

The critical need for interdisciplinarity in higher-education to address the multifaceted problems of a changing world

Author
Christophe Mocquet[a]

[a] Université Côte d'Azur, IFR MARRES, Nice, France

A society in denial of science…

The general public has mixed feelings about science. They seem to have high expectations of the science of meteorology to tell them what the weather will be like the next day. But they seem to be detached from the science of climate that warns them of the weather at the end of the century. For some, science is just one possible voice among many (Mitroff & Feryerabend 1976, Blancke & boudry 2021). Our policy makers are supposed to rely on scientific expertise to provide them with evidence on which to base their policies. But science is slow, contradictory, and full of uncertainties, and the Covid experience has shown that the population rejects these constraints (Battiston et al. 2020, Provenzi & Barello 2020). As a result, people have to choose between scientific information based on long studies and peer-reviewed evidence, and pseudoscientific opinions sometimes based on irrational beliefs (Teovanovic et al. 2020).

And yet, the public is becoming increasingly educated. In France, in 2013, there were eight times more students in higher education than in 1960. Today, 70% of high school students obtain the baccalaureate, compared to 10% fifty years ago. In the OECD in general (and in France in particular), 40% of people of working age (25-64 years old according to the OECD) have a higher education degree, and the proportion is ten points higher for the youngest of them (25-35 years old).

So why is science so discredited by the public? Why does the public think they know instead of listening to those who study? Perhaps there is one more step to take. By improving public education in general, the public may think they know what they are just scratching at. Perhaps this is an illusion of control, a cognitive bias (Dror 2020). Perhaps science is still too far out of sync with society.

… but a society full of science

Science feeds society, especially in the context of climate change. The physical causes are well known, and are rather clear and precise, and even if the consequences on biology are still subject to precautions, the impacts on the socio-economic sphere are inevitable. In this stressful context, and with limited resources, what strategy should be adopted? Scientists and decision makers should get together around one table.

The example of coral reefs is quite striking. The latest IPCC report predicts their widespread disappearance by the end of the century, even if we accelerate our mitigation to meet the Paris

Agreement targets (70-90% decline at +1.5°, 99% at +2°, Gattuso et al. 2014). So why continue to protect reefs that are likely to disappear in the coming decades anyway? Because fighting for the protection and restoration of coral reefs contributes to the development of local communities, and the longer they last, the better. Indeed, while the share of coral reefs in the GDP at the national level is generally limited to 5%, it can reach over 25% at the community level in Vanuatu and Fiji (Pascal 2011, Laurans et al. 2013). Thus, coral protection and restoration should not only be considered as a solution against coral loss but as a solution for the sustainable development of local communities. As the UN Sustainable Development Goal emphasizes: climate action, food security, sustainable value creation and addressing inequalities are fully intertwined.
Many stakeholders propose to help these communities find solutions to their development problems, such as overfishing. In Indonesia, fishing with explosives is a practice imported by Westerners that has largely destroyed coral reefs (Hampton Smith et al 2021). For the past ten years, the French NGO Coral Guardian has been helping local communities to change their model. By rebuilding their reefs, they are rebuilding a natural capital from which they can recreate a value chain. This initiative is successful because of a brilliant vision, the interweaving of socio-economic and environmental issues, with the help of science. This comes in contrast to other conservation efforts that make the mistake of focusing solely on environmental issues, sometimes without considering science and the local communities.

The urge for interdisciplinarity in higher education

Climate change is creating environmental challenges on a magnitude never seen before in our civilization. In this context, the fight against climate change and for the environment must never lose sight of the need for the sustainable development of populations. Now, we must train those who will find the solution to these multi-faceted issues. Not only must we train rigorous scientists capable of understanding the current global issues and finding solutions. But we must also train them to contextualize these solutions in a very diverse socio-economic fabric, for the benefit of the sustainable development of human communities, each with different local challenges.
It is therefore crucial to create a fertile ground between disciplines, so that future experts in natural, social and economic sciences work together during their studies. Our future decision-makers must be able to take into account all the multiple aspects of the same problem. We must train tomorrow's scientists to always be ready to use their critical thinking skills to study facts, and to be open to the richness of interdisciplinarity.
Perhaps then our citizens and decision makers will regain faith in science and will be able to turn to those who promote scientific disciplines to find solutions to their challenges in a changing world.

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