

Does Science Need Its Own Commands?

Łukasz A. Turcki

Psalm 79:10 says: "Why should the heathen say, Where is their God?"¹

Some years ago in the contribution entitled *The God of Unbelievers* to the volume: *Faith and Culture*² I quoted Napoleon asking Laplace³, why he had not refer to the God in his book on analytic and celestial mechanics. Laplace answered the Emperor: Sir, I did not need that hypothesis.

Since that exchange of opinion the controversy science – religion becomes essentially nonexistent in the area of exact sciences (physics, mathematics, chemistry, informatics and engineering sciences).⁴ Serious problems, however, arose in biology and medical sciences, particularly in those areas where science entered *Terra Australis incognita* of human procreation. The permanent conflict between some social and humanity sciences and religion does not seem to abate with time.

Not too long ago, in the mid of the XX century, we have witnessed two "culture wars" spread over the whole area of the modern science. The Nazi abomination, which in science resulted in the movement *Der Deutsche Physik*⁵ led by Philipp Lenard and Johannes Stark, prominent scientists and the Nobel prize winners, and its Communist mirror reflection spearheaded by Trofim Lysenko⁶, Olga Lepeshinskaya and their followers. Those were bloody "debates". Hecatombs of scientists have perished in the Nazi time world wide massacre; the communist "debate" with science was equally brutal as witnessed by endless killing fields of Gulag Archipelago. Most of the victims of those real Science Wars do not have their "Campo de Fiori" monuments in spite of the fact that their contributions to our civilization often dwarf those of Giordano Bruno.

It is not clear what will happen in the future in case of proliferation of the fundamentalist religious and/or ideologist activities. The barbaric act of

1 American King James Version. <http://biblehub.com/psalms/79-10.htm>

2 *Faith and Culture*, rev. J. Kulisz ed.

3 Following Leopold Infeld book on Évariste Galois, *Those whom the Gods have chosen*. Warszawa : Książka i Wiedza, 1950.

4 Even Richard Dawkins books and articles are not really about science and religion conflict. Cf. TURSKI, L. A.: Pożyteczność twórczości R. Dawkinsa. In: *Studia Bobolanum*, 2,5, 2009.

5 See for example LENARD: Philipp: *Deutsche Physik in vier Bänden*. München : J. F. Lehmann, 1936.

6 http://en.wikipedia.org/wiki/Trofim_Lysenko

destruction of the Buddha monuments⁷ by Taliban iconoclasts in Afghanistan in 2001 is a clear warning similarly as the periodic increase in the level of violence, associated with the debate *pro-life* and *pro-choice* in some countries. The level of, so far verbal, hatred shown in the recent pro and anti *in-vitro* debate in Poland indicates that the vampire of the intolerance has not been properly taken care of also in the (almost) post industrial societies.

In the past, science was occasionally on a collision course with not so much the core of the religious doctrines but rather with the perception of the particular science discovery by representatives of some religious denomination which then managed to indoctrinate considerable part of the general society with their own view. The same situation happens with the collision science – lay ideological doctrines. The example of the latter is the open conflict between the so called ecological movements and science about the use of the nuclear energy. In both cases the conflict is fueled by ignorance on both sides.

The science revolution which happened on the turn of XIX and XX century, led by the discovery of nuclear energy and the formulation of the relativity theory and the quantum mechanics, had not only paved the road to the explosive development of new technologies but also makes the understanding of the civilization based on those technologies quite demanding. A person in XIX century familiar with the huge cogs and wheels in the village tower clock was able to understand why the motion of that clock hands provides detailed information on elapsing time. With that knowledge this individual was able to understand the internal structure of a family owned grandpa watch containing the same cogs and wheels, just very tiny, and powered with coiled spring instead of the moving weights. So the fact that this tiny watch is also measuring time was easy to accept. When we open today's digital watch the association between rectangular chip, soldered to an printed circuit, and the process of time measuring is pretty unintuitive. Most of the users of tablets, smartphones and computers do not even know that in the heart of their devices sits a clock. The modern technology seems, therefore, to be unintuitive. Similarly seems to be science, for most of those educated in contemporary schools.

In spite of the fact that relativity theory and the quantum mechanics are hundred years old, in most of the schools we teach students fragments of those theories as seen before World War I and we even call it modern physics! The wrong but based on the first works of Niels Bohr on the atomic structure model of an atom, with planetary like orbits around a nucleus, is still the sign of International Atomic Energy Agency in Vienna!

The ignorance of the foundations on which all modern technology is based, not the detailed technical issues but general principles, is extremely dangerous, for never before the existence of the humankind hinges on the proper use and maintaining of this technology which penetrated essentially all the aspects of our life.

7 http://en.wikipedia.org/wiki/Buddhas_of_Bamiyan

It is only very recently that some scientists and educators try to reshape the process of education such that it will provide our students, and that means general population, with the knowledge needed to understand properly the world surrounding us. The proper education of the society in the exact sciences is possible and facilitated by the fact that those sciences have a robust structure based on a very few rules or principles which truth has been confirmed by consecutive experiments performed over and over again with all the time increasing accuracy. If the paradigm shift, in the Kuhn sense⁸, does happen in physics, it is preceded by independently verified experiments. In mathematics the situation is even more clear. There are no paradigm shifts, for once proven theorems remain proven forever, we rather witness something akin to Schumpeter's creative destruction.⁹ A good example of such an event is the creation of the non-Euclidean geometry in the XIX century.

The Basic Laws serve also as the checks against mistakes in either experiments or their interpretation. They also allow us to catch cheaters rather easily. This was the case with the quickly debunked hoax called cold fusion in the 80-thies of the last century.

The recent history of genetics is full of the examples of fake discoveries. The most recent one is that with the Riken Institute reprogramming of the stem cells. Again the strict rules about the experimentation and the fact that no scientific fact is accepted unless reproduced and/or proven by independent researchers makes it almost certain that what finally becomes written into the Great Book of science is the Safe Truth in the sense of William Clifford¹⁰.

That situation is quite different in social studies and in humanities. Here there are no similar fundamental rules and/or principles and, therefore, one might encounter situation described by Alan Social Stunt¹¹.

The ignorance of the rules governing our social environment is remarkably wide spread. Not long ago, during the disastrous crisis of world banking system it has been discovered that many top leaders of failing financial institutions were seeking advices from assorted clairvoyants and sorcerers via electronic mail and variety of social platforms. They were clearly oblivious to inherent contradiction in their behavior. Quite recently several theories applied to a huge sectors of contemporary economy were wrong from the very beginning but were applied and led to a disastrous results (communist like

8 KUHN, T. S.: *The Structure of Scientific Revolutions*. 50th anniversary. Ian Hacking (intro.). 4th ed. University of Chicago Press, 2012.

9 SCHUMPETER, J. A.: *Capitalism, Socialism and Democracy*. New York : Harper, 1975. [orig. publ. 1942]

10 CLIFFORD, W.: *The Common Sense of Exact Sciences*. 1885

11 http://en.wikipedia.org/wiki/Sokal_affair. See also the remarkable book: by GROSS, Paul R., LEWIS, Norman: *Higher Superstition : The Academic Left and Its Quarrels with Science*. Baltimore : John Hopkins University Press, 1994. See also criticism in the Mara Beller text: <http://www.mathematik.uni-muenchen.de/~bohmmech/BohmHome/sokalhoax.html>

economy, Salazar monetarism, various “theories” leading to current banking crises etc.).

We have also witnessed disastrous results of fundamentalist religious doctrines, created in the past but reemerging nowadays, predominantly, but not only, in the Islamic religion. In my country the confrontation between the church hierarchy and several NGO’s supported by many leading intellectuals on various issues associated, not only with the reproductive rights of women, is getting more and more ugly because both sides are led into the battle by scientific ignorants.

The simplistic explanation of that situation in social sciences is that they are missing their basic rules, principles of such a structure as in exact sciences. The religious philosophers, theologians at that point will certainly exclaim: we do have such laws, these are, in Christianity, The Commandments (see Table 1) and similar lists in other monotheistic religions.

Table 1	
Ten Commandments - Traditional Catechetical Formula	
<small>(http://www.vatican.va/archive/ccc_css/archive/catechism/command.htm)</small>	
1	I am the LORD your God: you shall not have strange Gods before me.
2	You shall not take the name of the LORD your God in vain.
3	Remember to keep holy the LORD’S Day.
4	Honor your father and your mother.
5	You shall not kill.
6	You shall not commit adultery.
7	You shall not steal.
8	You shall not bear false witness against your neighbor.
9	You shall not covet your neighbor’s wife.
10	You shall not covet your neighbor’s goods.

Whatever is our view on the origin of Commandments, it is clear that they were intended to serve as such fundamental rules for society and for hundreds of years they were successful in that role. It is remarkable how well those Commandments served our civilization from the time when most of the mankind was illiterate.

Today some of them, particularly those referring to the Deity, sound spurious for vast number of people. We also have to admit that interpretation of the meaning of some Commandments must have change during all those years.

I am sure that there is a considerable theological literature on how the meaning of, for example the Tenth Commandment, changed, from the time of Moses to our age of overwhelming advertisements. The notion of adultery,

nowadays, is certainly different than before the blood or DNA test become available. Even the fundamental Fifth Commandment: "You shall not Kill" has been reinterpreted in the course of history. People kill people on the battleground and some of them think they are not violating Fifth Commandment but their opposing individuals do, and vice versa. That interpretation serves as very symmetric justification of even the most cruel war activities.

The rule Ten Commandments play in our civilization is independent of the whole structure of the various religious denominations built in the course of history. Their rule seems to be, therefore, similar to that of Basic Laws in science. However the laws which governs our societies are constructed with very far perspective of the basic science, and even occasionally trying to ignore them. Historical attempts to use the basic laws of exact sciences to explain the rules of the social behaviors ended up as disastrously as described by Socal and Beller.

Back in the first half of XX Century several distinguished scientists in the US decided to create an institution American Humanist Association¹² which underwent many often tumultuous changes in the course of its history. This organization which has on its banner the struggle for rational and free of any association with whatever Deity, has been busy with finding and publishing some sets of rules, which according to them should be those fundamental rules for the modern society. The most recent one from all these attempts, published eleven years ago, The Humanist Manifesto is shown in Table 2. This Manifesto has been signed by considerable number of distinguished researchers and intellectuals, among them 22 Nobel prize laureates for physics, chemistry and medicine.

These six rules are completely acceptable and pretty obvious for a lay-person doing science like me. They are, I believe, so general that should be acceptable also to those who stand for the Ten Commandments. The Rule 1 from the Table 2 is just the concise verso of what I discussed at the beginning of my lecture. The rule 2 would be a serious problem for many theologians few years ago, but after the Pope John Paul II statements on evolution theory it should not raise too many eyebrows.

If there are points in wording of the Humanist Manifesto, which can be a source of dispute on theological level they refer to Rule 3 and they are partly on the same footing as debate on origin of Commandments.

12 http://en.m.wikipedia.org/wiki/American_Humanist_Association

Table 2 Humanist Manifesto III (a successor to the Humanist Manifesto of 1933 is the most recent of the Humanist Manifestos published in 2003 by the American Humanist Association)	
1	Knowledge of the world is derived by observation, experimentation, and rational analysis.
2	Humans are an integral part of nature, the result of unguided evolutionary change.
3	Ethical values are derived from human need and interest as tested by experience.
4	Life's fulfillment emerges from individual participation in the service of humane ideals.
5	Humans are social by nature and find meaning in relationships.
6	Working to benefit society maximizes individual happiness.

The serious point here, however is, what are those "ethical values derived from human need and interest and tested by experience". Should they be entirely left to our experimentation? Or should they be explicitly spelled out as in Commandments 5, 7 and 8?

I believe that yes, those three Commandments should be entered there explicitly. There are many other ethical rules necessary for everyday functioning of the society but, as the Commandments 9, 10 they are prone to have their interpretation changed in time. They are subject to creative destruction or a paradigm shift.

But *you shall not kill* should stand as rigidly observed as it is possible for humankind survival. When we switch on TV sets this evening or will search our information portals during the lunch break we will be able to watch how jointly the Commandments and Humanist Manifesto Rules are being actively question on steppes of Ukraine and on the Iraqis dessert and several other places of the World.

We need to join our efforts to somehow combine Commandments and the Humanist Rules to run the World the way we run the science using its Basic Rules.

Science does not need any new Commandments. It is rather certain that we do.

Łukasz A. Turski
 Center for Theoretical Physics
 Polish Academy of Sciences
 e-mail: l.a.turski@cft.edu.pl