Drinking Hemlock and Other Nutritional Matters

by Harold J. Morowitz

Harold J. Morowitz (b. 1927) was educated at Yale, where he later taught molecular biophysics. Associated with the National Aeronautics and Space Administration, Morowitz often addresses fellow scientists in his writing. Other works—including The Wine of Life and Other Essays on Societies, Energy, and Living (1979) and Mayonnaise and the Origin of Life (1991)—address a more general audience. “Drinking Hemlock and Other Nutritional Matters” is an essay included in The Wine of Life.

It was a rather dark, bleak morning, and after rising early I thought it appropriate to turn on the television and communicate, unidirectionally to be sure, with the outside world. There to my great surprise was a famous movie star of a few years back discoursing on the evils of sugar. The former Hollywood idol was vehement in her denunciation of this hexose dimer particularly in its purified and crystallized form. She denounced it as an “unnatural food,” an epithet that may well have bruised the egos of the photosynthesizing cane and beet plants. The mental image evoked was that of a solemn judge sentencing someone in perpetuity for an “unnatural act.” In no time at all this great lady had me caught up in her crusade, and I kept muttering “hate sucrose” as I prepared an unnatural extract of coffee beans and dropped in a highly synthetic saccharin tablet.

A few minutes later, when the veil of sleep had lifted and the uncertainty of reason had replaced the assuredness of emotion, I began to wonder where my cinema heroine had acquired such self-righteous certainty about biochemical and nutritional matters that have eluded my colleagues for years. Perhaps all this messy experimental work of grinding and extracting tissue and otherwise mucking about the laboratory is not the shortest road to truth at all, and we of the dirty white lab coat crowd are missing some mysterious pathway whereby true nutritional knowledge comes with blinding insight and transforms the lives of the faithful.

All of this recalled a frequent, painful experience that haunts biomedical scientists like a recurring nightmare. One is at a cocktail party or other social gathering where someone appears in the crowd and begins an oratorical declamation on Good Nutrition. The “facts” being set forth are often inconsistent with everything one knows about metabolic pathways, cell and organ
physiology, enzymology, and common sense. If the listener is so bold as to raise the question, “How do you know that?”, he or she is greeted with a look that must have faced Columbus when he queried, “How do you know the world is flat?”

Nutrition seems to be like politics; everyone is an expert. It would appear that to the general public years of education are as naught compared to knowledge somehow painlessly available to everyone, regardless of his familiarity with innumerable facts and theories that constitute a complex discipline.

The situation described is by no means confined to the choice of foods, and I certainly feel ill prepared to get involved in the sucrose controversy. Nevertheless, the field of nutrition is a good example of the many areas where we are constantly subject to a host of dogmatic statements, some of which are true, some of which are false, and many of which are indeterminate. The response to each of these assertions should be the query, “How do you know that what you are saying is indeed a statement of fact?” At this level of question, I believe our educational system has been a total failure.

Asking how we know the things that we know is part of the philosophic discipline of epistemology, the theory of knowledge, which is usually taught in upper-level and graduate philosophy courses and is therefore restricted to a small group of college students. But can there be any study that is more basic to education? Should not every high school graduate be prepared to cope with the many incorrect and misleading assertions that come his way every day? On the surface it seems strange that acquiring skills in assessing the validity of statements is not a core feature of the school curriculum.

Education, as conceived at present, is largely a matter of transferring subject matter from teacher to student, and uncertainty is usually settled by appeal to authority, the teacher, a textbook, or an encyclopedia. The methodological issue of how knowledge is obtained is rarely mentioned. Thus one of the most important analytical tools that an educated individual should possess is ignored. This is not to argue against the transfer of information but rather to assert that by itself it is insufficient protection in a real world containing demagogues and all kinds of charlatans and hucksters who have a free rein because almost no one is asking the appropriate questions.

On the issue of sorting out reality, most holders of doctoral degrees are almost as naïve as grade-school graduates, and all manner of academic disciplines also expend effort on statements that would be quickly discarded if epistemological criteria were invoked. This takes us back briefly to the subject of nutrition, where methodological problems make it very difficult to obtain even pragmatically useful information. Statements are made on the basis of averaging over populations when we have no ideas of the distribution functions that go into forming the averages. The impossibility of large-scale experiments with people requires extrapolation of animal or small-scale human determinations over ranges where the correctness of the extrapolation procedure is unknown. Nutrition is thus beset with difficulties that are clearly of an epistemological nature and, until these are resolved, careful scientists will be confined to very limited statements. Dogmatic assertions will remain the province of cocktail party orators.

The problem of why the theory of knowledge is not taught in the schools is relatively easy to see. Epistemology is, after all, a dangerous subject. If we start to question the validity of
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statements, then the teachers themselves come under question. All assertions about education, established forms of religion, government, and social mores will also be subject to justification on the grounds of how they are known to be true. For parents and teachers who have not been through the experience of exploring how we determine facts, it would be unnerving to have their children continuously questioning the roots of knowledge. Inquiry is indeed a challenge to the acceptance of things as they are.

To realize the threat to established ways that is perceived in the type of analysis we are discussing, we need to go back to ancient Athens, where the philosopher Socrates taught his young followers by the technique of questioning everything and seeking answers. As Will Durant has noted, “he went about prying into the human soul, uncovering assumptions and questioning certainties.” This has come to be known as the Socratic method. The citizens of the Greek city-state condemned the inquiring teacher to death by poisoning with hemlock. One of the most serious charges against him was “corrupting the young.” The fate of the first propounder of the Theory of Knowledge has perhaps served as a warning to keep the subject out of the school system.

There is still an objection that it is dangerous to teach the art and science of inquiry to the young; I would submit that it is more dangerous not to teach it to them, thus leaving them vulnerable to the quacks and phonies who now add mass communication to their bag of tricks. If we believe that rationality will lead the way to the solution of problems, then we must start by making the examination of what is “real” a part of everyone’s thought. If challenging young people are a nuisance, think of how much more a menace is presented by young people marching off in lock step and never questioning where they are going.

The solution seems clear. When we return education to the basics of reading, writing, and arithmetic, we should add a fourth R, “Reality.” Starting at the first grade and continuing through graduate training we must see that students become sensitized to the meaning of what is said and the realization of how valid knowledge is established. If this seems radical, it is. Drinking hemlock may be less painful than swallowing some of the drivel that comes over the TV set every day.