The post-normal science, processes of democratization in a perspective of sustainability and equity

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The conceptual views and frames through which we interpret the world

Two different views of the world are more and more clashing:

➢ One places mankind outside the biosphere and believes it is possible to control and dominate the natural systems,

➢ The other one thinks mankind is completely independent from the natural world it lives in: an internal element within a complex system, which is interdependent and continuously - and unpredictably – evolving.

Conceptual frames even for Science

Does Science discover or invent ? Does Science describe or interpret ? Is it unique and universal or are more kinds of science possible ? According to the view of the world one has , the answer is different:

➢ Mankind - or, better, the "experts" - are able to describe "facts" objectively, without any prejudice and they can unambiguously get laws from empirical obviousness , they can predict and transform natural systems in a controlled way.

➢ In front of the complexity of nature, many different "interpretations" are possible. These depend on the different points of views, on the instruments we use, on the language, on the conceptual frames. There isn't only one science but different ways to explore and interpret the world.

From describing to acting – from knowledge to the decisional sphere.

Traditionally science aimed at explaining natural phenomena. Then technology used scientific knowledge to affect the world, in different ways and with different aims according to power interests, values and relationships. Nowadays the learning process is associated with transformations – often irreversible - of the natural systems , which have a bad effect on the individuals' and the human communities' opportunities and life quality, who are often far apart. The technical and scientific research is more and more interwoven with the decisional sphere - regulations (politics, society and market). The debate about data is growing. Decisions are made in risky, uncertain and ignoring conditions.

The post-normal science and the legitimacy of different points of views

The *post-normal* science uses the systemic approach and the provisional and undetermined character of knowledge: it underlines that facts are uncertain, values are under discussion , the stakes are high and decisions are urgent.

This "frame" is suggested to face those situations where the high uncertainty of data is interwoven with highly undetermined and/or potentially irreversible effects. And it includes, in considerations and in decisional processes, the awareness mistakes might be possible. We no more look for a demonstration but for a dialogue, and the working method reckons not only the experts but a large peers' community is involved and legitimated to bring its own knowledge. In this context even the local know-how becomes very important as it comes from experiential knowledge that has settled for a long time in different cultures and it has not been formalized in scientific, abstract and quantitative terms. The qualitative knowledge becomes a useful means to communicate in an open and democratic process aiming at solving disputes and making decisions.

Ecological democracy for a sustainable and rightful world

The crucial elements of the relationship between the scientific community and society are dialogue, mutual attention, negotiation, expertise sharing, public debate about risks, in a sustainable perspective. The challenge to face then is to understand how "techno science" can be included in the democratic practice and promoted, developed, evaluated and controlled by society.

The main scenario takes into account that the resources our planet can offer mankind are limited and nowadays they are not evenly distributed, neither among the different human communities nor within the single Countries. That causes gunfights and wars , large migrations, extinctions of cultures, peoples, languages. What are the essential elements for sustainability?

1. Reasoning in global terms: the borders of systems are worldwide and the systems are interwoven.
2. Awareness of one's limitations.
3. Non-violent transformation of conflicts: legitimacy of participatory democracy and of the equity principle.