

## DESIGNING WITH THE BODY IN MIND – KINESTHETIC, EMPATHY, INTERACTION

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In this dissertation, I present the concept of *Kinesthetic Empathy Interaction* (KEI), as a novel approach to Kinesthetic Interaction Design. The approach is derived from two experimental design cases, in which I explore the possibilities of designing interaction that build upon and cultivate *kinesthetic relations*. The primary contributions of this dissertation is design taxonomy which outlines the concept of KEI and the two experimental research artefacts, TacTowers and BodyQuake, which exemplify the approach.

The foundation for the experimental work is established by applying the theories on psychomotor abilities and kinesthetic empathy. Most commonly empathy is understood in terms of emotional empathy, where a person identifies with or has an understanding of another person's situation, feelings and motives. In kinesthetic empathy, movement is emphasized, and refers to the capacity to participate with another's movement or another's sensory experience of movement. While the notion of psychomotor ability denotes a physiological perspective of the body, where choice of action is influenced by environmental conditions including other people, kinesthetic empathy links the participants in a kinesthetic empathic connection, thus emphasizing their *kinesthetic relations* in the interaction. The combination of the two, functions as the theoretical outset for designing interaction that takes into account multiple co-located people collectively constructing a shared kinesthetic experience.

The outcome of the two experimental design processes is two bodily engaging equipments, TacTowers - an interactive sports training equipment and BodyQuake - an interactive playground equipment. They

both encourage a kinesthetic empathic bond between the interacting participants by promoting *human-to-human interaction* mediated by an interactive system. They exemplify the possibilities of KEI, where the *kinesthetic relations* of the participants are cultivated. In both design processes, a range of *design sensitivities* are both derived and employed. They are used to operationalize aspects to be sensitive towards when designing interaction where the *kinesthetic relations* of the participants are encouraged and a contributing factor in the interaction. The nature of the interaction is unfolded in a design taxonomy, in which I expose relevant layers and aspects for designing interaction that promotes a kinesthetic bond between the interacting participants.

The design taxonomy supplements the research artefacts by providing a frame of reference in understanding the experimental design work. It is the combination of the frame of reference and the functional prototypes that communicates what KEI is, and the type of potentials it embodies. The design taxonomy outlines the concept of KEI as a *type of interaction* that builds upon the *human-to-human interaction* occurring between the participants in their *interaction with the system*. It points towards a range of *actions, implications and considerations* that should be taken into account when designing interaction with the body in mind.