Understanding Cognitive Artifacts. Towards Epistemology of Cognitive Extensions.
(Popular Summary)

The opinion that the creations of technology are a major factor determining social development, advances in knowledge and cognition is currently among the most commonly accepted popular beliefs. This fact is reflected in popular scientific literature touching upon the threats or benefits related to the use of modern technologies. Unfortunately, popular scientific diagnoses (e.g. N. Carr "The Shallows") tend to rely on fragmentary empirical data, subjective intuitions and common platitudes rather than in-depth reflection on the particular **mechanisms of interaction between the world of external technologies and the sphere of internal mental phenomena.** Upon closer inspection, analyses related to the cognitive significance of technology raise a number of questions: Why are some technological advances perceived as beneficial and some as harmful with respect to cognitive processes (i.e. learning, abstract thinking, remembering)? What are the actual criteria of technology's evaluation? Indeed, is it even possible to formulate a set of such objective criteria? What is the character and dynamics of the interaction between the user's mind and technology? Before these questions can be answered, one must first approach certain fundamental concerns related to the general concept of a human beings and their tools.

The questions above are inspired by the practical necessity to adapt technology to the information demands of the human mind. **The central focus of the project is a reflection on artifacts and their significance to the processes of cognition and knowledge production because this issue constitutes the preliminary condition determining the ability to face problems stemming from civilizational advances**. In an effort to achieve that goal, I will resort to the conceptual framework adopted in the concept of situated cognition which creatively merges empirical studies with the abstract concept of a human being as a techno-cultural hybrid. By referring to the studies performed within this framework, I intend to characterise the primary traits of cognitive artifacts, i.e. human creations used to facilitate cognitive processes. Moreover, I will analyse the models of the relationship between a human subject and cognitive artifacts, and critically review the existing attempts at classifying extensions of the human mind. The deliberations on the concept of a cognitive artifact in the first part of the project will, in the subsequent part, allow me to approach the question of whether, and to what extent, can analyses of external tools reinvigorate the old problems of the theories of knowledge and cognition. The classic epistemological concepts of perception and self-understanding will delineate the areas within which the advantages of considering cognition from the perspective of artifacts are particularly evident. For instance, it turns out that the question of the mechanisms of perceiving external objects changes its character when related to recognizing the tools utility or perceiving symbolic artifacts (e.g. realistic pictures). The research approach adopted in the project will not only emphasize the dynamics of self-understanding in the historical and developmental aspect, but also allow the isolation and analysis of a new type of artifacts, namely meta-cognitive artifacts, whose interaction mechanism differs from that of typical cognitive artifacts (i.e. a map, diagram, image).

These abstract issues are not without a direct practical significance. In many contexts, technological tools are useless not because they are themselves faulty, but because of inconsistencies between the tasks for which they are designed and the normal ways in which they are utilised. For instance, if tools intended to solve simple, manual problems under time constraints, require distanced reflection from the user, the performance of such tasks is greatly hindered and possibly dangerous (e.g. a car radio designed in such a way that its operation diverts the driver's attention from the road due to a sequence of activities necessary to tune to a new station). The studies conducted under the present research project will contribute to answer the question of whether cognitive artifacts facilitate the creation of an adequate relationship between the need to activate intuitive cognitive processes and the support for processes requiring reflection. The problem is worth analysing in the context of contemporary educational trends. There is currently a significant tendency in teaching towards the use of multimedia as a way of ensuring student participation and stimulating their attention, which in turn is supposed to facilitate knowledge acquisition. The implication is that the higher the level of activisation, the better the educational effects. It is therefore suggested that multimedia teaching aids are in principle superior to mono-media representations because they stimulate greater involvement. And so: coloured diagrams are better than black-and-white ones, images with sound are better than images alone, films are better than static images, etc. If the primary purpose of education is to develop the capacity for distanced reflection, it is doubtful whether an educational system overly relying on technological means of student activisation and involvement does indeed facilitate the equal development of the two mentioned aspects of cognition: intuitive and reflective.