

Is Science Falling Short?



By Alan Moghissi — April 15, 2016

The need for transparency in decisions that are based on Science

The history of guidelines addressing nutrition and diet go back to the early 20th century and eventually the Department of Agriculture provided numerous guidelines dealing with specific needs. For example in early 1940's guidelines were provided that were helpful in feeding the military personnel during the Second World War. In an article *where science falls short* in the *Washington Post* (Feb.19, 2015) Charles Lane describes the need for skepticism resulting from the decision of the *Dietary Guidelines Advisory Committee* (DGAC) to reverse previous decisions on cholesterol in diet.

Similar articles have appeared in other media including in the *Wall Street Journal* (Feb.20, 2015) as well as commentaries in TV. A lengthy article authored by Park and Kluger and published in *Time Magazine* (February 8, 2016) claimed to identify *new rules of the heart*, describing the relationship between nutrition and avoidance of certain diseases. The *Time* story described the *old science* and how the *new science* modified the old science. In order to appreciate the roles of the scientific community in providing advice to government including regulatory agencies and the role of the media to report scientific issues we need to recognize the existence of two relevant schools.

The Jeffersonian school requires that transparency is mandatory in societal decisions while the anti-Jeffersonian school believes the public is inherently unable to make sound decisions. The first school is traceable to Thomas Jefferson who stated that "If we think [the people] not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it away from them but to inform their discretion". The anti-Jeffersonian school goes in the opposite direction. The best example of this school is views expressed by professor Gruber of MIT "voters are stupid" and "lack of transparency is a huge political advantage".

The disagreements described above are based on the lack of recognition of key foundation issues of regulatory science an emerging scientific discipline. One of the primary tools of regulatory science is Best Available Science (BAS) and Metrics for Evaluation of Scientific Claims (MESC) derived from Principles of BAS. (see www.nars.org/bas [1] and www.nars.org/2-uncategorized/15-what-is-regulatory-science [2]).

A closer look at the scientific foundation of DGAC, Lane, *Time* magazine, and others are based on lack of recognition of the level of maturity of underlying science (ranging from scientific laws all the way to speculation), the role of the scientific community on drawing societal conclusions from science, transparency of scientific decisions, and other issues identified in BAS/MESC system.

Let us start by addressing an important issue included in the *Time* article: It may be recalled that *Time*

made a distinction between old science and news science. According to authors of the article published in *Time* whereas old science assumed that all saturated fat to be bad, the new science “is complicated but trans fats are the worst for the heart”. Apparently *Time* is basing its statement on the decision of the Food and Drug Administration (FDA) that trans fats can no longer be considered to be natural food and thus would require safety testing before they can be used in the market. However, there is no reason to believe that trans fats contributes any more to the LDL than any other saturated fact.

Before we address the issues related to the DGAC we must emphasize that do not belittle the efforts of the authors of the GDGAC and assume that they did their best. Nutritional science is evolving and as described in the BAS/MESC system is largely Association-Based implying that an investigator studies two groups that are identical in their habits, living conditions, and every other parameter except for their eating habits. For obvious reasons the conclusions drawn from such a study have significant uncertainties. Clearly the science related to the composition of the diet and numerous related issues addressed in the DGAC are evolving and one should not be surprised that they change as science evolves.

Another key issue is compliance with the Transparency Principle of BAS that implements the Jeffersonian principle and requires that scientific issue of societal concern must be described in a language that the affected community can follow. Ideally, the DGAC should have provided the status of science; identified uncertainties; the assumptions and judgments in their scientific assessment; and if necessary draw scientific conclusions. In contrast the recommendations should have been the task of administrators and regulators.

Instead, the anti-Jeffersonian approach is used and the recommendations are based on the judgment or speculation of the DGAC. The articles mentioned above (e.g. Lane and *Time Magazine*) quote individuals who support a specific process. It is easy to identify an individual including a professor who expresses an opposite view. Instead the authors would have been wise to quote an article published in a reputable scientific journal. If necessary, the author of the article could have been interviewed to clarify the content of the article.

Finally another relevant issue is the role of scientific community in application of science in regulatory and other policy decisions. Although it is common that scientific assessments include policy recommendations, once scientific issues are addressed by the scientific community their application to societal decision can be done by people outside of the scientific community. In effect the scientific community and individual scientists are no more qualified to draw conclusions than members of other professions.

In summary, the authors of the publications described above should have described the level of maturity of the underlying science consisting of the inclusion of assumptions, judgments and related issues. In addition, the authors should have stated how the conclusions would have been different if alternative assumptions, judgments, and related issues would have been used to draw conclusion. Contrary to implications that science is not working, is falling short, and numerous similar allegations, the science did not fall short. The scientists, authors, and the process did.

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