

When Science Becomes Creeds? Perfection!

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Huntington's theory on the Clash of Civilizations divides the world into several civilizations, with the dominance of various religions, Catholic-Protestant, Islam, Buddhist, Hindu, etc. (Huntington 26) Different people can have different religions, all of whom follow different creeds: no pork, no beef, no alcohol; it can be basically everything. But what would happen if Science becomes the creed of the people as if it were a religion such that every follower of Science must follow certain set of rules? When Science become a creed, will everyone follow? Probably not. Some may even create a new religion and new creeds, just as the Protestants stemming from the Catholic Church in the 16th Century, having diametrically opposite views on the same issue, for instance, marriage. ("Comparison between Orthodoxy")¹ But then, let's assume some, if not most, especially of the more educated people, trust science, will Science, in form of creeds, be beneficial to them, and our society?

First, we need to know who will follow the creed of Science. Not scientists. On the contrary, the laypeople should be the ones. In the following, I would discuss the effects of treating Science as a creed stratified into different stakeholders, namely the laymen and the educated,

¹ Divorce is unacceptable for Catholics but discouraged in Protestantism.

in three “A”s—Advocating scientific knowledge, Applying Science and Advancing Science.

From a utilitarian point of view, advocating scientific knowledge as a creed is an effective means of knowledge transfer. Scientific knowledge has to be “translated into the ordinary language”. (Sivin 228) Imagine we are to explain to a child how water is boiled. And we explain that “water boils at 100°C, when you see the bubbles in the pot floating to the top”, in lieu of “boiling is the rapid vaporization of a liquid, which typically occurs when a liquid is heated to a temperature such that its vapor pressure is above that of the surroundings, such as air pressure”, (“Boiling”) and the definition may change with new theories or discoveries. In secondary schools, we were taught the Newtonian Physics. $F=ma$ is our creed. We were taught of it, applying it, tested on it, and we grasped the basics of the Newtonian Physics. On the contrary, imagine what would happen if my teacher said “scientific knowledge changes; you see Newtonian Physics is no longer accurate, we now use Einstein’s relativity”? Will student, first of all, understand all the underlying mechanism, the derivation via the complex calculus? If so, will students still be willing to learn the scientific knowledge that may not work soon? Maybe. But this is going to be a much slower process, and we cannot ensure an unanimous understanding as there is no “absolute creed” and “absolute answer”. We instil scientific knowledge into the children rule by rule, creed by creed, in ordinary language, analogies and metaphors. Science, however, commits suicide when such knowledge becomes exorbitantly complex, deterring people from understanding the basics of science, which then prevents the birth of the new class of scientists, who, in the first place, are to be intrigued and fascinated by the art of science itself in the first place.

From a grosser perspective, apart from advocating scientific knowledge, the application of scientific knowledge in real life may be

ascribed to the creeds of science. Taking science as a creed can ensure the unanimous acknowledgement of the importance of scientific knowledge. When scientific knowledge becomes a creed, it becomes straight-forward rules to follow. From Poincaré's point of view, beautiful are those useful things, or in his words, "those which are best adapted to our intelligence". (166) By the same token, as far as I am concerned, science is the most beautiful when it can be utilized the best. When scientific knowledge becomes a creed, transformed into all the bases the decision-making process of every ordinary people, we all will be able to adhere to science. A creed that "if you are sick, wear a mask" is simple and direct. What is the result? The general public can abide by the virtue of such creed easily and translate into actual actions. Compared to a tedious lecture about the mechanism of transmission of communicable diseases, the epidemiological triad, will transferring such incredibly useful knowledge in form of a creed more effective? In post-SARS era, whenever there is an epidemiological outbreak, the Hongkongers, possess a high hygienic standard. Not because they had lectures on communicable diseases; the different factors that affect the development of the disease like the type of pathogen, route of transmission, etc.; not the understanding of the nature of science that science is subject to change, but because of the promotion of such scientific knowledge, in forms of creeds, simple and direct rules to follow. For example, the "You must, You must, You must, Wash hand, Wash hand, Wash hand"² brain washing campaign by Mrs. Tung. It is only when these knowledge under a transformation into language of pristine simplicity, brainwashed and engraved on people's mind can they be translated into real life action. Only when science becomes a creed can it possess the beauty of

2 It is a translated version of the popular expression mentioned by Hongkongers after the wife of the Chief Executive at the time used—"千祈千祈千祈，要洗手洗手洗手"。(〈奪命沙士 (SARS)〉)

simplicity and usefulness that can more grossly change people's perception towards certain issues and thus actions.

Regarding the policy-making process, a creed in science can promote the awareness towards scientific ideas, and will help make decisions on scientific, gross statistical evidences but not personal beliefs. Illustrated in *Silent Spring*, the willow was treated with blanket spraying, albeit unintentional, sustained an undesirable ill-effect of vast destruction to its habitat (Carson 146–147) requiring to be re-sprayed once a year while they abandoned selective spraying, a more effective method proved by researches, which can be employed without requiring to re-spray for 20 years. (152) Had the virtues of science become a creed, being so “sacred” and followed strictly, the government would probably deal with the issue the other way, following the scientific evidence and prevented the ecological disaster. It is therefore patent that “scientific creeds” are conducive to societal development, increasing the adherence to scientifically-proved concepts, course of action and contingencies, enabling our society to blossom.

The systemic risks are significantly reduced, while prejudice against certain stigmatization may be eradicated, when one adopts science as a creed. First, Science is evidence-based, and often requires a substantiate amount of trials for any scientifically significant knowledge to be generated. Scientific results are reproducible. When one adopts science as a creed, he would follow the experimental results which suggest what is the best option, but not made emotionally. It is as if a cancer patient would be able to choose the best cancer treatment based on 5-year survival rate of the intervention. In the sense of society, whenever everyone is choosing the best outcome and balances the risks and benefits according to statistical data, it is easy for all to perceive the fact that the risks are lower. In addition, the stigmatization is one of the most significant issue one would face—

HIV patients, or even doing skydiving. Yet, according to the statistical retrospective scientific results, it is discovered that the risks of dying from a car accident is even more significant than that of flying or skydiving. The risks of transmitting HIV with kissing, even sexual acts without contact of mucosal layers is minimal. With everyone taking science as a creed, one would learn the actual risks and ill-effects of the action from scientific knowledge, and with thorough understanding, the stigma and prejudice against certain actions and deeds would be eradicated.

The above seemingly unassailable arguments, however, cannot be applied to every circumstance. What about the scientific research? Researches play a central role, of uttermost paramountcy in the advancement of the development in science. Creed is a term by which we mean “A system of religious belief; a faith”, for example, the Apostles’ Creed. Creed is something rigid, something unchangeable, and the followers of the religions have to follow the doctrines of the creed.

Regarding the advancement of science, scientific creed may seemingly cast much doubt towards the scientists’ attempts to make discoveries in the future. With a rigid, unchangeable rule rolled out in front of you, with hardly anyone challenging it, the scientist may not have a sense for them to appreciate that the theory may not be entirely correct. But the theory may not give the most accurate insight towards our nature. Aristotle divided the world into celestial region and terrestrial region (Lindberg 26) to interpret the motion, inaccurate. Newton later developed a theory “on earth as in heaven”, with just “one law of the universe” (Cohen 62) which was a much more accurate understanding of the universe. Had Copernicus, Kepler, Galileo, Halley, Newton, etc., treated Aristotle cosmology as unmovable creed, can the Newtonian Physics be formulated? Most biologists were supportive of the theory that proteins bear the genetic information at

Schrodinger's time (Watson 116) because of the large number of sequences by the combinations that can be given by the 20 amino acid. Scientist taking this as a creed would fail to explore alternatives as DNA, the secret of life. Watson suggested the key to his success in giving the 3D structure "neither of whom (Crick and Watson) possessed a detailed command even of undergraduate chemistry". (134) Without the obstruction with certain longstanding values in Chemistry, similar to some creeds in the mind, on the contrary, helped him make new discoveries. Rosalind Franklin, insisting on her diffraction experiment, so onto her previous knowledge by which she was trapped, that X-ray diffraction should be able to provide with her all the important facts of the structure of the DNA molecule, and decided not to deal with the model via model-building before gathering enough experimental data from diffraction. (Watson 134) This prevented her from thinking out of the box and thus, a failure to discover the structure of the molecule.

Granted, the notion of taking science as a creed runs counter to the nature of science, which rules that scientific knowledge is tentative and, subject to change. (Lederman *et al.* 502) To have such rigid a thought that the creed must be applicable universally, however, is too simple, if not naive for any rational man. Muslims do not have to follow the doctrines of Christianity, although they may read part of the *Bible* where Jesus is one of the messenger of Allah. Likewise, scientists are not obliged to take such a creed, or only take it partly. In contradistinction to laypeople who had little access to the scientific society, they receive higher education, and a PhD training, learning scientific methods in exhaustive details and develop a researcher's instinct. Do remember that a PhD candidate, if lucky enough, would have to spend at least 3 years, in a research lab just to acquaint oneself with the research methods and conduct researches before one is conferred the doctoral degree, not to mention all the time one would have to

spend as a postdoctoral fellow before one gains tenure-track, professorship or lecturer post. Educating the group to forget about such creeds in science is an implied process; everyone who has worked in a research lab would know, sometimes we will have to improvise. A doctoral degree is almost a prerequisite for any academic posts and researchers will be trained not to follow the creeds. Not just scientists, but any undergraduate in science-related discipline shall be able to appreciate the changeable nature of scientific knowledge. Prof. Francis Chan, Dean of Faculty of Medicine, The Chinese University of Hong Kong, reminded all medical freshmen in the first lecture that “50% of what you learn in medical school will be wrong within 5 years of graduation, but here we will equip you with the skill set of appreciating new scientific knowledge, not just reciting knowledge.” Of course, were higher education institutions to inculcate student scientific knowledge as creeds, disaster would result. However, we shall have much confidence in these prestigious institutions that in their training which make sure it would not happen and science will then not commit suicide.

Science needs to be translated into normal language for non-scientists. To ensure that science will continue to thrive in each and every corner of society, we must ensure that science is promoted into each and every household, and each and every soul. It is not a religion, but one of the most, if not the most, effective, efficient and easy way of shaping a rational society where evidence dominates their decision making. A.A.A.—not the proof of similar triangles, but Advocating scientific knowledge, Applying Science and Advancing Science, will hinge on the creed of science. The majority of society, the laymen and the government benefit from the creeds of scientific knowledge. The minority, scientists, can get rid of the illusion. The majority benefit; minority not affected; does science really commit suicide when it adopts a creed ?

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Teacher’s comment:

To tackle the problem of “When science becomes creeds”, Yuk Bun provides an unhackneyed way to reflect the meanings of science in any society. He proposes the idea of three “A”s—Advocating scientific knowledge, Applying Science and Advancing Science, as one of the most effective, efficient and easy ways to construct a rational society. Yuk Bun argues that different stakeholders, namely the laymen and the scientists,

would opine the impact of “science becomes creeds” differently. This paper analyses the stated problem from a unique perspective. (Yip Lo Ming Amber)