

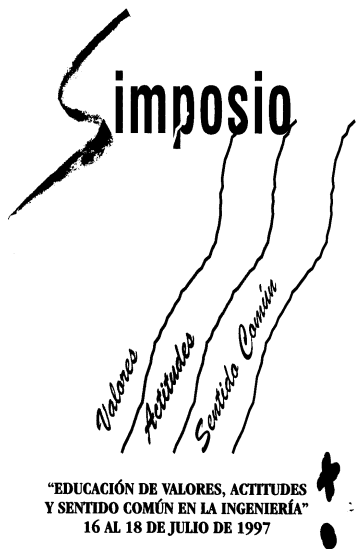
Science & engineering, philosophy and common sense♦

Lorin Loverde*

Sometimes when certain connections are made among concepts, the fact of their juxtaposition triggers in the mind interesting implications. Consider the following title of a symposium: "Education of Values, Attitudes and Common Sense in Engineering".¹ Certainly, starting out with education and values is a common theme of the Enlightenment philosophies of the 18th Century. Adding the concept of attitude is equally a common theme of psychology. However, then come the concepts of common sense and engineering, at which point we begin to wonder.

In the paper "Sentido común: una filosofía para la vida cotidiana" the author, Garza Treviño, cites a number of philosophers, from

Aristotle to Kant to affirm the importance of common sense. For example, John Dewey noted how it is **the traditions**, work, techniques, interests and institutions which a group (or society) establishes for itself. The group thus far in human history is always provincial because we do not yet have the one group of humanity as a whole that we need. We want engineers to learn and apply common sense. Lack of common sense is close to being malfunctional and irrelevant in life. However, should common sense be the source of values? And even more importantly, should the people in society who apply science to life be guided by such values? In the negative mode, the answer to both questions is yes. Values without common sense are irrelevant. Engineers without common sense are impractical.



HOW DO WE ELEVATE OURSELVES TO EXCELLENCE?

Turning the ideas into the positive mode, we have a very different and startling proposition. Should our highest guiding values can be reduced to mere common sense? Engineers who impose science on society can appeal to mere common sense for a defense (even when they are cause of ecological disaster and mindless mechanics).

There is a good meaning of common and a lesser meaning. The good meaning refers to what is common to all, which is what Heraclitus meant by the *logos*. The lesser meaning refers to the sub-excellent, the lowest common denominator, or the weakest mind of a group. The weakest mind should not be the determiner of our highest values. The whole idea of social and moral progress rests on our continuing to aspire to the highest truth of which we are capable, not

♦ El presente artículo nos fue enviado con motivo de la publicación en el número 1 de **Ingenierías** del texto *Sentido común: una filosofía para la vida cotidiana* del Lic. Juan Gerardo Garza Treviño. El Editor

* Director Administrativo de Quality de Sabinas.
Qslorin@aol.com

what the weakest mind can tolerate. There is no other way to aspire to excellence or to apply excellence to our culture.

Common sense is the residue, the settlement on the bottom of the lake after the storm among highest minds is over. Common sense is important not because it leads to greatness but because it is the minimum without which we lapse into irrelevancies. The minimum should not be used to define the maximum, the barely passable should not be used to define the excellent, and the weakest mind should not be used to determine the direction of a civilization.

What should? We certainly do not abandon common sense, but how do we elevate ourselves to excellence? We have to avoid the provincialism of common sense. Why do we want to be satisfied with common sense? What is its hidden appeal? One approach is to realize the analogy, science is to engineering as metaphysics is to common sense. This too is a startling juxtaposition.

We have established what is common sense, and we know that engineering is the application of scientific laws to practical problems. However, how does science parallel metaphysics? And why is engineering like common sense?

Engineering is like common sense in both the good and reduced meanings. Engineering is the application of the *logos* to practical problems. Yet engineering is also the receiver of knowledge from a past storm of a theoretical conflict in the skys of science. Engineering did not apply any propositions of relativity theory or quantum mechanics in the Eighteenth Century. The storms of Einstein and Plank had not yet occurred.

Yet engineering is "where the rubber meets the road." This metaphor means that at the point of contact, things are very critical. Engineering is the point of contact between scientific theory models and social needs. Engineers who whistle happily while building atomic bombs and biological weapons are dangerous. Engineers are citizens, and we all as citizens need to aspire to excellence in planetary responsibility.

THE TERRIBLE QUESTION

Now the most difficult question: how is science like metaphysics? In the answer to this question is also the answer to what might be called "*the terrible question*" – namely, why does science fail to guide both engineers and citizens with the highest values, the best attitudes, the most noble altruism, the most creative art, and the most equitable form of justice?

Scientists would immediately protest the latter question, saying in effect, "But that's not our job!" Yet the terrible question haunts scientists, haunts the engineers who rely on scientific knowledge, and haunts the people who depend on engineering successes to improve their lives...not make them worse. The question is terrible because we rely on science for so much, and even if science refuses to answer the terrible question, it imposes upon us a framework and a horizon within which we have attempted to answer the question. That is, until Heidegger.

WHAT IS METAPHYSICS?

The answer to that question before the philosophy of Martin Heidegger will not yield the answer to the terrible question. Before Heidegger, metaphysics was a set of the basic propositions of a philosophy. So, before Heidegger the relation between metaphysics and physics (as the first science) was visible: metaphysics formulated the abstract theory structures in the inquiry

of the mind and physics tested the theory structure in the inquisition of nature. Initially, the philosopher was both metaphysician and physicist. Later, to a scientist, metaphysics was a source of hypotheses. However, metaphysics was also the foundation of the other areas of philosophy: epistemology, ethics, aesthetics, politics, value theory, etc. These other areas were the foundations of Western Civilization, the soul of our culture, but they were largely ignored by science which aspired to be value-free.



Martin Heidegger 1889-1976

Therefore, metaphysics is larger than science. Eventually, science used up the best hypotheses from metaphysics and went on to develop far better hypotheses and theory structures than the philosophers could provide by inquiries in their minds. Metaphysics was eventually ignored as if it no longer influenced our world picture. That was before Heidegger.

Heidegger described the foundations of Western Civilization (metaphysics) as being a detour of some 2,500 years that is still our fundamental framework today. The implications of the Heideggerian revolution are immense and will take centuries to work out. For Heidegger it

is not an accident that our word for the application of science to society by engineers is "technology." Our word is the combination of the Greek concept of *technê*, plus the Greek concept of *logos*. *Technê* is a metaphysical term. Heidegger said that we should not be surprised that technology has come to dominate and exploit men through weapons as well as nature through tools. All of that was in *technê*, in the beginning of metaphysics from the era of Plato. If metaphysics has suffered such a flawed beginning, such a twisted stem, it is no wonder that modern culture has grown crooked, bent, distorted, and dangerous? And insights into the origins of metaphysics are not what you will find in the common sense of today.

Heidegger's answer to the terrible question is that metaphysics laid the groundwork for value-free, inhumane, and anti-ecological science from the beginnings of Western Civilization. Heidegger's answer is that metaphysics constructed a powerful but fundamentally flawed system for **framing** questions and posing answers about the cosmos, God, man and society. Therefore, if we can have some insight into the flaw of the framework of metaphysics, we can have some insight into the flaw of the framework of science and the unfortunate dependence on science by engineering. And further we can surpass common sense and begin to take a better direction for civilization in the future.

To get this insight by Heidegger's direct argument is rather complex:

- metaphysics posited theory structures
- metaphysics separated mind from thing,
- metaphysics substituted the object of knowledge for the thing in nature, and
- metaphysics turned the object of knowledge into an already-there-ness of self-same, inert objects waiting for man to stumble upon them.

Most people cannot understand that argument because it is too fundamental, too far-reaching in its

implications. However, we can back up and get at Heidegger's conclusions by another route. We can begin to ask questions about the approaches we take to knowledge, the scope we demand of knowledge, and the degree to which we want to progress in terms of humanity as a whole.

THE GUARDIANS OF THE TRANSITIONS

The challenge to each new era of science and culture is to sift among the many, many strange wonders and elaborate on those few that make sense in light of the current historical context. That is why each epoch has to re-interpret the ancient wisdom in its own way. That is also why the previous epochs can be seen to have made such blatant mistakes. Now, in our time, we say arrogantly how could they have believed such things back then? But back then, deep in history, they looked around their world and it never occurred to them that they could doubt such things. In a few hundred years or a few thousand years, people will say how could they have believed the things they did back in the 20th Century?

Consider what it means for the *intelligencia* of a culture to offer propositions about what to believe. It sounds simple, and it would be if they did not care whether what they said was true. Once the *intelligencia* feels the call of conscience and stops arbitrarily accepting revelations (or stops presumptuously accepting cultural traditions), then the burden of truth becomes the greatest burden one can imagine. The *intelligencia* are the guardians of the transitions from the old to the new.

There are only two² ways to proceed in this most important and perilous journey. One is to offer an appeal to the truth and the other is to

offer an appeal to faith. It would be convenient if both were the same (as they should be ultimately). The people of truth never know for sure and the people of faith never believe for sure. The people of truth search for what will convenience anyone. The people of faith have finished their search and demand that every one join them. The people of truth reject any imposed logic or arbitrary principle. The people of faith reject any close examination by universal principles that might expose what is too arbitrary. Neither is innocent. Each has attacked and killed the other. One elevated itself through Eros to ascend to the divine. The other was elevated from outside of itself through Agape by God's descent to the human.

THE SEARCH FOR IDENTITY

Consider, for example, the search for identity among several generations of Latin American writers in the last century of the millennium. They make strange mixtures of European philosophers. The mix could be called merely mistaken, but that would deny their new view which may be precisely their seeing things mixed differently. What is different is their stand against materialism with the attempt to affirm will, spirit, love and sacrifice.

That is admirable. But one must ask why a region should bother to search for a partial identity (the Americas) when our real task is the new planetary culture. Alfonso Reyes is correct that the entire human heritage should go into the new culture.³ Yet it will not exactly be a synthesis because the heritage is not adequately dealing with the hidden knowledge that is now finally emerging. The *New Planetary Culture*⁴ is an elaboration of ancient wisdom so that with this new insight artists and intellectuals can create new forms for a planetary culture. By definition, a planetary culture is non-tribal, non-national and also non-regional.

Planetary does not mean one planet as if the earth were the center of the universe. Rather, it means wholeness, the inclusionary mode of universal brotherhood. If a nation wants to forge a new culture, the people should not be looking only into their individual past but also into the future of the planet as a whole. This universal outlook will not impose a homogenized culture on the indigenous cultures. Rather, it is a re-grounding of cultural forms and practices, cultural thought and action.

It is interesting that the nationalists, and even the more encompassing multi-national regionalist, typically do not tend to deal with fundamental philosophical positions. Their inability to deal with philosophy and spiritual knowledge will be a direct influence on their retreating into easier positions of provincialism (and it makes no difference whether it is the provinciality of a tribe, a nation, or a multi-national region). When the intelligencia avoid a foundation in truth, they call for faith (in the religious realm) or commitment (in the political realm). **Mere historical contingency of a culture does not equal truth.** It was probably for this very reason that Karl Marx had to add that the communist ideal is not only historical but is also historically determined. That additional qualification is saying that you might as well agree with the historically contingent and provincial position because it will come to pass inevitably. So there are only two appeals a leader can sound to the people: (1) truth, (2) faith. Truth carries its own intelligibility thereby it is up to the **individual** humans to figure it out and infer what is the common good for action in light of this truth. Faith is asserted even though it does not carry its own intelligibility. In either faith (religiously) or commitment (the political variation), the primary emphasis is frequently

given to a moral code, i.e., rules of action. Then, it becomes up to **either** the human individuals to figure out **or** institutional intermediaries to pre-digest for individuals what kind of a foundation would produce (and justify) such rules (that is how we get the theologian trying to figure out why there is evil if God is good).

CONTRIBUTE TO THE EMERGING VISION OF THE WHOLE

Humanity is one. The ultimate question in regard to regional culture is not whether universals corrode unique national heritage; rather, the question is whose universals will be adopted by the unique and historically developed culture? If the universals are merely Greek, then it is logical that they will homogenize national pride or regional strength. But if the universals are spiritual truths, they give an inclusionary basis for expanding a region, not its mere homogenization.

Further, there is a price for avoiding truth. If we do not understand the universal *archê* of evil, then we unwittingly fall into its path of least resistance. A provincial culture is rich, but by its willingness to stay provincial it lacks a vision to ward off evil, so separatism falls into evil despite all its humanistic and benevolent intentions and efforts. When criticizing provincialism of a tribe or a nation or a multinational region it is not so much a matter of saying what is false; rather, it is a matter of saying what is only partially true. Most wide-spread movements attain a shared vision of reality because they each manage to obtain a part of the truth. That part of the truth has power. People rally around it as if it is the common good. The problem is not so much that they are wrong and someone else is right; the problem is that their vision of the truth is only a part of what is true, and someone else's vision of the truth is also a part of the larger universe of truth. Except for the totally selfish

and exploitative positions, almost every wide-spread religion and culture has a part of truth to contribute to the emerging vision of the whole. Even science cannot lay claim to a finished truth. When Newtonian physics replaced medieval cosmology, the assumption was that we replaced error with truth. But when Einsteinian physics emerged, it did not replace an error, it simply offered a more encompassing truth, applicable on very large and very small scales, where Newton's laws were not accurate, but the Newtonian view is still valid for the scale of objects we call our ordinary world.

Often, people assumed that intelligible meant lawful, that lawful meant predictable, that predictable meant determined, and that determined meant unfree. If that sequence of inferences is applied to nature, then nature would be unfree and freedom could arise only if we oppose nature. In the sense used herein, intelligibility means a formerly organized, information bearing continuity or an emergingly organized discontinuity which comes out of creativity, chaos or the abyss. Quantum physicists as well as sociologists found intelligibility in statistical events. Even much of the irrational becomes more intelligible when we identify the unconscious forces or events which drive the behavior. Free will is not something that we have if we somehow manage to formulate a theoretical justification for it in opposition to nature; free will is an ontological aspect. Making things intelligible included making a place for free will, creative change, and the emergence of radical leaps. There is a place for (1) free will **and** (2) a place for love **in** (3) nature because all three are aspects of the same ontology.

The sooner we appreciate that, the sooner we can explore the almost infinite complexity of the whole truth.

A COMMON FUTURE

When we conceptualize truth to be finite and comprehensible, we imply that God as the origin is finite as well. If the origin is infinite, inclusive, and overflowing, so also must be the truth which comes forth out of it. The cultural provincial is a person who seeks power and does not want to admit to a finite but unending truth; he unconsciously assumes that it is better to have something finite and finished over which the guardians of truth can maintain control for their own exclusinary benefit in politics, religion, science or even art. Therefore, a good assertion of the intelligencia is not the traditional one that "my truth is better than your truth," rather it should be that my truth comes from a unique molding of reality, interpreted by a unique people with a development in history, and so thereby my truth deserves to be given an opportunity to earn a place (unless it is totally exclusionary and without love) in the multi-colored mosaic, in the multi-thematic symphony, in the multi-cellular cosmic body of evolving truth. In our era, the Latin love song is not the same genre as the North American love song or the Chinese love song or the Iranian love song. The idea is not to destroy any of them that give their peoples a common past but to find reasons which we share to create new songs which we can share for a common future.

THE TASK OF EDUCATION

It is simple to teach enough to students to understand and appreciate these issues. If engineers, or musicians, or lawyers, or administrators are not educated well enough to even understand the scope and

depth of the **questions**, how can we expect them to be the guardians of our future?

Science provides theoretical models, and engineering applies the knowledge to everyday life. However, neither engineering nor science can abdicate to a tradition their responsibility to be guardians of the planet and guardians of humanity as a whole.

Metaphysics provides theoretical models (forming a partial truth), and common sense applies the knowledge to everyday life. However, that is not enough. There is a great time lag in this process. The common sense applied today is the residue of metaphysics (and tradition) from centuries past. Neither philosophy nor common sense can abdicate to a tradition their responsibility today to be guardians of the planet and a guardian of humanity as a whole.

NOTES

1. "Sentido común: una filosofía para la vida cotidiana," Juan G. Garza Treviño, *Ingenierías*, 1998, Vol. 1, No. 1., p. 27.
2. Of course, in addition to these two ways of appealing to people, there are always the techniques of totalitarianism, deception, and coercion. But the question here is not how do you force people to follow but how do appeal to something in them that allows them to follow naturally without force.
3. Stabb, Martin S., *In Quest of Identity: Patterns in the Spanish American Essay of Ideas, 1890-1960*, The University of North Carolina Press, Chapel Hill: 1967, p. 85.
4. *New Planetary Culture: Foundations for the Next Era as Developed in Business, Science, Technology, Social Sciences, Philosophy and Literature* is a three-volume work in process by the author.

