

STUDYING SCIENCE AND TECHNOLOGY IN THE PHILIPPINES AS CULTURE AND PRACTICE

The sociology of science and technology is an interdisciplinary field. At the first instance, it calls for the bridging of C.P. Snow's (1959) "two worlds" of the natural sciences and the humanities (and the social sciences). The professional and intellectual concerns may be separate, but both inhabitants of the "two worlds" share an "everyday life-world," where the main concern is to adapt this world to human needs. Moreover, another type of interdisciplinarity is required in understanding how science and technology adapt to or alter existing life-worlds. This type involves linking disciplines within the social sciences and fields in sociology.

Gelia Castillo addresses the interdisciplinarity question within the work being done in the social studies of agricultural systems. Her article, written in 1990 for a training of trainers workshop on research tools for farm and household analysis, examines the science and technology being used in agriculture and food production. It is an excellent illustration of how sociology of science and technology can be pursued from the point of rural sociology, where we typically associate Castillo's body of works, and how sociology of science and technology becomes an exploration with irrigation engineers and technicians, postharvest technologists, agricultural scientists, economists, feminist researchers, among others. Castillo introduces eight typologies of interdisciplinary work in agricultural research and makes the point that "more than one component, one factor, one dimension, one aspect, and therefore more than one discipline is often called upon to carry out research programs or projects..." However, as many of us must have already come to know, interdisciplinarity may exist as a discourse but is difficult to practice. Castillo highlights the importance of leadership, the culture of the research team, and the funding support for interdisciplinary research.

In the next article, **Raul Pertierra** examines the relationship between another two seemingly "separate worlds" – everyday culture and science – as manifested in the world-views of the Filipino youth. Pertierra points out that while the youth lack encounters with the practice of science and are largely unaware of the achievements of Filipino scientists and government scientific institutes, they are much more optimistic than the older generation about the future of science. They enjoy their studies of science, are users of new technologies (i.e., internet and mobile phones), and are exposed to a globalized world, where science and technology are visible in everyday life. For Pertierra, it will be reasonable to expect the youth to be key in the development of a culture of science even though the country's historical, social, political, and cultural environment where a scientific culture is expected to thrive is complicated at best.

In addition to its conceptual contributions, the article also demonstrates how one can proceed with a contextual analysis of quantitative data. In studying students from well-equipped universities and schools in the Philippines, Pertierra does not make claims of the representativeness of the sample, preferring to claim the exemplarity of the samples instead. His sample is arrived at on the basis of concepts that correspond to activities, actors, and meanings in a particular setting. In a country where education and sciences resources are unevenly distributed in space, well-equipped universities and schools are more likely to develop in its students a culture of science and technology.

While the survey can ascertain prevailing world-views in a given population, scientific practice, culture, and ethos of the laboratory or a small community of researchers lend themselves better to direct observations (Latour 1987). Providing an example of how culture and practice are best observed *in situ*, **Alinaya Fabros**, worked as a call center agent in order to study global outsourcing in the Philippines, and the work conditions and experiences of Filipino call center agents. Fabros locates the various forms of reflexivity that call center agents exercise in their work within a “global economy of signs and selves.” This formulation of the phenomenon allows her to study both micro- and macro-social orders. On one level, she employs social constructivism in examining how call center agents shape their everyday realities at work and outside of it. On another, she explains the macro conditions under which particular forms of reflexivity and ideas are formulated, communicated, and tolerated or controlled. These conditions are based on the global stratification system, where sets of positions are linked together in patterned ways of influence and control of work and production to achieve increased levels of productivity, competitiveness, and profitability.

Fabros’ decision to study call center agents in action closely follows not only Latour (1987), but also Goffman (1959) and the study of actors’ performances in the scene called life. Both Latour and Goffman encourages the examination, not only of finished products and front stage-performances (e.g., technical support services delivered by agents whose job description requires both technical competence and people-skills), but also the product in-the-making and front and off-stage performances (e.g., training of call center agents, situations before or after call center agent attends to a client).

With a similar goal of understanding science-in-action, **Marcia Czarina Corazon Medina** examines the process of knowledge production in the natural sciences as this is being shaped by the introduction of online journal databases in university libraries. She looks at how graduating seniors in physics, biology, and chemistry, and their thesis advisers, make use of such resources in creating scientific capital within the

epistemic community they are in (e.g., thesis panel, working group). Following Bourdieu and Passeron's (1975) formulation, Medina points out that thesis citations of leading-edge researches and ideas which are readily available in library online databases accord symbolic capital to students citing them. Through effective use of these resources in one's thesis (e.g., to improve a research design, to find a problematique, to develop a review of literature that is up-to-date), students gain scientific competence and social authority within their epistemic community. Yet, as Medina points out, this form of knowledge production is shaped by the decision-making processes in the epistemic community (e.g., which journals are to be cited) and by the perennial challenge faced by universities: the cost of providing these resources to students.

These four articles combine to provide an idea of the promise of and need for a sociological study of science and technology in the Philippines. What are possible empirical areas of inquiry? Based on an inventory of experts in the core technology areas of biotechnology, advanced materials science, microelectronics, information technology, photonics, and instrumentation/robotics, the Technology Forecasting Committee created by the Department of Science and Technology more than a decade ago identified science and technology-intensive areas that have potentials in the country. These are technologies related to high-temperature superconductivity, advanced materials technology, thin-film deposition technology, advance satellite technology, microelectronics, and information technology which have consequences on agriculture, manufacturing, communication, transportation, and energy generation (Yanga 1999). Linking science and technology to our development needs, improving the public image and acceptance of science and technology, and developing structures for scientific work and technological innovation are perennial goals. Our society has just only begun to be aware of the consequences of information and communications technology on the political, economic, social, and cultural aspects of Filipino life. In the meantime, European and American sociologists of science and technology have started looking into the social and ethical implications of biotechnology and nanotechnology. The sooner we enrich our understanding of existing issues of science and technology, the better prepared we will be in engaging the futures of science and technology.

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