

## **Open Science and its Enemies: Challenges for a Sustainable Society**

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Social history of modern science, particularly the way it acquired social legitimacy clearly depicts the science and society relationships emerging from the time of Galileo. Science, scientists and society waged relentless struggle against religion and other social forces to gain relatively autonomous space for advancing systematic knowledge about nature and natural phenomena for the benefit of society at large. The social institution of science has evolved as one of the most powerful, highly influential and sought out institutions since the Seventeenth Century. Knowledge as public good; peer review of science; prominence attached to open publications; and premium placed on professional recognition and scientific autonomy remained the hall mark of science for the last three centuries. Based on this ethos of science, the social

institution of science evolved a unique social contract between science and society. This social contract drew considerable institutional and state legitimacy for open and public good of science in the service of state and society all through the post-war period. Open and public good of science has evolved as a movement which makes scientific research data and advances in systematic knowledge accessible to a wider society at all levels subject to certain peer related institutional measures. There is a wide international recognition that open science is composed of some critical elements such as open data, open material, open access, open source, open peer review and open educational resources in the interest of maintaining a healthy science – society relationship and its social contract. Unesco's intervention in making public Human Genome Project data is a very good example. For instance, recently European Commission, since 2016, has prioritized open science along with open innovation and open to the world in its path to research, science and innovation policy which aligns with open digital and global environment.

As we enter the second decade of 21<sup>st</sup> century, this social institution of science and the social contract is undergoing a major transformation. It is threatened by various societal market - economic and global forces. In fact,

the whole paradigm of open science and its social contract is challenged by various ‘enemies’ or adversaries reminding us of the influential work by Karl Popper, ‘The Open Society and its Enemies’ published in 1945. These challenges are coming from primarily, a) Market based privatized commercial science and globalization; b) post-industrial society and 4.0 industrial revolution; and c) systematic information blocks or barriers on global challenges such as Climate Change or global health or even food security. What is at stake? Is there a significant change? Is it transforming the very social institution of science? And what implications this has for our contemporary and future sustainable society? These are some of the important issues, which will be addressed in this paper.

**Key words:** *Ethos of science; social institution of science; globalization; post-industrial society; climate change*