

Creativity-Centered Design from an Ecologically Grounded Perspective: Activities and Resources in Palafito 1.0

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ABSTRACT

In this paper three methodological approaches to creativity-centered design are identified: the computational approach, the dialogical perspective and the ecologically grounded framework. These methods relate to the current definition of ubiquitous music (ubimus). Both social and material factors that shape creative musical phenomena within ubiquitous music making are addressed. The second section discusses a design study highlighting the concepts laid out in the first part: activities and resource usage. A split between creative products and resources, which points to three material observables, frames this discussion: resources, products and by-products, including creative waste. Two new design qualities are proposed: volatility and rivalry. The paper concludes with a summary of the study results, suggesting further explorations of the ecological framework in ubiquitous music experiments.

Keywords: *Creativity-Centered Design, Ecological Cognition, Ecologically Grounded Creative Practice, Ubiquitous Music*

PART 1: UBIMUS METHODOLOGICAL PROPOSALS

Since 2007, our research group has been engaged in a multidisciplinary effort to investigate the creative potential of converging forms of social interaction, mobile and distributed technologies, and materially grounded artistic practices. We have proposed to adopt of the term *ubiquitous music* (ubimus) to define practices that empower participants of musical experiences through socially oriented, creativity-enhancing tools (Keller et al., 2011a; Keller et al., 2014b). Ubiquitous music

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is defined as a research field that deals with distributed systems of human agents and material resources that afford musical activities through sustainable creativity support infrastructure. This consensual definition, established through collaborative work within our community of practice, summarizes the research efforts of three distinct but complementary methodological approaches to the study of ubiquitous phenomena: (1) the dialogical view, (2) the computational perspective and (3) the ecologically grounded framework.

The Dialogical Approach

The focus on human agents and the centrality of sustainability issues suggested by the proposed definition of ubiquitous music's object of study resonates with two current educational practices: the dialogical methods pioneered by Paulo Freire (1999) and the emergent socially situated views on education (Burnard, 2007; Lima et al., 2012, 2014; Loi & Dillon, 2006; Thorgersen, 2014). This research agenda is based on participatory, community-based, subject-centered methods, targeting both formal and informal educational settings.

Converging trends in musical creative practice and educational research point to the local context as a key factor in shaping creativity in educational settings (Brown et al., 2014; Lima et al. 2012, 2014). Loi and Dillon (2006) propose the design of adaptive educational environments as creative spaces that foster interaction through situational and social dynamics. Technology becomes a key resource within this paradigm. The Australian educator Patricia Burnard (2007) introduced Loi's and Dillon's framework within the music domain, suggesting that creativity and technology are two central forces fostering innovative educational practices. Rather than mechanical development of performance skills, Burnard proposes participation and collaborative networking as objectives of music education.

Educational advances in ubiquitous music have also gathered support from Paulo Freire's (1999) philosophy (Lima, 2013), broadly defined as the dialogical approach. The dialogical conception sharply contrasts with views that see learning as a purely mental, individual process. Through iterative cycles of exchanges, dialogical methods foster individual and collective reflections (Lima et al., 2012). Hands-on activities and social interaction among peers stimulate constructive criticism. Given the relevance of the local referents, the stakeholders are encouraged to reflect on their creative procedures and products. While keeping tabs on the local reality, participants develop a critical understanding of their creative processes, raising the awareness of the consequences of their actions on the local material and social environment.

One of the objectives of ubiquitous music research is to gather insights on the relationships between the subjects' profiles and the strategies they adopt during creative tasks. Subjects may engage in creative activities by applying previously learned strategies. Sometimes, this background knowledge may not be applicable to technologically enhanced environments. So ubiquitous music experiments have adopted a parsimonious method for increasing tool access without hindering reuse of previous knowledge (Lima et al., 2012; Keller et al., 2013b). Tools are presented as opportunities for interaction, but they are not given as requirements until a series of preliminary planning studies has been completed (Pimenta et al., 2014). Depending on their specific profile and on their previous experience, some subjects take advantage of computationally based support while others limit their actions to simple forms of sonic manipulation. This aspect of the procedural dimension is treated as a variable to be observed rather than as a given condition.

As discussed in (Brown et al., 2014; Burnard, 2007; Lima et al., 2012), the socially situated approaches to education stand in stark contrast to the standard views on musical creativity. While standard models have been concerned with activities that (in theory) can be carried out without the need for social interaction or place-related experience, such as 'problem-solving' and

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