# Bodily Connectedness: Designing Affective, Movement-based Communication Media

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## ABSTRACT

This is a practice based PhD research that explores inter-affective movement-based communication as an approach to mediated connectedness (an immediate, felt experience of feeling close to another person) over distance in dyads. Inspired by recent socio-cognitive theories (e.g. enactive intersubjectivity [8], synergistic approach [16], in this thesis communication is viewed as a dynamic coordination between two holistic living bodies, rather than two abstract minds transmitting information from sender to receiver. The main hypothesis is that coordinated inter-affective movement can facilitate the feeling of connectedness in mediated settings. I will creatively explore this assumption by developing a sequence of experimental design artifacts.

## CCS CONCEPTS

• **Human-centered computing → Interaction devices**;


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**KEYWORDS**

Connectedness; Movement-based Communication Media; Embodied interaction; Affective Communication Media; Experimental Design

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## INTRODUCTION

The need for connectedness is recognised as one of our fundamental human needs [17],[26] and is related to social behaviour driven by the motivation to survive. It can have a significant impact on human health and mental well-being [1]. Despite the production of communication devices increasing every year, it seems that "...none may seem to offer the potential for intimacy and connection that being face-to-face does" [2, p.13].

Technological development primarily focuses on performance optimization and explicit information transmission, thus neglecting implicit affective qualities of communication related with the feeling of connectedness [10]. These affective qualities are related with the feeling of connectedness. Research into long-distance relationships showed that communication in separated settings is often not about the content (information) but about the context (how people communicate) of their own and each other's feelings [19]. This therefore advocates for a medium that would encourage affective communication and emotional reflexivity [11].

## BACKGROUND AND RELATED WORK

The above mentioned technological limitation inspired growing interest for delivering new media. Dunne and Raby [6] are among the pioneers aimed to find ways to create "ambient presence" [6, p.61]poetic and non-verbal forms of mediated communication. They raised a concern that functionality focused telecommunication technologies were, at the time, missing "subtle communication qualities"[6, p.61]. Strong and Gaver [9] referred to a similar idea in their intention to design for "implicit communication" [9, p.3] that would be personal and expressive, as opposed to explicit and goal oriented communication tools already existing. Similarly, shared virtual space "The bed" [5, p.371] focuses on "abstracted presence" and intimate non-verbal communication. Other scholars refer to similar ideas, using terms such as: "mutual awareness" [27, p.2699], "social intimacy" [21, p.24], "affective connectedness" [18, p.2192]. A variety of definitions make it clear that this is a contested

research field that is yet to be established. In my work I refer to this field as technology for affective communication. I will contribute to this research field by focusing on mediating connectedness.

## PROBLEM STATEMENT

This thesis focuses on mediating connectedness at a distance, and considering connectedness as an immediate, felt experience of feeling close to another person. One of the problem with the existing research is the absence/ over-generalisation of a definition. The lack of clear definitions leads to a low conceptual understanding of how to design for such experiences and how to evaluate the results of designed works.

Informed by modern socio-cognitive literature [4], [7] I define connectedness as a: *bidirectional shaping of inter-affective states, resulting in shared affect and recognition that someone else's feelings are the same as mine. Connectedness can arise from jointly attentive dynamical coordination of embodied agents, that is pre-reflective and implicit.*

The view of connectedness as embodied coordination reframes the way human communication is considered. Viewing communication as a task-oriented activity with the sole goal of information transmission is an overly simplistic approach considered to be narrow and "missing contextual and bodily aspects" [15, p.165]. This thesis focuses on communication as a dynamical, co-regulated, embodied and coordinated behaviour [15]. This view is also informed by recent theory of enactive intersubjectivity [8]: human intentions are expressed in actions that are perceivable by others, created and transformed in the process of interaction. Similarly, a synergistic approach [16] emphasizes the interdependence of dynamically coupled through social interaction individuals, that impact each other's action-perception system. Both enactive intersubjectivity and a synergistic approach view social interaction as mutually influential, embodied and dynamical.

## RESEARCH GOALS AND METHODS

I will start with exploring an assumption that moving together leads to feeling connected [4], [8]. This issue was discussed widely within the scope of behavioural synchrony that shows many positive correlations in social interaction, such as helping in establishing rapport [13], [16], [14]. Fuchs and De Jaegher [8] explain that our basic social understanding is primarily formed from a dynamic and coordinated interaction of embodied living organisms (enactive intersubjectivity) and believe that human intentions are expressed in actions (perceivable by others). They are not pre-given and static but created and transformed in the process of interaction, thus bidirectional engagement and mutual impact bring correlated experience of connectedness [3], [20]. More specifically: "stability of coordinated movements mirrors the stability of mental connectedness experienced in social interactions" [16, p.281].

I propose to test coordinated movements in mediated settings and see how it affects related experiences. For the first experiment, within dyads, I will create a pair of rocking chairs using accelerometers, speakers and sound generation to sonify the rocking action. The first participant would hear the sound of their own rocking movement from a speaker, and the second participant's sound from another speaker; when chairs synchronise, sonic feedback would then synchronise accordingly. Thus both participants perceive rocking in coordination based solely on the audio feedback. Prototypes will be tested between dyads with preestablished close relationships in scenarios: (1) Rocking in the same room with visual contact, (2) Rocking in the same room with no visual contact, (3) Rocking in different locations with real time sound, (4) Rocking in different locations with modulated sound. Data will be collected from video-recording, questionnaires and semi-structured interviews before and after interactions in each setting.

The next step would be to explore the potential of coordinated movement for affective sharing in mediated settings. The assumption that movement and emotion are expressively interdependent was explained by Sheets-Johnstone [22], [23], [24]. She sees emotions as kinaesthetic happenings that arise from the movements and in return "move us to move" [25, p.394]. I would use design approaches that consider implicitness [5], [6] and ambiguity [9], aiming to encourage improvised, creative and more personally meaningful use.

I would conclude by merging results from mediating bodily coordination and mediating bodily expression of affect, thus aiming to mediate the subtle feeling of connectedness implicitly and mutually at a distance.

## EXPECTED CONTRIBUTIONS

Through my research and practice I want to awaken the interest of the general public in the role of body movement in technological communication systems. I believe that current communication media oversimplifies our interaction thus diluting its intrinsic poetic complexity. Alternative views on technologically mediated communication that encourage affective sharing will allow implicit understanding between humans, humans and machines and potentially machines [12].

## RESEARCH SITUATION

I am in my first year of a 3.5 year PhD program. Presented work is a summary of my research proposal. I have conducted a literature review in related fields which informed my research proposal and the first chapter of my thesis document. I am presently developing the discussed prototypes and will be conducting first experiments in April 2019.

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