Chapter 11
e-Research, a way of Learning Together?

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ABSTRACT

The aim of this chapter is to compare the two worlds of science and learning in the perspective to find commonalties that could be used to develop new methods and technologies to better support collaborative and on-line scientific research. In this perspective we claim the existence of a convergence of these two domains and highlight similarities in on-line tools that support such activities. At the same time, we bring attention to the fact that a largely overlooked aspect of existing on-line scientific collaborative research systems, which is instead well represented in learning systems, is communication among partners. To address this issue we build a collaborative on-line software tool that allows to make some interesting early observations. Further on, we report on the introduction of a discourse structuring facility that could be used, on one hand, to ease the use of communication tools and on the other as a boundary object: an artifact that allows to bridge different paradigms and backgrounds.

INTRODUCTION

This chapter will explore the possibility to extend and improve e-Research technologies applying approaches borrowed from learning. This could be possible only if a convergence is demonstrated to exist between the two domains.

In this, a starting point, could be the fact that both have undergone a severe revision in the last decades which coincided with the crackling that postmodernism was able to trigger in their, ever since, firm pillars. This irreversible process allowed switching from a scenario where science was associated with the truth and learning with its transmission, to one where both became associated with situated and socially dependent knowledge building. It was indeed the possible existence of this convergence that triggered our interest in comparing the two domains, so that we thought that new ideas can emerge comparing the different approaches taken and the different experiences done separately in the two domains. In this sense it must be said that, while, in the field of learning, there is quite a large literature on what this

latter can borrow from scientific research, on the other side there is not so much available yet, on what science can gain from the comparison with learning.

BACKGROUND

Science

The Encyclopædia Britannica defines Science as: *any system of knowledge that is concerned with the physical world and its phenomena and that entails unbiased observations and systematic experimentation.*

In the traditional vision, science coincides with truth. This happens because scientific research is an activity that is supposed to be objective (unbiased), meaning that it is supposed to be founded on facts and logic.

This has been demonstrated to be hardly the case.

Science is not objective. Even in the perspective of the analytical tradition (Searle 2008, Diviacco 2015) the term objective is translated as "not just from someone's point of view". It essentially means that what is stated is not private, that, on the contrary, it is public, meaning that it is inevitably defined by the interactions of the members of a community. Quoting Latour and Woolgar (1979) "Science is a Social Construct".

Within the same perspective, facts and opinions themselves cannot be easily (or maybe at all) distinguished. To say that something is a fact would require the possibility to state its metaphysically objective condition. Metaphysical objectivity refers to properties of things that do not depend on experience for their existence (Diviacco 2015). This of course is something rather difficult to determine for anyone of us. What we normally try to achieve, instead, is the form of epistemological objectivity we described above, where a community finds a convergence towards a "state of affairs". This latter is not a fact, since it is epistemic, but at the same time it is not an opinion, since it is not only private. It is a merely possible situation that can be expressed by any non-contradictory true or false sentence

Paradigms, Communities and Theory-Ladenness

In the traditional view, researchers are always described as "cold" operators that, in their work, from a point A inevitably and "logically" go straightforwardly to a point B. This does not happen in reality. Researchers are much more "serendipic"[1] . Many paths can be followed during any research and often scientists can be tempted to follow a less direct one. Suchman (1987) uses the metaphor of a map where many roads can drive to the same place.

Pierce (1931) maintained that actual research drifts from the standard vision of the scientific method due to a mode of reasoning, that he called abduction.

Abductive reasoning infers the existence of a state of affairs not accessible to observations. It is a form of hypothesis that should be based on a rational analysis of other states of affairs. It is different from induction, which is predictive, as in the classic example: all ravens are black therefore the next one will also be black. In fact abduction is generally used in retrodictions, such as in the example proposed by Peirce (1931), where if I enter a room where I find a tin of white beans and a white bean on the floor I grow naturally the idea that this latter comes from the white beans tin.

This is just an hypothesis. Abduction merely suggests a state of affairs.

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