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Vol. 2, No. 1—March 1992

Devastating the Future

At the outset, *The PSR Quarterly* announced its intention to publish "research, analysis, and in formed scientific and medical opinion on the nature and consequences of weapons of mass destruction and the impact of catastrophic events, such as natural and technological disasters, war and civil conflict, famine and disease, that may inflict vast loss of life and threaten regional or global devastation." We would do so, we declared, in recognition of the "connection between what a society has learned to value and where it decides to devote its resources [1].

We did not then go on to state what is made anguishingly clear by several of the reports in this issue: that, almost always, it is children, those who are at once the most vulnerable and the least able to bear the consequences of man-made or natural disaster, who pay the heaviest immediate costs. When we destroy children, we devastate the future.

"Destroy" may seem to some to be rhetorical over statement. Consider, then, the operative actions that describe the treatment of children in these reports, in a continuum of brutality. They are: shoot, irradiate, wound, and kill.

War and civil conflict make a major contribution to this toll. In the Gaza Strip, Schnitzer describes the damage done to more than 600 patients (over half of them children under 18 years old) by plastic bullets, originally claimed to be relatively benign instruments of control. The author confirms and extends earlier reports [2] of serious injury (and even death) caused by these bullets.

In an exquisitely detailed review of the after effects of the technological disaster at Chernobyl, Davis draws attention to a different sort of childhood pain: fear and uncertainty, in a future shadowed by the possibility of nuclear contamination even when there is not yet, and may never be, precise and definitive evidence of large-scale radiation-related disease and death.

In Somalia and Ethiopia, a combination of war and natural disaster -- drought and famine -- has produced a mosaic of related human disasters: starvation, disease, desperate migrations, even the imprisonment of young children. In Poland, disastrous levels of lead and other environmental pollutants are blighting the health and development of children. Yugoslavia's civil war has killed children -- even those in hospitals. (Some of these tragedies will be described in future issues of The PSR

Quarterly.) In these contexts, it seems almost surreal to talk of children's needs for security, health services, education, and psychosocial stimulation.

These reports, however, are mere fragments of an ugly global tapestry. Over the past five years alone, Physicians for Human Rights, Americas Watch, Amnesty International, and other human rights groups have documented abuses of children in Burma, Cambodia, Chile, El Salvador, Guatemala, Haiti, Iraq, Kurdistan, Mozambique, Nicaragua, Panama, South Africa, South Korea, and Tibet. Rehabilitation from torture, including the rehabilitation of tortured children, has become a new medical specialty.

Three new books, all published in 1991, further document the global dimensions of the assault on children. No Place to be a Child: Growing Up in a War Zone [3], by James Garbarino, Kathleen Kostelny, and Nancy Dubrow, describes the burdens of children in Mozambique, Nicaragua, Cambodia, the Occupied Territories, and Chicago's inner city. Savage Inequalities [4], by Jonathan Kozol, documents another form of assault: educational neglect and abandonment. There Are No Children Here [5], by Alex Koteowitz, is a terrifying account of the growth and development of two young boys in the chaos and anomie of a Chicago housing project. These books attest that disasters afflict children in highly industrialized societies, not just in the third world. Their titles speak to a grim progression. It is not just children who are under attack; it is childhood itself.

Finally, as the reports in this issue by Wilkinson and Cole make clear, we continue -- in this officially designated worldwide Decade of the Child -- to manufacture nuclear weapons and to fashion instruments of biological warfare.

There is a bottom line. Every day on this planet, 40,000 children -- one every other second -- die of deprivation, neglect, preventable disease, war, civil conflict, or natural or technological disaster. It is appropriate, we believe, to call this a global catastrophe, one that profoundly alters the quality of global survival. It is indeed a question of "what a society has learned to value and where it decides to devote its resources...."

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Vol. 2, No. 2—June 1992

Two Tears for Democracy

We are in the midst of a season that descends upon the U.S. every four years, bringing usually more heat than insight to problems we prefer to keep kicking far down the road ahead. Our tendency to talk rather than come to resolution suggests with increasing inescapability that we will bequeath to the 21st century several grim global legacies: over population, pollution, and climate change. Within our own boundaries, we also persist in shying away from hard choices regarding what to do about our flawed educational system, our failing health care system, our struggling economy, our decayed infrastructure, and our stressed environment.

It is a frail but distinct comfort to note that we are at least talking about these issues. There have been times in our history when such has not been the case. The example of Dr. Carl Johnson, discussed in these pages, is painfully recent, and we can point to many places in the world where the opportunity to explore and debate is severely curtailed.

As we are discovering during this election year, the impact of a government on its people can be difficult to assess in real time. It is particularly difficult to do so if access to information is blocked. When citizens cannot speak out and when the world cannot look in, repression and abuse of all kinds can persist for years. How crippling such silence can be is revealed in two essays in this issue, one on the decline and distortion of psychiatry during 70 years of Soviet rule and one on the toxic degradation of Poland's environment, the result of unconstrained and unexamined industrial exploitation characteristic of Eastern Europe in the cold-war era.

An important theme in these two stories is the special vulnerability of medicine and science, intellectual activities that require a free and full exchange of information. In regimes where such exchange is impeded, this vulnerability may have comparatively benign manifestations: medicine and science devolve into barren enterprises, caught in old paradigms, blinkered by outmoded methodologies, and ignorant of essential advances in knowledge and approach. More perfidious effects of isolation and repression can also be traced, as in this essay on Soviet psychiatry and wherever else physicians and scientists have allowed their minds and their skills to be used to serve the interests of a state against a people.

Medicine and science exist as robust intellectual activities only insofar as their practitioners pursue fact, explanation, and, at some remove, truth. But there is more at issue. Certainly, to support these imperatives, medicine and science need societies where information is gathered, reported, and discussed. This need, however, has other roots as well. Without knowledge of the work of medicine and science, the public cannot be assured that what is learned and applied accords with established public expectations of what is proper and ethical. The public is more than substrate and subject for medicine and science. The public, to the extent that it funds these enterprises or is affected by their outcomes, also has the right to know what is going on. Although such scrutiny may at times appear intrusive or naive to physicians and scientists intent on finding the most powerful cure, developing the most efficient organism, perfecting the most effective weapon, or serving the most righteous state, on balance the cost of not allowing such openness has been found to be too great. The negative examples span decades and continents and range from denial of informed consent in human experimentation [1] to torture and genocide [2], from disregard of environmental risk [3] to catastrophic pollution 14], and from weapons that kill many to technologies of mass annihilation [5]. It is not that the public always agrees on what is proper and ethical or that these notions have not changed over the years. It is that only by affording the opportunity for an ongoing moral and intellectual debate about what its professionals should be doing can society hope to approach a high standard of inquiry and action.

As news finally begins to flow from Eastern Europe and the former Soviet Union [6], we welcome its volume as we wince at its tidings. It confirms the realities we have been avoiding from our own country and throughout the world: the limits and cost of growth and the fragility of our social contracts. The commentaries in this issue of the journal challenge us to thoughtful engagement with problems long before us, now better documented than ever, and still not truly addressed. Coming of age at the end of this century, we resist coming to terms with all we have learned. The adolescent lament from the late 1960s ("the problem with today is that the future is not what it used to be" [7]) still lingers in the air, long after we should have grown up, long after we should have realized that the future is not what we had dreamed but what we have made.

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Butterflies and the Millennium

Over the last several weeks, as we leave the crucible of UNCED behind us and head into the U.S. election, a chilling Ray Bradbury short story [1] keeps coming to mind. It evokes the hazards and finality of some kinds of choices. As the story opens, everyone is basking in the news that a good President has been elected, and a big game hunter leaves the office of an exotic travel agency to be swept back in time to hunt dinosaurs. He is under strict instructions and penalty of death not to do anything but walk on the specially laid metal path and shoot the designated beast, who, according to advance intelligence, was about to die anyway from some other cause. Any other action, taken 60 million years back in time, ran the risk, the man was told, of changing the present world irrevocably. The man, made heady by the jungle air and in the heat of the hunt, steps off the metal walk onto the jungle floor, crushing a butterfly under his boot. The guide summarily rushes him back to the present, where, as they enter the travel office, the words on the signs are all spelled differently and the travel agent behind the desk grunts something unintelligible. And, yes, the bad guy has been elected President.

It is not so much that we face the choices of good guys and bad guys this November (although those on the current list can certainly be seen as spanning a wide range of experience, judgment, and humane common sense). It is that we have so much to do and so little time in which to do it, so many actions deferred for so long that we are left with few degrees of freedom. It is that we have learned enough to know that the world's current patterns of consumption and growth are, every second, crushing butterflies, and we have enough advance intelligence to know that the consequences will be harsh and will be felt in years we number in scores, not millions. It is that we have such urgent need for enlightened and engaged public policy and so little assurance that this year, eight years before the turn of the century, we will elect someone who can help us accomplish what we must.

There recently appeared a troubling essay about environmental pollution and public awareness that speaks directly to these themes [2]:

The general pattern of response to environmental issues . . . is remarkably similar, whether the issue is the ecological effects of pesticides, the disposal of toxic wastes, the destruction of stratospheric ozone, the ecological effects of nuclear war, or toxic winds.... First, someone identifies a potential 'problem.' The problem simmers until for some reason it becomes highly visible, usually by getting into the popular press.... As the problem becomes visible, public awareness increases dramatically,

and people start pointing fingers. Who caused this problem? Then comes the reaction from the vested interests: 'We didn't do it,' 'You must be wrong,' or 'The data must be wrong.'

After this peak in awareness, reaction and debate, the issue advances to one of several possible outcomes: (1) Everybody gets tired of it, and it fades away unresolved; (2) a scientific breakthrough makes clear to everyone what needs to be done; or (3) more likely it becomes politically expedient or economically advantageous to 'solve' the problem, at least in terms of public awareness.

In the following pages, the articles by and about Needleman suggest that we are still deep in the debate phase on the issue of lead poisoning, where vigorous attacks are aimed at the person and the data. The vested interests are at work. In Epstein's synthesis of several early warning signs, linking global warming to the spread of cholera, we see surface the first phase of this process of response to environmental issues, where one person raises a thoughtful question, thoughtfully explored. Thanks to UNCED (see the account in these pages by Epstein), global climate change will probably continue to remain a visible topic in the technical and lay press.

What is troubling in the essay quoted above is not just how long the process of identification and public debate may take: pesticides hit the press with Rachel Carson's Silent Spring, published in 1962 [3]; the first paper on acid rain was published in 1968 [4]; the role of chlorofluorocarbons in stratospheric ozone depletion was first described in 1974 [5]; and the first authoritative study of the environmental effects of nuclear war came out in 1975 [6]. Equally disturbing is the limited range of apparent possible outcomes from this debate: unless a "scientific breakthrough" leads to some happy technical solution, the problem either falls off the list, because people grow weary of discussing something for which there is no evident answer, or it is "solved" in some backpocket manner that escorts it from public view.

This sequence is not limited to biological and environmental debates. This pattern of outcomes applies as well to another set of problems discussed in this issue of the journal by Melman: the escalating arms race, the militarization of society, and possible alternatives. We have known about the dangers of militarization for centuries. Warnings that are particularly poignant to us, still touched by its shadow, can be found in the years, months, and days leading up to World War I. By the 1890s, "Europe was a heap of swords piled as delicately as jackstraws; one could not be pulled out without moving the others" [7]. The costs of militarization through the years thereafter have never been more succinctly described than by Dwight D. Eisenhower, in a 1953 speech that has been much quoted but in essence still ignored:

Every gun that is made, every warship launched, every rocket fired signifies, in the final sense, a theft from those who hunger and are not fed, those who are cold and not clothed. This world in arms is not spending money alone. It is spending the

sweat of its laborers, the genius of its scientists, the hopes of its children.... This is not a way of life, at all, in any true sense. Under the cloud of threatening war, it is humanity hanging from a cross of iron.... is there no other way the world may live?" [8]

Thoughts of alternative ways of living and spending have usually run up against the risks or realities of new wars and have thus been dismissed as visionary and, consequently, irrelevant.

A question arises to those of us trapped and impatient in this structure of pattern and outcome: what is it, in the nature of scientific breakthrough, that allows it to be so determining? And what else, if that is lacking or may never arrive, can we introduce with good effect, instead?

Scientific breakthrough, as used in the essay by Likens, is not further defined but conveys the sense of something dramatic. Breakthrough hits the front pages of public consciousness and either casts bright light on issues that have bothered many of us for a long time or suddenly shatters barriers we have assumed to be cosmic givens. True breakthrough occurs when a scientific discovery causes a shift in scientific paradigm, as described by Kuhn [9], and then, when communicated to the public at large, triggers a change in world view. We are speaking here of scientific revolutions: the nature of the solar system, the structure of matter, the splitting of the atom.

An important aspect of scientific breakthrough is that, for most of us, it comes without personal cost or effort. We did not take part in creating it; we only partake of its results. We are the beneficiaries of those relative few who worked on the problem for years, if not generations. We coast on a legacy granted by these few into new and more open waters, relieved of one old burden of ignorance, heading toward new cognitive challenges we had not realized existed. For society at large, scientific breakthrough appears to be one of the easier ways to effect change.

It seems difficult, however, to see how any kind of scientific breakthrough in the meaning used above is going to affect the complex and entrenched social and economic behaviors that cause global environmental degradation and military production and proliferation. To say that there may be one on the horizon is to stay caught in Greek tragedy, where it is understood that the solution must await the arrival of the deus ex machina. This is the deadly, ironically archaic stance of many avowedly modern analysts and scientists who assert that technology will save us from ourselves.

The focus on breakthroughs obscures the cumulative value of discrete, incremental intellectual discoveries. Discovery can relate to small questions as well as large, with impact felt only in rarified circles, at least for many years. What makes a discovery have significant impact on social policy may have less to do with its potential revolutionary content than with the doggedness and creativity with which those

who recognize its relevance to an environmental, social, or economic problem keep it before the public view. In other words, those who translate and connect a range of insights and observations may, with time and enormous expenditure of effort, also succeed in bringing about major shifts in the way the world sees and conducts itself.

This process takes years of work by many and the passage of generations through time and experience. Events, such as the dissolution of the cold war, can help to speed and galvanize resolution. The under standings, however, must be continually reclaimed and reframed -- presented again, with whatever new evidence the tide brings in. Those who inquire and write and organize know that our November election cannot have much impact on the near future. But they know that each step leads somewhere. It is the long run they are after, and the butterflies.

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The Message from Chelyabinsk and Hanford: The Corrupting Power of Secrecy

The publication by Kossenko and her colleagues of long-suppressed data on the health effects of radioactive contamination as a consequence of Soviet nuclear weapons production at Chelyabinsk illustrates a dreadful convergence of government policies in the United States and the former Soviet Union. But this is not mere history, safely limited to the past. These new data, and the prospects for their further elaboration, present us with new problems and choices -- some scientific, some moral -- that stretch into the future. It seems clear that the human and environmental damage of the nuclear arms race will be with us for decades, perhaps centuries; we cannot yet even estimate its half-life.

As Amundson points out, two very different governments produced generations of poisons -- and lies -- by very different means. In the Soviet Union, radiation monitoring of exposed (but unknowing) populations, and the epidemiological assessment of disease and death, was begun early and pursued fairly intensively -- but all scientific publication, and any information to the populations at risk, was rigidly suppressed. In the United States, studies of the populations around nuclear weapons facilities were simply not done or were conducted with such limited dosimetry and flawed methodologies as to be virtually worthless [1] and to render meaningless the government's repeated assurances of safety.

What the Soviet Union and the United States shared was the corrupting power of secrecy as an instrument of government. The Chelyabinsk story demonstrates there what Physicians for Social Responsibility has documented here in Dead Reckoning [2] (its review of the U.S. Department of Energy's [DOE's] epidemiological studies): secrecy can damage lives, violate the integrity of science, and rip the fabric of public trust in authority on which the legitimacy of any government, in significant measure, depends.

Amundson notes a convergence of the interests and plans of victims, citizen activists, and their physicians and scientist colleagues in the two countries, catalyzed in part by the stubbornness and bravery of Kossenko and her colleagues, free at last to publish. Rush, in these pages, notes a different convergence of interests. If the raw data, the processes of analysis, and the scientific direction and course of future studies remain under the control of the apparatchiks here and there -- that is, in the hands of those who recklessly produced the hazards and still have

every reason to conceal or minimize their consequences -- then we have reason for continuing concern.

That is what is so alarming about the DOE's hasty conclusion that the Chelyabinsk data suggest less damage per dose than previous studies and might justify a more limited cleanup of DOE-contaminated sites in the U.S., and is what is so troubling about the DOE's pursuit of a cooperative research agreement with the Chelyabinsk scientists. The latter, desperately short of funds and equipment, are vulnerable to promises of help from any source; the DOE, under the terms of its Memorandum of Understanding with the Department of Health and Human Services, is supposed to be moving out of the business of analytical epidemiological research. Given its record in the U.S., its expansion into Chelyabinsk seems, at the least, unsanctioned.

It is useless, however, to speculate about motives. The central questions that confront us are, with one exception, scientific. In this issue, Davis supplies an important analytic framework to use in assessing many of these questions. Among them are two of particular interest: What were the scope and quality of the Chelyabinsk radiation monitoring? Are there really reliable individual exposure assessments, on which dose-response calculations depend? Given the shabby state of the Soviet health care system, how accurate were the diagnoses? Given the admissions of falsification of diagnoses and death certificates, how valid are the outcome measures? The answer to these and similar questions will determine what we can really learn from the Soviet experience.

As we explore this experience, we are faced with one issue that is less scientific than it is moral. A recent scientific visitor to the splintered remnants of the Soviet Union described how she stumbled across research groups from half a dozen countries at almost every turn -- eagerly exploring the effects of radiation exposure, air pollution, and toxic contamination of soil and groundwater. Few if any of them, however, were offering clinical assistance. With local health care systems now near collapse, research without real diagnostic and curative help is exploitative, reminiscent of the U.S. record in the Marshall Islands. Scientific inquiry mandates collaboration in the pursuit of new knowledge; our obligation as physicians mandates that we also respond to clinical need.

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