and mountain ranges ... are examples of systems." And he goes on, "We live in exactly one world, not two or three or seventeen ... a world that consists entirely of physical particles in fields of force, and in which some of these particles are organized into systems that are conscious biological beasts, such as ourselves." Then in an aside that attracts the lawyer's attention, Searle adds, "The world of Supreme Court decisions ... is the same world as the world of the formation of planets and of the collapse of the wave function in quantum mechanics."

It is the oneness of that *one* world, that world that consists entirely of physical particles in fields of force — it is its exclusiveness and its totality, that exhausts reality and leaves no place for any other thing in human experience.

I think the passage I have read from Searle is representative. Others, including practicing scientists doing wonderful things with the methods and presuppositions of science, may think it extreme. Much of the evidence for any impression about the atmosphere of our own time is in what the proposer of it has been led to read by chance and instinct. One can only ask whether one's impression is similar to others' impressions that are similarly based on what they have heard and been led to read by chance and instinct. Each of us could come in with our bags of clippings, quoted remarks, highlighted paragraphs from textbooks. But there could be no statistical resolution, no poll, when the question is who are to be taken seriously and, of course, how they are to be interpreted. One more example than that I find

resonant, this not from a bar journal report or from a philosopher who is necessarily once removed from the working scientist, but from the physiologist and Nobel Prize winner François Jacob, whose *Logic of Life: A History of Heredity* (1973) and *The Possible and the Actual* (1982) are classic texts in modern biological theory and teaching.

As biological thought developed, Jacob says, "What could impose a limit on understanding the living world was ... no longer a difference in nature between the living and the inanimate worlds. It was the inadequacy of our means and even of our possibility of analysis." "An organism is merely a transition," he says — and there is that word "merely" again — "a stage between what was and what will be. Reproduction represents both the beginning and the end, the cause and the aim. ... Every object that biology studies is a system of systems. ... [T]he operational value of the concept of life has continually dwindled and its power of abstraction declined. Biologists no longer study life today. They no longer attempt to define it. Instead they investigate the structure of living systems, their functions, their history. ... [B]iology has demonstrated that there is no metaphysical entity hidden behind the word 'life.' ... From particles to man, there is a whole series of integration, of levels, of discontinuities. But there is no breach either in the composition of the objects or in the reactions that take place in them, no change 'in essence.'"<sup>6</sup>

**W**ith John Searle and François Jacob, both much listened to and admired, as examples, let us come back to the three questions I put at the beginning, about

the ultimate vanishing of science itself, about atrocity, and about totalitarianism.

I worded those questions without circumlocution, using the uncomfortable words "atrocity" and "totalitarian," but not too strongly, I think, in view of the hostile tone and aggressive wording of assertions of total theory commonly encountered today. Absolutely critical is the proposition that, in Searle's or Jacob's words, life and the human be "continuous" with the rest of nature as now conceived. Discontinuities there may be between levels of explanation — the physical, the chemical, the biological, the neurological, the social. Change in view with new evidence is to be expected. But the essential does not change, new worlds are not entered, the discontinuities are there to be filled; what emerges is still a property and a property of a system which is, as Jacob says, "part of a higher-order system itself." It is hard to miss the real delight taken in demonstrations that there is (here my example is Cambridge historian of science Michael Redhead) "no special significance in the evolution of human beings as compared, say, with galaxies or any other example of a quasi-stable, physical system that sustains itself far from thermal equilibrium with its environment." Redhead is approvingly reviewing a new cosmological proposal attempting an evolutionary explanation of the constants of physics so that there is at last nothing in physics that rests on "something outside the universe."<sup>7</sup>

The word "special" used as a pejorative, as in the phrase frequently heard that Redhead uses, "no special significance," is one of the signs of being in the vicinity of a total theory — the other, of course, is that you, and the theorist, are both included in the description. Like anything one can be in the vicinity of, it can have effects in the world,

on others, on oneself, on oneself through others. And it is therefore not unfair to place beside these claims examples from the experience of our century of our capacity to act as if there were no lines we could not cross, nothing special, really, no difference, really, between the inanimate and the living, or between the living and the human.

Thus, for the absence of any special difference between human beings and other living things: When one of the doctors who experimented on children in German concentration camps was asked at his trial in 1966, "If you were of the opinion that Jews were more disposed to TB than Aryans, why then did you experiment with Jews at all? ... Why didn't you use guinea pigs?" The doctor replied, "For me there was no basic difference between human beings and guinea pigs." Then he corrected himself, "Between Jews and guinea pigs."<sup>8</sup> Or consider this grant application in the 1940s to the German Research Foundation by Hans Nachtsheim, who postwar continued work at one of the academically distinguished Max Planck Institutes in West Germany, the Max Planck Institute of Comparative Genetic Biology and Genetic Pathology. Nachtsheim's application and experiments were brought out recently at a retrospective exhibition in Germany, titled *The Value of the Human Being*.<sup>9</sup> I quote from it partly for its familiar grant-application language, its justifications directed to peer reviewers:

Since there was a marked difference in our animal research on epilepsy between the behavior of older and younger specimens, we tested epileptic children under similar conditions in pressure chambers. Up until now only children between 11 and 13 were at our disposal. At a pressure corresponding to IV to 6,000 meters no epileptic attacks occurred.

In humans age 11 to 13 corresponds to 5 to 6 months of age in rabbits, an age at which the cramp threshold, as is also the case with rabbits, is not so low as to induce cramps with certain regularity under pressure chamber conditions. To have a basis of comparison, we would need to test epileptic children between 5 to 6 years of age.

With respect to the absence of any real difference between the inanimate and the living, the subjects of medical experiments carried out in Manchuria during the Second World War were called logs, "maruta."<sup>10</sup> When they were delivered to the laboratories, they were trussed up like logs, and in the account we have of what went on in Manchuria, where we demonstrated the extent of what we as human beings are at least capable of doing to one another, the example is set out: "Laboratory technicians would then go to either building 7 or 8, order guards to provide the number of 'logs' needed for the next experiment. ... A special pressure chamber ... was constructed to assist researchers in determining how much pressure the human body could absorb. Test subjects were locked into the chamber, their bodies bearing a host of measuring devices. Pressure was introduced, and increased gradually until the victims collapsed in convulsions and died."

In the United States we have our own, perhaps somewhat less horrific examples, such as the Tuskegee experiment, which involved active prevention of treatment for black men with syphilis when penicillin became available. And lest I leave any suggestion that law is without its own difficulties, I should quote from one of our great figures, Justice Holmes, who had at least said he believed that "the postulate upon which we think about the universe is that there is a fixed

quantitative relation between every phenomenon and its antecedents and consequents," every phenomenon, including the phenomenon of human law and, of course, including his own mind.<sup>11</sup> In his Supreme Court opinion strongly approving Virginia's eugenics laws, Holmes's language was this: "It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover cutting the Fallopian tubes. Three generations of imbeciles is enough."<sup>12</sup>

**I** said that one question pertinent to the future of total theory is whether belief in science, science unblinkingly faced, without evasion or prevarication, leads to actions such as these. And I referred to the pertinence of law's working premise, that thought and action are connected.

That connection operates in both directions. There is a prior question, what is the thought, what belief in science is belief in, what "science" is, if you will, that must come before seeing a connection between action and thought. Lawyers read action as well as what is said, even as they are reading the whole of what is said. A scientist or mathematician speaking cosmologically does not cease to be a human person speaking and acting. Certainly what we actually think affects what we do. But what we do reveals what we think.

Thus every act of kindness, every staying of the hand in general or in particular instances, is an indicator. The well-known films from the University of Pennsylvania<sup>13</sup> of

experiments on head trauma show investigators standing by laughing while monkeys' heads are smashed again and again, and the films produced revulsion. But the revulsion is to be found within laboratories as well as outside, among teachers and investigators when speaking and acting in their purely professional roles as well as when speaking and acting among friends and family at home. Not instinctive approval, and saying "of course," but revulsion follows the medical technician's explanation of his vivisection of a maruta or log in Manchuria: "Vivisection should be done under normal circumstances. If we'd used anesthesia, that might have affected the body organs and blood vessels that we were examining. So we couldn't have used anesthetic."<sup>14</sup>

Revulsion is to be read, read as well as explained as itself the operation of a system within an environment of systems, which explanation by itself alone only reaches back to join the fundamental basis of the technician's explanation of vivisection without anesthetic.

What stands between us and experimentation or "intervention" premised on the absence of anything sacred, central, or special about the human, or life, is not simply a system's calculation about its timing or about how far self-protective, self-regulatory rules might be relaxed — the system in question being the investigator. What protects us is not a wholly manipulative response to external pressures, a calculation whether it could presently be gotten away with given the behavior and strength of prosecutors or the media. What holds back scientists like nonscientists from doing these things, what is pointed to by a thousand gestures large and small, is something in actual belief and thought. How can I or any of us say this? Any investigator may protest, "No, there is nothing there in my belief and thought but



what I say is there.” But what is there would be for us to decide, reading him as a whole. And once there is that opening, that something more or that something beyond, his vision is no longer completely closed. It has lost its totality.

Belief in science need not lead to atrocity, because science, in fact, in its actuality, is not to be identified with total theory and absorbed into it, any more than the scientist is to be identified with some part of what he or she says. If the teacher who says in the classroom that love is nothing more than the operation of the limbic system is heard using the word *love* at home at night, anyone listening, I should think, would want to revisit what was said in the classroom. To the same effect, read a history of science by a scientist who is not an outsider to it, who has played a part in science, joining, committing a life, sacrificing for the future, trusting, building, evaluating, deciding, teaching. François Jacob’s *The Logic of Life: A History of Heredity*, which I quoted before, is an example of a biologist writing a history of biology. The history recounted moves forward toward truth through error, including the error of “vitalism” or the specialness and mystery of life (“life” being a word eventually put in quotation marks, “spirit” or the animate and “mystery” both becoming pejoratives). The history of biology is a progressive evolution, its happenstances are serendipities, newness in it is a better newness. Those who have participated in it, like the author of the history, look forward vicariously to its future, as a thing of value to be made possible by the active devotion of a life.

How odd then the truth toward which this evolution of truth has pointed, that all things studied including the studier are systems of systems changing without direction

and certainly without purpose, driven entirely by cause and chance, “necessity” and chance, in which there is no progress or even the conception of it, and no regression or even the conception of it, and in which it may even be said that the most basic rules of interaction are themselves a changing product of process. How odd the contrast between this all-encompassing account of the biological, and the vision of the evolution of this all-encompassing account of the biological, biology itself. Reading the history of biology by a participant qualified to state for nonbiologists the insight of biology, one can be forgiven for wondering about the generality of the statement of the insight, and for wanting to put the two together, the biologist and biology, the history of biology and the history of the world.

I ndeed, total theory, were it true or believed to be true, would challenge the doing of science. In the introduction to his little book, *The Tacit Dimension*,<sup>15</sup> the chemist and philosopher of science Michael Polanyi recounts the turning point in his thought and life, his encounter with a truly total system, that was for the moment being carried out in action, and in which, just as in the representative visions of Searle and Jacob that I have quoted, human beings were fungible and disposable systems operating within a system. Polanyi met Bukharin in Moscow in 1935 when Bukharin was a leading theoretician of the new social system. When Polanyi asked him about the pursuit of pure science in Soviet Russia, Bukharin, in Polanyi’s words, said that “pure science was a morbid symptom of a class society; under socialism the conception of science pursued for its own sake would disappear, for the interests of scientists would spontaneously turn” to fulfilling

the state plan. Polanyi was "struck by the fact that this denial of the very existence of independent scientific thought came from a socialist theory which derived its tremendous persuasive power from its claim to scientific certainty. The scientific outlook appeared to have produced a mechanical conception of man and history in which there was no place for science itself." This turned Polanyi from his work in chemistry to the philosophy of science and to the question of what science was that freedom of thought could be claimed as necessary to pursue it.

Joseph Weizenbaum, the pioneer MIT computer programmer perhaps known to you as the author of the computer psychoanalyst ELIZA, had a similar encounter and made a similar connection when he recently debated prominent cognitive scientists and faced the repeated statement being made that the brain is merely a meat machine. In English, he said, we have two words for what is being called "meat." "Meat is dead, can be burned or eaten, can be thrown away; whereas flesh is living flesh, and a certain sense of dignity is associated with it. We don't talk about eating flesh, and if we talk about burning flesh, it is a horror image. Why...say 'meat machine' and not 'flesh machine'?" To say the brain is merely a meat machine, he protested, "is a very deliberate choice of words that clearly testifies to a kind of disdain of the human being." The response made to him was, "If we are to make further progress in Artificial Intelligence, we have to give up our awe of living things."<sup>16</sup> Weizenbaum went on to reflect that the political and cultural could not be separated from world view and a picture of what it means to be a human being, with the consequences in totalitarian settings that all of us have seen.

The encounter of science with the total in social and political thought, the discovery that science itself is threatened, is akin to the challenge to science today in the so-called science wars. The two questions, on the one hand the question whether science viewed scientifically must be seen as a passing creature of history, if "scientifically" is actually to mean viewing all from a stance that all without exception is system and process, and on the other hand the question whether belief in science, again if science is such a stance, leads to dehumanization and atrocity, are connected through the experience of our own century, certainly at the very least as questions.

Weizenbaum felt the connection from one side; Polanyi felt it from the other side. I have thought that the most interesting warning note, which anticipated the recent historicist or constructivist challenge to science, was sounded by Darwin — Charles, not his grandfather, Erasmus. Evolution is only part of what today is called a "final" theory that is being sought, or a "TOE," a "theory of everything," though some as I have noted would push evolution back or down to the constants of physics as they would push it up to love. But what Darwin saw was that the grandest conclusions might be subject to his theory of evolution, that it might move toward that absorption of the theorist, as well as the theorized-about, which is the mark of total theory.

In his *Autobiography*, in a passage added when he was revising his first draft, Darwin wrote "Then arises the doubt — can the mind of man, which has, as I fully believe, been developed from a mind as low as that possessed by the lowest animals, be trusted when it draws such grand conclusions? May not these be the result of the connection

between cause and effect which strikes us as a necessary one, but probably depends merely on inherited experience?" He went on in a letter, "[W]ith me the horrid doubt always arises whether the convictions of man's mind, which has been developed from the mind of the lower animals, are of any value or at all trustworthy. Would anyone trust in the convictions of a monkey's mind, if there are any convictions in such a mind?"<sup>17</sup>

Now Darwin was not referring to his scientific work in these passages, but Darwin was the most self-aware and honest of investigators and would not have spared any part of his thought. The particular reference of the first was his personal conclusion of purpose alive in the universe and in the operation of natural laws; the reference of the second was his own position on the existence of God. Others of his grand conclusions, including his insight into evolution and its mechanisms, were no less candidates for this "horrid doubt." If the theory itself were a natural phenomenon, it would not be privileged among the phenomena of nature. It was the product of a mind which was also a natural phenomenon, with nothing about it essentially different from an appendix or a stag's antlers. Mind is simply a more complicated system, with the "more" being without value, merely a difference. The system speaks only of arrangements that have led to its survival, given things as they are now. Conclusions theoretical or otherwise are a product of mind; mind is just something that happens. It is "what happens" when things organize themselves into a certain state.

"With me the horrid doubt always arises whether the convictions of man's mind, which has been developed from the mind of the lower animals, are of any value or at all

trustworthy. Would anyone trust in the convictions of a monkey's mind, if there are any convictions in such a mind?" We may have a rather higher opinion of the monkey's mind, but Darwin was pointing to what the social constructivists, the historicists, total theorists themselves, are saying today about science and the truth of science. On its own terms the theory of evolution is an emergent property that will survive or not — in itself as something discrete, and as part of a system of other emergent properties — depending upon its relative advantage against competitors in whatever environment faces them all in the future (an environment that is, of course, a system, to which they themselves contribute). Theory too, by definition, must become a combination of units, a system, a system of systems, a property of a system of systems. The theory of evolution *was*, on its own terms, a chance variation, selected, for this moment, to survive. It and a system of which it becomes a part *will*, through a diversity generator (one such is the behavior of material in DNA), produce further emergent properties, that will themselves form a system which may or may not be selected further for survival. But it, the theory, and the system of which it becomes a part, will produce further emergent properties that may be so selected, only if it and its system happen to survive to do so, against other systems producing properties in the same way.

There is not truth in what the system which is the tongue, the hand, or the eye registers in sound or script from the system which is the mind or brain. There is not truth in the theory (as something discrete and definable as different from something else), or in what came before it, or in what it produces and what comes after it. There is only, in its

own view of the world that includes itself, chance variation, systemization, and selection, in competition with other sequences of chance variation, systemization, and selection going on all around "it." *It*, on its own terms, this very vision of chance variation, systemization, and selection with no assurance of survival, is as divorced from a true view of the world as much as any other chance variation. It once was not, is now, may not be for long — that is all that can be said. That is all that can be said if the terms of the vision extend to everything, if it is accompanied by phrases such as "all," "entire," "whole," "only," "nothing but." If it refers everything to itself, and has no opening beyond itself, there is no breach through which there might be escape from it, no breach through which something not within its terms might enter the world, nothing outside it — you and me, to begin with.

Interestingly, those who immediately see this vanishing, this endpoint of radical ignorance, are mathematicians. Within mathematics there is a school, again called constructivists, who would absorb mathematical reality into the cosmology summarized by Searle and Jacob and identify mathematical objects with neurological states in the way Darwin was on the brink of doing as "the horrid doubt" rose within him. Mathematical "realists," who comprise I am told the majority of mathematicians though mathematics is not, of course, ruled by majority rule, reject this, at least for mathematics, and testify to a sense of illumination and discovery of something not only outside themselves but beyond the material world.

In seeing this self-swallowing quality of total theory, it may be thought that one is seeing no more than a logical problem in an argument that it is "true" there is no "truth," or in an argument that you should "believe" there is no "belief" because, to spell it out, "belief" is a property of a system that is a chance variation with no larger claim to notice than that it was selected for the moment.

But it is not a problem of logic that is seen. What is being seen here is the way these urgings of total visions point so nicely beyond themselves, to where, standing outside the talk, are the persons talking. This beyond is what is seen. To argue logic as logic is typically argued is actually to move from life and persons talking to a particular form of thought that for the moment ignores persons talking and might make "belief" or "truth" a "property" or "feature," surrounded by a fence, capturable. But a "belief" that there is no belief is not the same thing as a belief. "Truth" that there is no truth is not the same thing as a truth. Truth and belief are not in boxes, separate from believing persons and the truth of persons and all that persons who believe actually believe and all they truly consider truth. It is not paradox or circle that is seen when a system that is total is packaged, presented, and urged. The response is seeing ever more vividly what the paradox or circle points out to.

This is the significance of the phrases "in my opinion" or "I think" or "I am persuaded" — statements familiar enough to the lawyer — when they are spoken by the scientist. In those phrases is the opening in any total cosmological vision being urged, the limit of its reach. The scientist is always there, the good scientist (for there can be good science and bad science) showing good faith toward other scientists,



toward experimental method, toward the profession, the good scientist working toward and trying to express acts of the creative imagination, drawn on by wonder and awe that are truly wonder and awe.

The scientist's evident attachment to value belies Jacques Monod's summation of science, well-known because of his Nobel Prize for physiology and well-known because it is so clear and sharp: "In an objective system ... any mingling of knowledge with values is unlawful, *forbidden*."<sup>18</sup> System, and objectivity, and the absence of the value of the person and the person's values, linked together. But there is implicit affirmation of value and the person constantly going on within science and in the presentation of scientific cosmologies to nonscientists. The scientist may say to the nonscientist, on the matter of cosmology, "You're wrong." But there are implicit affirmations in her bothering to say it. There are implicit affirmations in her use of "wrong," in her not just saying, but her saying *to*, and in her not just saying to the wind and ocean, but her saying to *you*.

If the scientist then goes on to present a vision of what is right, there are implicit affirmations of value and the person in her bothering to assert it, in her attempt to persuade, in her pointing, in her very act of presenting it. Even if she were to say that you, or I, or we, are *insignificant, meaningless*, there is the question what that *significance* is for her in her "insignificance," that to which the prefix "in" is attached, what that *meaning* is for her to which "less" is attached in her word "meaningless." She affirms things, she denies things, whenever she opens her mouth. You affirm things, you deny things whenever you look at me or I look at you, whenever you appeal to me or I to you — whenever, indeed, you dismiss what I say.

Thus you, or anyone, could say with Searle that the person just is, as water is, and go from there, with of course the thought presented that the person is essentially the same as water, the emergent property of a system of causes operating without purpose within rules without purpose. But in fact, in actual fact, you must always begin with the person, begin there rather than with the particles and systems the person has predicted and seen and shown in the world.

There is the scientist in all of us. We all, scientists included, depend on the testimony of others. Beginning with the person, connecting scientific insight to the person with all that such connection acknowledges and affirms, does not dissolve scientific insight into historical process, scatter it, make it vanish. Persons speak and persons listen. And so for scientists in the "science wars," faced by total theorists who call themselves historicists or social constructivists and who urge that all that has been achieved in science is nothing more than the beliefs of a passing sect, epiphenomenal glitter, science itself indistinguishable from fashion in clothes: Scientists might say in response that, read as a whole, seriously and closely, we cannot think you really mean what you seem to be saying. What can be said to the scientist as total theorist can be said by the scientist to the total theorist challenging science.

There is in this also what would seem to me the likely response to the obvious question, why Christianity, or any organized religion within which life is lived from birth to death, is not a total system, as total as the total view of the universe including living things as a system of systems. The comparison leads back to the sense each of us may have of what is representative to which I referred earlier, and the difficulty of determining what is representative and the

necessity of a mutual appeal to impressions and a feel for things. Any comparison must also be somewhat specific, to Christianity in its Orthodox form or Catholic or Protestant strict or broad or Evangelical; or to Judaism ultra-Orthodox, Orthodox, or non-Orthodox; or Islam Sunni, Shiite, or Sufi; or Buddhism in its various forms, Hinduism in its various forms.

But for Christianity in general, if there is such, the response would be, I think, that Christianity is not a system despite efforts to make it so, any more than human language is a system independent of its utterers despite efforts to make it so. And I would think also that insofar as Christianity is objectified and held out for examination, there is limitation within it — in the person at its center and the person always in its particulars, the person or persons that limit tendencies to occupy the mind with formulae or the equivalent of formulae under its aegis; there is limitation within it in the doubt that is associated with faith just as certainty is set against faith and offers to do without it; there is limitation within it in openness to experience and the utterly new that denies the closedness of a total system. The fundamental absence of total schema, it might be urged, becomes evident each time its own bureaucracies and, yes, atrocities are criticized most effectively within its own aspirational terms pointing to the person in the large and in the particular.

**I**n closing I want to return to the comments I made at the beginning about why, of all disciplines and all people, law and the legally trained might be interested in these matters. Obviously, how lawyers deal with situations in which respect for the humanity of a human being has fundamentally disappeared, or suffering is

caused by an individual without any trace of suffering in himself, is not at all satisfactory. How lawyers deal with such situations is no present model, neither lawyers' thought nor their action — they can be charged with contributing to such situations.

But lawyers cannot choose to put such situations out of mind. Whatever their dilemmas, they must make a decision, move toward preventing the actions of others, scientists' included, or making others' actions possible, scientists' included. This, the inescapability of involvement, is one reason why there may be a contribution from law to the increasingly heated discussion of cosmology that marks the end of this century. Lawyers' thought and lawyers' action are connected; cosmology is never far removed from law.

More important, though, than the connection between thought and action in the lawyer's own work is the lawyer's natural treatment of testimony and evidence, whether the question at issue is large or small. The lawyer's, the judge's, and the juror's experience is that there are many voices, each asserting the truth about a matter, that may differ without lying on the part of any, and that may be each attended to with care while still supposing there is such a thing as the truth. A reminder of this may usefully precede cosmological argument, given that there is no place for many voices in a theory once it has become a total theory, any more than there is in totalitarian social and political thought.

Furthermore, with the testimony of any witness, with any text, with the evidence in any case, the thrust of legal thought is toward the whole that is presented, everything said, the whole testimony, all parts of a document, opinion, or statute, before any conclusion is drawn about the meaning of any part of it — before, as I said, any judgment

is made about the very meaning of the words being used by someone to say what is believed, said, or proposed. The whole includes, as I have emphasized here, gesture, action, self-restraint; and as a matter of methodology and training, the lawyer extends this interest in the whole to testimony and statement and action spread over time, maintaining in organized and even formal discourse the common observation we make in ordinary life, that what one believes is not summed up in what one does or says one believes at any particular point.

This is of course law's own form of totality, this interest in all the evidence — whatever may be chosen to be left out, for purposes of particular decisions, in the interest of justice or autonomy or practicality. Science at its best comes close to this, values the empirical, celebrates it. But science in the end must exclude in the dogmatic sense if it is to pursue its method. The problem really arises at the cosmological level, the theories of everything we have been considering, where the exclusion of and designed indifference to human evidence can become a credal matter rather than merely methodological — merely methodological, but, as we know, wonderfully enabling.

Then, too, the lawyer may be rather well situated to see the tacit assumption in speakers' speaking about the nature of things, that they, the speakers, can use and appeal to human law. The assumption may be not just tacit but hidden from the speaker's own view, as may also be hidden the implications of an appeal to human law, the entry of law's presuppositions, transcendence of space and time in the construction of an authoritative voice, internalization of value, the connection between language and person, the mutuality of good faith.

Lawyers are attuned to the working of systems, looking for them, anticipating them. But lawyers are also listening to and for the person — they must: they can proceed really only on authority. All else is mounting force, blood or feint, disintegration. And working openly with and toward authority, the lawyer may be in a special position to observe the operation of authority in other disciplines even when the practitioners of other disciplines explicitly deny its presence. Again, lawyers may be in a position to indicate what the presence of authority might mean for the reach of the premises upon which the discipline proceeds.

Finally, the lawyer or the participant in law sees the individual and can usefully remember the experience of seeing the individual when considering total theories, including those theories that make the individual merely a construction constructed by a changing system. In highly articulated, or systematic, or what is called "professional" thinking and writing, there is something of an ascendancy of interest in the statistical. In the strong light of that interest, law protects the individual from fading. In all statistical work and all probabilistic understanding there is a push against the individual. Against this push stands the distinctively legal form of thought, not alone, of course, but there, rescuing the individual, pulling out the individual from the rush and flow, seeing the individual in all his or her strangeness and special particulars, categorizing, of course; generalizing and grouping, of course, because use of language and any general thought does so, but holding onto and valuing the individual for his or her own sake. Law is an extraordinary and largely unnoticed force in modern thought — a counterforce.

These professed visions of the nature of the world that includes us, these pictures of everything where everything is included, I think we know are inadequate, incoherent, and wrong. We know that, that at the least, even if we could not do better in presenting a picture that is adequate, coherent, and right.

How do we know? Do we just know, like a stubborn child, that these visions do not fit the truth?

Some of us know, and report in ways that compel our attention, from art and through art, from music and through music, from direct touch of expressed meaning. Revelation some call it: a true epiphany, which candor with ourselves and others allows through, as more than a wish or a hope.

Less direct, more inferential, we know from a sense of necessity as strong as the necessity we feel in gravity itself.

And we know from those who present these visions to us, because they tell us so in so many ways.



## ENDNOTES

- <sup>1</sup> See David Knight, "Words That Make Worlds," *Science and Public Affairs*, Summer 1994, 23.
- <sup>2</sup> Thomas Kuhn, *The Structure of Scientific Revolutions*, 2d ed. (Chicago: University of Chicago Press, 1970).
- <sup>3</sup> Stephen Hawking, *A Brief History of Time: From the Big Bang to Black Holes*, with an introduction by Carl Sagan (New York: Bantam Books, 1988).
- <sup>4</sup> *American Bar Association Journal*, July 1997, 20-21.
- <sup>5</sup> John R. Searle, *The Rediscovery of the Mind* (Cambridge, MA: The MIT Press, 1992), 85-90; *The Construction of Social Reality* (New York: The Free Press, 1995), xi-xii, 120.
- <sup>6</sup> François Jacob, *The Logic of Life: A History of Heredity and The Possible and the Actual* (London: Penguin Books, 1989), 2, 307, 299, 306, 421.
- <sup>7</sup> Michael Redhead, "Other Universes," reviewing David Deutsch, *The Fabric of Reality* and Lee Smolin, *The Life of the Cosmos*, *Times Literary Supplement*, January 2, 1998, 5.
- <sup>8</sup> Günther Schwaberg, *The Murders at Bullenhuis Dam: The SS Doctor and the Children* (Bloomington: Indiana University Press, 1984), 113-114.
- <sup>9</sup> Christian Pross and Götz Aly, *The Value of the Human Being: Medicine in Germany 1918-1945* (Berlin: Ärztekammer Berlin, 1991), 15, 22, 38.
- <sup>10</sup> Sheldon H. Harris, *Factories of Death* (London: Routledge, 1995), 62, 71.
- <sup>11</sup> Oliver Wendell Holmes Jr., *The Path of the Law*, 10 *Harvard Law Review* 457, 465 (1897).
- <sup>12</sup> *Buck v. Bell*, 274 US 200, 207 (1926).
- <sup>13</sup> *Unnecessary Fun*, narrated by Ingrid Newkirk and compiled by Alex Pacheco, excerpts from video tapes from the University of Pennsylvania Head Injury Clinic (Washington, D.C.: People for the Ethical Treatment of Animals, Inc., 1985).
- <sup>14</sup> Nicholas D. Kristof, "Japan Confronting Gruesome War Atrocity," *The New York Times*, 17 March 1995.
- <sup>15</sup> Michael Polanyi, *The Tacit Dimension* (New York: Doubleday, 1966), 3-4.
- <sup>16</sup> Joseph Weizenbaum, "The Myth of the Last Metaphor," in *Speaking Minds: Interviews with Twenty Eminent Cognitive Scientists*, eds. Peter Baumgartner and Sabine Payr (Princeton: Princeton University Press, 1995), 256-60.
- <sup>17</sup> Charles Darwin, *The Autobiography of Charles Darwin*, ed. Nora Barlow (New York: Harcourt Brace, 1959), 93; *The Life and Letters of Charles Darwin*, ed. Francis Darwin (New York: D. Appleton, 1919), vol. 1, 285 (Letter to W. Gresham, July 3, 1881). I am indebted to George Levine for highlighting these passages for me. See his treatment of them in *Darwin and the Novelists: Patterns of Science in Victorian Fiction* (Cambridge, MA: Harvard University Press, 1988), 235-237, 271-272.
- <sup>18</sup> Jacques Monod, *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology* (New York: Alfred A. Knopf, 1971), 176.

© Joseph Vining, 1998. Used with the permission of the author.