

DRF: Thesis SL-DRF-21-0348

RESEARCH FIELD

Computer science and software / Engineering sciences

TITLE

Inventive Conditions and Dimensions of Digital Design

ABSTRACT

A large part of digital innovation is structured by a few technological clusters anchored in specific geographic sites (Silicon Valley, Shenzhen, etc.). These places are ecosystems, that is to say natural, social and technical environments, which play the role of "technological terroirs".

The first objective of this thesis is to clarify the specificity and impact of these original local contexts regarding inventiveness in digital design. On the one hand, they welcome and generate the possibility of innovation; on the other hand, they modulate and organize a global space, made up of all the territories connected to information networks. The Paris-Saclay Campus will be one of the study sites. The activities of OCTO Technology will provide others.

The notion of design designates a recursive design process that produces and evolves a technical object by integrating the constraints and resources resulting from its social and cultural integration. The philosopher of technology Gilbert Simondon has developed a method to analyze the invention and evolution of technical lineages in relation to their "associated milieu". This thesis will measure the relevance of these concepts applied to digital objects, revise them and supplement them with the contribution of other thinkers of digital technologies.

The deployment of algorithms or artificial intelligences is the result of a complex process of dissemination operating at multiple scales. An analysis of the conditions for inventiveness in terms of design regimes and middle grounds is relevant. However, the property of "scalability" is specific to digital design (due to marginal cost replication) and transforms the dimensions of this process. The thesis will therefore have to take into account the scale relativity in order to objectify the different levels where the inventiveness of digital design operates.

This thesis requires a reflection that embraces the richness and diversity of technological dimensions, including its ethical dimension. It should lead to avenues, for the CEA as well as for OCTO technology, aimed at promoting the emergence of digital innovations from the eco-responsible perspective of "right technology".

LOCATION

Institut de recherche sur les lois fondamentales de l'univers

DIR

Laboratoire de recherche sur les sciences de la matière

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