

Two years ago, in the presentation of the Workshop on Language, Cognition and Computation, I wrote: "although mental processes or cerebral functions such as perception, reasoning or language may be studied and described in terms of structural regularities and formal patterns independently of their notional content, it is also true that these functions may be studied independently of their physical and biological basis; the metaphor of the brain as hardware and the mind as software has been proved extremely fruitful at tightening the relationship between the humanities and the computational sciences. The main goal of this workshop is to explore the results, the validity and the limitations of such a metaphor."

The Workshop was oriented, then, towards those perspectives that tackle the study of cognitive processes with a methodology that could be described as "top-down": from software to hardware. There remained open the possibility of organizing a second workshop where the same topics were present but as understood from the other methodological perspective, "bottom-up", from hardware to software.

The great impact of new technologies on medical sciences and the development of molecular biology have contributed in arousing the interest on the study of the physical and biological underpinnings of mental processes, both from the point of view of their implementation in the cerebral hardware and from the point of view of their origins within the general framework of biological evolution. And such renewed interest on the brain is not only circumscribed to neurosciences and biology, but to a wider range of disciplines within the humanities, from anthropology and paleontology to psychology and philosophy.

This is a world full of questions, but new and original questions that open new ways for research: what is the relationship, if any, between the origins of language and the origins of other human capacities such as tool-making? Must we interpret the existing correlation of certain aphasias with variable degrees of apraxia as evidence in favor of such a relationship,

given the neuroanatomical proximity of certain centers of motor control to the areas where linguistic capacities appear to reside? Does that mean that the origins of language and culture are, at least in part, amenable to an explanation in biological terms, or they are independent phenomena? Is there any parallelism between the process of language acquisition and embryological development; that is, is child language a sort of primitive stage of language just like the different stages of embryological growth have been interpreted by some biologists as a “short history of animal evolution” from the simplest forms to the more complex ones? What can be said about the inverse process: the loss or the decay of linguistic capacities either as a consequence of external or pathological agents or as a consequence of the natural decay of cerebral tissues imposed by age?

It is one of our main goals in this second workshop to provide with the framework for a reflection on the results, validity and possible limitations of the lines of research defined by the questions above. In addition, it will also be interesting to think about the relationships between the “top-down” and “bottom-up” methodologies and about the future of such relationship: will there be convergence or just substitution of the neurosciences for the cognitive sciences? Such a reflection has both a scientific and a practical interest. It must be observed, for instance, that most practical applications in the language industries have been following the cognitivist paradigm with only a minority of applications following the ideas of neural modeling, which has nevertheless had the consequence of transferring the methodological debate to this area as well.

Another practical consequence is the one derived from a better understanding of the processes of acquisition and decay of linguistic capacities to the extent that such understanding may have repercussions on two situations of a great social importance nowadays: the need for a general knowledge of foreign languages and the decay of cognitive capacities due to greater life expectations.

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