

## INTERVIEW WITH MARTA BERTOLASO, PROFESSOR AT CAMPUS BIO-MEDICO UNIVERSITY OF ROME

*Interview conducted by Quentin Wodon  
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### EXCERPTS:

- “Philosophy is important for science and technological innovation, for example for clarification of scientific concepts, critical assessment of scientific assumptions or methods, formulation of new concepts and theories, fostering of dialogue between disciplines and between science and society...”
- “Critical thinking and contextual judgment are crucial in science as in normal. It is unreasonable, on the contrary and just to give an example, to expect that a mere larger and larger amount of gene expression patterns or cellular mechanisms will explain complex diseases.”

#### **Would you describe your work, and some of the particularities of your university?**

My main academic appointment is with Campus Bio-Medico University of Rome. My university promotes integrated teaching, research and healthcare structures, pursuing the good of the human person as the main end of all its activities. The university offers students a formational experience aimed at stimulating their cultural, professional, and human growth. This is done by proposing the acquisition of skills in a spirit of service. It promotes knowledge, interdisciplinarity of the sciences, and research in all fields that contribute to the overall good of the human person. Patients are cared for in the unity of their material and spiritual needs, in accordance with a view of life open to the concept of transcendence.

#### **What is your main field of research, and why did you choose that field?**

I am the Head of the Research Unit of Philosophy of Science and Human Development in the Faculty of Science and Technology for Humans and their Environment. I was initially trained in bio-molecular sciences and cancer research. I decided to continue my academic path in philosophy of sciences only afterwards.

#### **Box 1: Interview Series**

**What is the mission of the Global Catholic Education website?** The site informs and connects Catholic educators globally. It provides them with data, analysis, opportunities to learn, and other resources to help them fulfill their mission with a focus on the preferential option for the poor.

**Why a series of interviews?** Interviews are a great way to share experiences in an accessible and personal way. This series will feature interviews with practitioners as well as researchers working in Catholic education, whether in a classroom, at a university, or with other organizations aiming to strengthen Catholic schools and universities.

**What is the focus of this interview?** In this interview, Marta Bertolaso, Professor at Campus Bio-Medico University of Rome, shares insights about the work that she received an Expanded Reason Award for and about life in academia, with a particular emphasis on her research in the philosophy of sciences.

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I was, in fact, aware that there was somehow 'more in science than science itself', paraphrasing contemporary philosophers that highlighted the importance of the human factor in managing emerging technologies, finding new models and theories and asking relevant questions in getting towards more satisfactory explanations of developmental processes. At that time, in fact, limits of reductionist approaches in life sciences were increasingly evident. I always trusted science and scientific practice as an integration of technological possibilities and of the human capability to pose and explore relevant questions in order to better our life.

**You are a recipient of the Expanded Reason Awards. What was your contribution for receiving the Award?**

A global vision of cancer biology and cancer research seems to go hand in hand with a wide vision of human capability of understanding living beings through science. Empirical positivism, in fact, in the last century has affected both the object and the subject of scientific knowledge in a harmful and sterilizing way. It was also a message for university and training institutions: keeping the sense for truth alive, is necessary to put the whole man back into play, rescuing the fundamental existential questions that emerge from his particular tasks and also from any scientific task. Here comes the possibility for a more honest epistemology (a new relational epistemology of life, in the book's thesis) that keeps the human insight in all dimensions of science, while not giving up with understanding and the progressive search of truth.

In this, we also see the role of philosophy in the most important research programs of our time. Disciplinary dialogue with philosophy or theology as a requirement of the fundamental questions, as well as philosophical or theological concepts can lead the integration of fragmentary knowledge into the whole of reality. They are able to drive from knowledge to wisdom and from phenomenon to foundation. Also, knowledge of the historic and philosophical background provides a kind of independence from prejudices scientists desperately need. Much of the discussed literature demonstrates that scientists do have many philosophical hallmarks. Philosophy does have a productive impact on science.

**How easy or difficult is it for you to share your values with students when teaching?**

I have to acknowledge that I am in a privileged position because my students choose my courses and they are every year more attended. It is easy for them (being engineers, scientist or medical students) to understand the mantra 'bad science bad ethics'. Moving from these premises we can discuss the importance of the 'mesoscopic' lesson contained in the book. It is that human reason is fundamental to keep the results *within* the boundaries of the reasonable and understandable.

Such reasonability matches with the notion of 'expanded reason' very well and opens the possibility to discuss the importance of virtues for successful scientific work with a positive social and ethical impact. Critical thinking and contextual judgment are crucial in science as in normal life in order to identify the adequate and relevant level of detail. It is unreasonable, on the contrary and just to give an example, to expect that a mere larger and larger amount of gene expression data or cellular mechanisms will explain complex diseases.

**How do your values affect your research? And what are some challenges you face?**

Honesty, transparency, trust, humility and courage are the driving values and virtues I always try to live and share with my students, colleagues, and friends. Envy and bad competitions can make this hard and difficult but it is, at this point, that faith and trust in God helps me in moving forward anyway. All this does affect all my life and, in this sense, also my work and research activity. Optimism when looking at the human capability to search for truth is definitely part of my leadership in the academic and educational environments.

**What is your advice for students who may be Catholic and are contemplating doing graduate work or a PhD?**

I always encourage them to keep in mind and deepen the universal truths that are contained in the Gospel and the Tradition or in the Church's documents (e.g. the Social Doctrine of the Church is extremely current). This is important to be better persons and, therefore, also better professionals in different fields. I also encourage them to take care of their humanistic training. Philosophy is important in different ways also for science and technological innovation: for example for clarification of scientific concepts, critical assessment of scientific assumptions or methods, formulation of new concepts and theories, fostering of dialogue between science disciplines, as well as between science and society, opening up new reflections of ethical aspects and epistemic values, encouraging reflection on the philosophical foundations of science and its practice.

**Could you share how you ended up in your current position, what was your personal journey?**

I am currently Professor for Philosophy of Science in the Faculty of Science and Technology for Humans and their Environment. I have focused my research on the epistemology of science and philosophy of biology and medicine, including in terms of how to deal with different aspects of regulatory issues of complex biological systems, organizations, and growth.

I have also studied how different explanatory theories evolve in science, and how (mechanical) models can be considered a way towards discovery in the biotechnological field. How science works in practice, from biology to bio-engineer, has also been my recent areas of research and philosophical reflection, with particular attention to systems biology. More recently, I have been involved in a research program exploring the impact of modern philosophy of sciences' main trends in our understanding of human work and its future as mediated by new AI technologies.

**Finally, could you share a personal anecdote about yourself, what you are passionate about?**

An anecdote I like to share refers to a diagnosis of genetic mutation I was asked to do. The intent was to pass the result on to a doctor who was probably suggesting a woman to abort her child because of a possible predisposition to a somehow related cancer. It was crucial not to enter into a 'moral' argument about the badness or goodness of abortion but rather to discuss with the colleagues to what extent it was fair to communicate such diagnosis without clarifying that the real risk (on the basis of the scientific literature) to die for the child in the case he/she would bear such mutation was on average the same each one of us has to die because of a car accident before age 50 or 60. The result was thus transmitted with a completely different emphasis. After a few months we met that woman with her husband in the lab. They were grateful for the consultancy as they were worried and depressed with the idea, at that time, of giving up with that pregnancy they had looked forward to for years before.