Tempting and Enforcing as Paradigms for the Design of Social Interactions in Social VR

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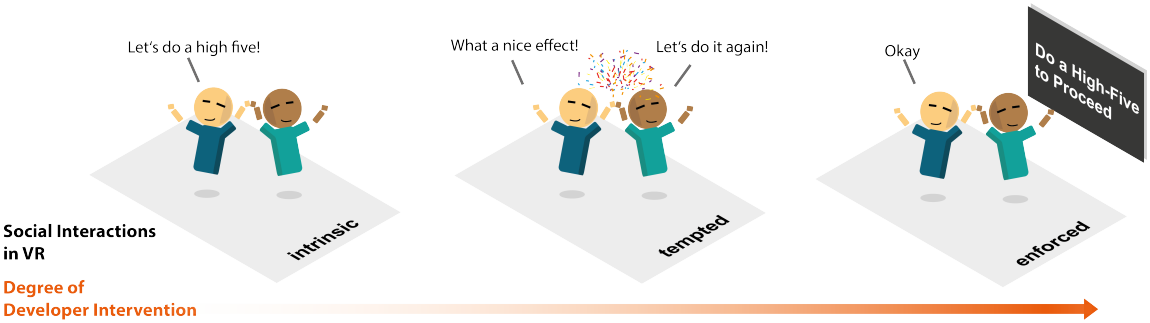

Fig. 1. A continuum to inform strategies for inducing social interactions between VR users.

Developers of Social VR applications have access to individual users' motion data and the resulting spatiotemporal relationship between them via VR hardware. This information opens up the possibility of identifying specific social events like handshakes and making them usable for concrete features that eventually shape the social experience within the virtual world. Following this line of thought, we put the paradigms of tempting and forcing specific social interactions in VR up for discussion to add a novel perspective to the growing body of literature on Social VR design strategies. In this position paper, we first give an illustrative example for linking body movement data and social features, then present a continuum of developer influence on social interactions in VR. In conclusion, we advocate the value of exploring social VR interaction techniques that extend beyond reality.

CCS Concepts: • **Human-centered computing** → **Virtual reality**; *Collaborative and social computing theory, concepts and paradigms*; Interaction design theory, concepts and paradigms.

Additional Key Words and Phrases: Social VR, social interaction, persuasive design, interaction design, embodied interactions

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1 A HANDSHAKE FOR A FRIEND

In the Social VR app Rec Room, one can add others to a friend list via a virtual handshake. This feature illustrates how movement data during social interactions can be linked to specific platform features and how VR technology introduces exciting strategies for shaping social interactions in VR [5]. However, it can also be used to illustrate how such mechanics' utilization imposes a great responsibility on developers regarding the interaction design. In Rec Room, the handshake mechanic works brilliantly, as the interaction is voluntary, meaning users can also befriend each other

via a classic menu. Moreover, the handshake corresponds with the social meaning of the event, which is triggered by it. Now imagine, for example, that shaking hands was the only way to make friends. This would probably have unpleasant consequences for users who are uncomfortable getting close to others, or even touching them, given that personal space sensitivity also applies to virtual reality [1, 2], and virtual interpersonal touch may underlay the same social norms that users apply in the physical world [3, 7]. Now, further, imagine that Rec Room developers would have had the idea that users would not have to perform a handshake but touch each other in the pubic area for 20 seconds to trigger friending. This intentionally exaggerated example illustrates that virtually embodied social interactions are subject to design parameters that may extend beyond traditional interaction design and that designers must recognize. In the friending handshake, these parameters are, i.a., the body zone and duration of interpersonal touch and the real-world meaning associated with it and the degree of freewill.

2 TEMPTING VS. ENFORCING

Figure 1 shows a theoretical continuum that illustrates how a developer can influence the execution and eventually perception of social interaction in VR on the example of a high-five. It ranges from no influence, i.e., a high-five intrinsically performed by users, to subtle influence that should tempt users to interact in a certain way by providing, e.g., visual feedback to virtual body contact, to a significant influence in the form of enforcement. Potential implementations for tempting mechanics can be found in recent research on the self-avatar follower effect [4] (e.g., influencing spatial orientation to others trough self-avatar movement) and social augmentation approaches [6] (e.g. manipulating how other avatars are rendered to motivate approaching behavior). Our basic assumption about this continuum is that all paradigms, intrinsic motivation, temptation, and enforcement, can be translated to specific mechanics that, depending on other factors, may enrich or damage the social experience in VR. Researchers and developers' challenge is to identify relevant influencing factors and formulate recommendations regarding the suitability of one approach or the other to induce a positive social experience in different use cases. Thereby, each of the paradigms opens up various questions ranging from the color design of a visual effect to ethical concerns of influencing or enforcing user behavior.

3 EXTENDING BEYOND REALITY

We recognize two arguments in favor of social interaction design in VR to not follow reality 1:1 but should consider approaches like tempting and enforcing. First, the degree of realism that can currently be achieved in VR is still subject to limitations compared to reality (e.g., tracking capabilities, graphical realism). These limitations result from technological hurdles that have to be overcome first and from the currently limited availability of advanced technologies for various application areas. Therefore, it is valuable to explore approaches that can compensate for these limitations by not aiming to simulate reality but providing mechanics that enrich the social experience despite the lack of realism. Second, we see the potential to enrich even realistically presented virtual social interaction precisely through such approaches. As an illustrative example, let us again refer to Rec Room, where a fist-bump between two users is accompanied by a particle effect, which possibly adds an extra layer of experience to the interaction. We can imagine that, if cleverly designed, such effects could compensate to some extent for the lack of realistic haptic information. However, if haptic information could be conveyed realistically in VR, we would still consider such effects as experience enriching. We would assume that they are capable of tempting users to engage more often in such visually augmented interactions, as they potentially would be more fun. Further, as an argument for implementing enforcement in realistically rendered virtual environments, we would consider the enforcement of a fist-bump in a virtual meeting room, e.g., to spawn a whiteboard, as a promising strategy to foster engagement in virtual meetings.

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