

Science in the Modern World¹

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In his letter inviting me to speak at the College of Science Special Recognition Program, Dean Caesar Saloma reminded me that the College is marking the 25th anniversary of its founding this year. I distinctly remember how adamant our colleagues in the natural sciences were to carry out the split at the soonest possible time — a sentiment that was not at all shared by those of us in the humanities and the social sciences.

But the reason was simple. Indeed, the old College of Arts and Sciences had become a sluggish giant that found it increasingly hard to enforce the norm of equity across the broad range of its constituent departments. When the split was finally accomplished, the whole affair seemed more like a secession of the sciences, than a mere re-structuring of UP's biggest college. But, I think we can now all say it was the right thing to do. Had the old College of Arts and Sciences faculty rejected the idea, a new independent College of Science would have risen beside it, whether we liked it or not.

The timing of the split was propitious. In a bid to catch up with the rest of Asia, the Marcos Martial Law regime had embarked on an ambitious program to accelerate the modernization process using science as the spearhead. Almost overnight, the new College of Science became a magnet for infrastructure and research funds. Its departments metamorphosed into institutes, enjoying the privilege of a certain level of autonomy from university rules.

The dynamism that was unleashed from that split has brought the natural sciences to where they are today – far from the dimly-lit pavilions of Palma Hall in which they began. The momentum gained from that break-up remains strong. Just the other day, I was stunned to see the large patch of green bordered by Physics, Math, Geology, and the College of Science being stripped and leveled by a swarm of earth-moving tractors. Being an avid birdwatcher, I was horrified. This vacant space has long been the habitat of the Long-tailed Shrike, the White-collared Kingfisher, the Black-naped Oriole, and the Yellow-vented Bulbul. Where will these feathered friends go? I asked myself. But, as an academic, I could only watch with great fascination and expectation of what is to rise on this ground. We may be seeing the core campus of a future Science University of the Philippines.

I thank Dean Saloma and the College of Science faculty for reaching out from the other side of the so-called hard-science/soft-science divide so that I could speak on this occasion. This is such a refreshing change from the civil inattention that used to characterize our relations in the past. As we all know, there has been a long-standing debate in the university itself on the scientific status of the social sciences. The lack of a resolution of this question that is acceptable to both natural and social scientists has had far-reaching organizational consequences within UP itself.

This impatience precisely served as the intellectual backdrop to the break-up of the old College of Arts and Sciences in the late '70s, first into Divisions, and later into three separate colleges – the College of Arts and Letters, the College of Science, and the College of Social Sciences and Philosophy. My college, the CSSP, is easily the odd man out here as its identity straddles both the sciences and the humanities.

This double identity is perhaps most manifest in sociology. One side draws us closer and closer to literature and psychoanalysis, the other side pulls us more and more towards the biological sciences, cybernetics, and mathematics – a direction earlier traversed by economics. I guess, partly because it has

been our lot to be thrown together physically in the same complex revolving around Palma Hall and the Faculty Center, relations between the social sciences and the humanities have been very close. We serve on each other's graduate thesis panels, our students enroll in each other's courses, and the old boundaries that separated literary theory from social theory, ethnography from fiction, are gradually being dismantled. In contrast, our links to the natural sciences have withered in the vine over the years. This is really such a pity, because there's a lot we can learn from one another.

I want to tell you briefly of my own growing interest in cognitive science and neurobiology as a result of new developments in the theory of social systems. In the past five years, I've been drawn to the path-breaking work of the Chilean biologist Humberto Maturana and his student, the immunologist Francisco Varela, on what they call the "autopoiesis" of living systems.³ From their studies of the organization of living systems, these scientists have concluded that all life is self-referential and self-producing. And cognition is not the process of representing a world out there, but rather "the ongoing process of bringing forth a world through the process of living itself." From this it follows that the world is not anything ready-made, whose nature it is our task to discover. The world is rather something we construct through the act of living itself.

Maturana and Varela say, "Everything said is always said by an observer." Therefore, we must take care not to confuse our descriptions as observers with "what pertains to the system as constitutive of its phenomenology." To see living systems as autopoietic is to avoid ascribing to them a purpose and to see them rather as simply engaged in the processes by which they autonomously create and recreate themselves. Life therefore is no more and no less than the ability to repeatedly create oneself.

If you are familiar with Kant or Nietzsche, you will note that this idea is not new. But let me say something about what it means for the epistemology that informs our disciplines. For the longest time, we have thought of science as a kind of mirror