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Science and Public Policy: Millennium Questions

by
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Who of us would not be glad to lift the veil behind which the future lies hidden, to cast a glance at the next advances of our science and at the secrets of its development during future centuries?

- David Hilbert²

At the beginning of the twentieth century, at the International Congress of Mathematicians in Paris, the mathematician David Hilbert presented twenty-three of the greatest unsolved problems of his day. At the start of our new millennium (and century) similar question-posing exercises can be observed in several areas of science. The Clay Mathematics Institute of Cambridge (MA) has announced seven Millennium Problems, with prizes of \$1 million each.³ Stephen Jay Gould has suggested a question (Is there other intelligent life in the universe - and, if so, what do they know that we don t?) A recent conference of

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² George Johnson, "10 Physics Questions to Ponder for a Millennium or Two," *The New York Times*, August 15 2000, D3. Hilbert added: It is by the solution of problems that the investigator tests the temper of his steel, he finds new methods and new outlooks, and gains a wider and freer horizon.

³ www.claymath.org/prize_problems/

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theoretical physicists at the University of Michigan produced a list of ten questions.⁴

The physicists were capable of more elegant and precise formulations than a simple social scientist can propose. (For example: If you square the charge of an electron and divide it by the speed of light times Planck's constant, the resulting dimensionless number is slightly more than 1/137. Could it be precisely 1/137 or another number entirely?)⁵ But the same method can be applied: If we awoke from a coma a thousand years from now, what would we ask about the progress of science and public policy?⁶

1.) What training, relationships, and institutions assist people to develop their full potential and contribution to society?

Today, empowerment is an almost-universal way to phrase this question. On the right, William Bennett heads Empower America. Jesse Jackson wants to empower Afro-Americans, the poor (and many others). Third World activists seek to empower women to

⁴ Johnson, *op. cit.*

⁵ More formally stated the question is: Are all the (measurable) dimensionless parameters that characterize the physical universe calculable in principle or are some merely determined by historical or quantum mechanical accident and uncalculable? Another statement of the question is whether God, in designating the speed of light, had any further freedom (and if so, how much) to set other parameters and still produce the current physical universe? *Ibid.*

⁶ A caveat: the Millennium inquiry is not the only agenda-setting exercise. For public policy, there are short-term questions with compelling urgency and benefit for human welfare (e.g., the causes of war and peace under the control of a decision maker, and how to inform wise foreign policy choices in the years just ahead? Or how to accelerate government learning rates or achieve agreement for a workable plan to provide health insurance for uninsured Americans?)

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accelerate economic development. Clinical psychologists and psychiatrists have worked in related vineyards for decades. California-based personal growth coaches like Tony Robbins and Landmark do a land-office business (now, on a global scale) to help people develop and realize their dreams. Liberal arts institutions believe that they offer settings and curriculum for growth and development of potential, as do Ph.D. programs.⁷ What works best?

2.) Is there belief-independent spiritual growth? If so, how can it be developed?

Psychologists have used scientific methods to identify invariant stages of mental growth (e.g., Piaget, Kohlberg, Gilligan, Loevinger). In light of the classic tripartite conception of human nature (body, mind, spirit) is there a comparable process for *spiritual* growth? I.e., that is universal and does not depend upon or require specific beliefs of different religions?

Since the Dalai Lama began to travel in the West, there has been a growing recognition that the best Buddhist teachers (for example) use what they call skillful means. Like professors in a classroom, they provide assignments that respond to their students current level of growth and an intuition about next steps. And, among leading practitioners, they have a twinkle in the eye test to distinguish genuine spiritual teaching from televangelists.⁸

⁷ Re early 21st century education: A worldwide education bureaucracy is organized by the assumption that it requires two years for most students to master two years of college French, a year to move from reading at the third grade level to reading at the fourth grade level, etc. But did this turn-out to be wrong, and did researchers discover extraordinary opportunities for students to use their time more productively?

⁸ Across independent religious traditions, spiritual growth seems to be encouraged by what psychologists call pattern interrupts that engage identity, socialization, and non-conscious habits of body and mind. Thus, if a student is into the pursuit of wealth, he/she

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Why bother? In part because genuine spiritual leaders appear to have had extraordinary powers to inspire people, and to promote ethical sensibilities for government and throughout society.

3.) Re the description and explanation of individual behavior, what variables and processes were we missing?

Across many types of problems, the social sciences have slowly developed a systematic list of all of the variables - by analogy to the periodic table in chemistry - that cause human behavior.⁹ And in several areas higher-order compounds have been identified (e.g., 480 types of American voters).¹⁰ At the beginning of the next millennium, if we view the all-purpose computer simulation program with the elements to describe and explain any human behavior, what would surprise us?¹¹

gets the vow of poverty. If there is a commitment to figure-out the right answer and to rationality, the student gets what is the sound of one hand clapping? If talking, then the vow of silence. If sexual pleasure, then chastity. If physical activity, then sitting-still and following one's breathing. But these are teaching strategies, like problem sets, and not (by good teachers) presented for purposes of conformity. Ken Wilber, *The Marriage of Sense and Soul: Integrating Science and Religion* (New York, NY: Random House, 1998), 171-173 et passim.

⁹ Lloyd S. Etheredge, *The Case of the Unreturned Cafeteria Trays* (Washington, DC: American Political Science Association, 1976).

¹⁰ Robert Abelson and Ithiel de Sola Pool, "The Simulmatics Project," *Public Opinion Quarterly* 25, no. 2 (1961). Reprinted in Lloyd S. Etheredge, *Humane Politics and Methods of Inquiry: Selected Papers of Ithiel de Sola Pool* (New Brunswick, NJ: Transaction Publishers, 2000), xx-xx.

¹¹ Since the results of genome-mapping will be available the answers also should include the genetic bases of behavior and settle nature-nurture issues.

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4.) What are the missing variables, institutions, and processes in the 8 (now, incomplete) production functions?

Harold Lasswell suggested a checklist of eight bottom lines to survey the values produced and distributed by the world's social, economic, and political processes: wealth, well-being, respect, rectitude, affection, power, skill, enlightenment.¹² Wealth-related models and indicators (with quarterly reports!) have become the specialized province of economists. But how does everything go together for all of the processes?

This is a remarkably comprehensive task - especially to accomplish globally. It involves institutions (and their performance), policy learning, cultural change, and other system-level issues - as well as individual behavior. And it includes questions of government performance - e.g., Did democracy (and American democracy as we knew it at the beginning of the 21st century) turn-out to be a reliable system for rapid progress? (Were minor improvements needed and possible? Major ones?)¹³

Scientifically, of course, one of the prominent questions is whether any (or all) coefficients have turned-out to be stable. And if they change (or remain constant), what is the higher-order explanation?

¹² For an overview of work in this tradition, see Harold D. Lasswell and Myres S. McDougal, *Jurisprudence for a Free Society: Studies in Law, Science and Policy*, 2 vols., The New Haven Studies in International Law and World Public Order (Boston, MA: M. Nijhoff, 1991).

¹³ Concerning the American judicial process and the potential for future improvement, see the retrospective application of DNA identification methods by Barry Scheck, Peter Neufeld, and Jim Dwyer, *Actual Innocence: Five Days to Execution and Other Dispatches from the Wrongly Convicted* (New York: Doubleday, 2000).

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5.) Discussions that get somewhere. In social processes, a common observation is how much time is wasted in committee meetings. And it is not clear, either, how much of the talk that is involved in public policy and politics actually is productive.¹⁴ Any hints or new insights developed, re how to move things along? Are people able to use their time more productively?

6.) What makes a problem easy or difficult? A comprehensive theory of the different characteristics that make any problem easy or difficult could be remarkably useful, especially if the cumulative inquiry could (like the quadratic formula) provide the base for new algorithms that could accelerate solutions to different types of problems.¹⁵

7.) Any new languages to aid self-expression, communication, or improve understanding of the physical or social world?

We have a limited number of languages, ranging from the nouns, verbs, adjectives, adverbs, prepositions, and approved grammatical relations of the traditional (linear) verbal languages; mathematics; music and dance (which practitioners claim are capable of extraordinary power, refinement and (potential) superiority to verbal languages for some

¹⁴ Murray Edelman, *Political Language: Words That Succeed and Policies That Fail* (New York: Academic Press, 1977); David Marca and Geoffrey Bock, eds. *Groupware: Software for Computer-Supported Cooperative Work* (Los Alamitos, CA: IEEE Computer Society Press, 1992); Paul Meehl, Why I Do Not Attend Case Conferences, in *Psychodiagnosis: Selected Papers*, ed. Paul Meehl (New York: W. W. Norton, 1977).

¹⁵ Several years ago, I began a preliminary list for public policy - Lloyd S. Etheredge, Government Learning: An Overview, in *Handbook of Political Behavior*, ed. Samuel Long (New York: Plenum Press, 1981), 135-140. One method, which might be helpful, would be to broaden the inventory and identify orthogonal dimensions.

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purposes); visual arts (which may or may not be a language)¹⁶; and an early generation of artificial languages (and meta-languages) for computer programming.¹⁷ Were there new languages invented that permitted mankind to break through to the other side (if there is another side?)

These are a core group of 7 leading questions. But I think that I would have several more, although more specialized:

Other

8.) Was Heidegger really onto something? If so, what have his work and methods developed into?

9.) Did anybody test the validity of ideological assumptions (liberal v. conservative) that recycled in American politics in the late 20th and early 21st centuries?¹⁸

¹⁶ Robert E. Horn, *Visual Language: Global Communication for the 21st Century* (Bainbridge Island, WA: MacroVu Press, 1998).

¹⁷ Harold Abelson, Gerald Jay Sussman, and Julie Sussman, *Structure and Interpretation of Computer Programs*, second ed. (Cambridge, MA: MIT Press, 1996), 360 et passim.

¹⁸ Esp. re motivational v. rational choice models of macroeconomic behavior see Lloyd S. Etheredge, *A Proposal for a Study of Leadership, Motivation, and Economic Growth. Discussion Paper Prepared for the Commission on Social and Behavioral Sciences and Education, National Academy of Sciences/National Research Council* (Swarthmore, PA: Swarthmore College, 1990), Xerox. Archived at www.policyscience.net; Lloyd S. Etheredge, "The Scientific Scandal of the 1980s," *Political Psychology* 15, no. 1 (1994).

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10.) Was there any important relationship of sex and politics?

Twentieth-century social science saw periodic claims of a relationship between sex and politics, which blazed across the skies like comets but disappeared without much scientific evaluation. (E.g., Freud's claim that sexuality powerfully defined male (Oedipal) and female relationships with political authority - and Freudian Left rhetoric. Feminist critiques of almost everything. And there was tantalizing evidence in small studies of chimpanzees that enforced reduction of status in dominance hierarchies reduced male testosterone. Etc.) Did this ever amount to anything?

11.) Whatever happened to the nation-state?

12.) Did American research universities, as organized at the beginning of the 21st century, turn-out to be a good institutional vehicle to get us here? Or were there better ideas?¹⁹

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¹⁹ For historical evidence that academization quickly (after the first generation) produces stagnation and replaces creativity by scholasticist commentaries on old texts, at least outside of the hard sciences, see Randall Collins, *The Sociology of Philosophies: A Global Theory of Intellectual Change* (Cambridge, MA: Harvard University/Belknap Press, 1998), 608, 504-505 et passim.

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