

From passive perception to affordances: the trip of sensory substitution technologies

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Sensory substitution is a multidisciplinary approach with insights from psychology, philosophy, engineering, and computer science. The main idea of sensory substitution is that we can create technologies that substitute one sense with another, e.g., vision with touch or vision with audition. Although some steps were made in the 19th Century, the discipline as such was established during the second time of the 20th Century thanks to the work of authors such as Bach-y-Rita. The construction of these devices for substituting sensory modalities is inspired by a certain view on human cognition: in this sense, the way in which we conceive the functioning of a device is clearly determined by how we conceive perception and action. Different authors think that sensory substitution devices should adjust to the classic cognitivist picture of the mind, so they must support its main claims: the passivity of perception, the divorce of perception and action, the endorsement of representations, etc. However, this is neither the only way to build sensory substitution devices nor the only way to conceive the nature of mind. Non-cognitivist approaches such as ecological psychology postulated the centrality of affordances (or possibilities for action) as a key aspect of our everyday lives. This view challenges widely-assumed claims in the cognitivist view, such as the perception and action divide. And, as such, the endorsement of the main claims of ecological psychology (or any other non-cognitivist approach) has a direct impact in our way of designing sensory substitution devices. In this talk, I show how recent experimental research on sensory substitution from a post-cognitivist approach shows that some claims of the cognitivist approach to sensory substitution are unjustified.