

## Letter from Academia

### From Science to Value Creation – Researcher Perspective

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**Abstract.** A proposal to create value from science is presented. The main challenge is to balance two approaches: “knowledge driven creation” and “society driven innovation”. The future for scientific research will be placed in the ability of the research community to be able to address these two paradigms to create both new knowledge and disruptive solutions for the society needs.

**Keywords.** Scientific research, action research, innovation, education, value creation.

#### 1 Introduction

It has been recognized that science and technology create value for society as well as its economic and social development (Geisler 2001). However, when discussing this issue with members from industry, government and academia, the question always arises: Why do we need scientific and technological research? How can we measure its real value within a society? Ordinarily, the objective of scientific research is the generation of knowledge without necessarily having the goal of knowledge transfer to have an impact on society. There is a need to propose a new paradigm where we, the researchers, carry out our important task of creating knowledge, but also to connect this knowledge for the benefit of our society. My opinion is that scientific research should be used to add value to a society in a faster and more measurable manner. I believe that there are three ways for this to be accomplished: 1) Research to improve education; 2) research to achieve innovation; and 3) research to transform society.

#### 2 Some Thoughts

Let me share my thoughts with an explanation and examples. Research is a key cornerstone of education as there is a need to continuously evolve scientific and technological knowledge in our learning process. Of course knowledge generation allows us to keep our education and technical knowledge updated. However, the real challenge is to understand from a scientific perspective how the learning process is evolving and how the new generation of youngsters (e.g. Millennials) are, by osmosis, modifying the learning paradigms. Therefore, educational models and technologies are always changing. Examples of these new approaches are MOOCs (Mass Open On-line Courses), Learning technologies (Augmented and Virtual Reality), serious gaming, challenge oriented learning, to mention just a few. Are we really preparing

the next generations to face even bigger challenges? Are we helping them to develop the right skills and competences? Are we using the right technologies to achieve a truly educated population, worldwide? The challenge here remains open: how could scientific research create value in order to achieve a more educated society in a global world, regardless of their social and economic reality?

The connection of scientific research to the innovation process is always an endeavor. Linking contributions of fundamental research to an outcome, with measurable social benefits, has been a major discussion at forums and conferences. However, an innovation process is better sustained by scientific research because it provides for the realization of all the innovation activities (i.e. research, development, technological, organizational, financial, and commercial) with a great deal of novelty using a scientific approach; such as action-research, experimental based, and data-proof. The idea is to achieve four types of innovation in a competitive manner product and services, process, organizational and marketing (Oslo manual 2005). Research is fundamental to innovation; an innovation process is a driver for research activities: the push and pull approach. Research on Bio-Info-Nano-Cogno is creating accelerating technologies to innovate, for example: Artificial Intelligence, Robotics, Biotech, Nanotech, smart medicine, neuroscience, sustainable energies and resources, and computing. All these technologies will contribute to groundbreaking innovations and digitize the world, create products on demand and processes, and democratize knowledge, product and services. Therefore, science, technology and innovation will continue to add value to society. The challenge is to enable a virtuous connection to bridge knowledge generation with value creation.

### **3 Conclusion**

Finally, scientific research should transform society. There is an imperative that the researchers should link scientific training and production to find solutions to the most defiant problems humanity is facing: water, energy, environment, food security, global health, education, sustainable growth and poverty. Researchers have access to global knowledge and solutions that can be applied to their local context. Open research and innovation models are key to address these difficulties with a sense of community, collective knowledge and capacity to act. Why do we look the other way instead of addressing these challenges? The phrase “publish or perish” is well known. However, we must take our responsibility to deliver solutions to society in order to really create value within our communities. How can we achieve value creation in our research in a more straightforward manner? My proposal is to combine two research approaches: “knowledge driven creation” and “society driven innovation”. As researchers, we have a responsibility towards value creation based on our scientific research that addresses society’s demands. But we also have to advance scientific knowledge to create new concepts, theories, and paradigms to progress the comprehension of the world and universe. Let’s also change our mind-set while training our undergraduate, master, PhD students and Post-Doctorate researchers so they can connect to the humanity necessities. It is the time to change our vision and commit to one that will allow the transformation of our society based on scientific research. Let’s not miss this opportunity: Research to educate, innovate and transform in order to transcend in this lifetime, so far... there is only one opportunity.

#### **4 References**

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