Perceivable Interface
ILVS Senior Project
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I am a digital artist who is obsessed with how people and humans interact with technology. As a hopeless believer of storytelling as a medium, I seek projects that focus on reinventing and reconceptualizing a narrative, in tandem with the new possibilities afforded by innovative digital technologies. The literary aspect of my studies focuses on the exploration of human nature and language. By exploring particularities of human expression -hidden in behavior, metaphors and history- I catalogue various modes of human experience; and aim to make them quotable through art. I believe in the idioms "art is experience" and "different medium is a different experience". Playing and experimenting with different medium, help me arrive at a core message in my visual stories. Created with this view, Perceivable Interface is a multi-sensory experience, tying together imagination, art and technology. It aims to create a new mode of experience modeled on the visual experience of looking in a mirror. It is a dialogue between sensing bodies and technology, as well as a part of a larger context about psychoanalysis and human nature. By providing a simple set up for exploring how the digital can affect our body experience and alter our self-perception, Perceivable Interface creates a new thread for discussion about human ego.

The technical aspect of Perceivable Interface consists of two parts: the physical and the digital. The former includes three dancers. The latter consists of software, customized to visualize the dance performance in real time. Three dancers perform in front of a full-body 3D motion capture sensor. The software processes the gestural data gathered by the sensor and

creates visual representations, which simultaneously get reflected on a screen behind the dancers with a large-scale projector. The software uses a simple algorithm to deconstruct detected images, in this case the dancers' bodies, into glitchy silhouettes. Live interaction with the program during the performance creates in synchronization with the sound depth and fragmentations visual effects. While body motion and gesture sensing software allow for a combined experience of the physical world with an augmented, digital world, the projection brings dynamic graphics off of the desktop and into our body-space. In doing so, digital information gets organized into a sensually available presence. Although this new virtual presence is a projection of dancers' bodies in space, it simultaneously functions to remind and forget dancers of their bodies. The performance changes and builds, as dancers' presence in front of the screen interferes with the projected image on the screen,

In order to understand the main idea behind the project, one needs a basic primer about an important theory in psychoanalysis: The Mirror Stage, a concept developed by the French philosopher and psychoanalyst Jacques Lacan. He takes up the term to refer to the belief that infants recognize themselves in a mirror or other symbolic device, which induces a moment of apperception, the state of mind in being conscious of its own consciousness. In this ah-ha experience that characterizes the mirror stage, the infant, for the first time, grasps the connection between the image and its own existence. The infant identifies the reflection as being of him and in doing so, it critically analyzes its self-image. Apart from being an important stage for the development of infant's identity and construction of a self-image, mirror-stage is a phase concomitant with a sense of disappointment. It marks a divide between the mirror image, the reflected-I, and the self. The reflected-I is a feeble and a non-totalized lack in comparison to

ideal image of subject's self.[1] Thus in establishing the connection between the inner world and the outer world, the mirror stage introduces the infant to the world of desires and needs and sets off its striving towards the superego's ego-ideal -also notoriously know as the perfect self. The idea behind Perceivable Interface comes from tech-minded speculations on the mirror stage theory: How would this theory apply to the age of technology and the digitally augmented? Can the mirror-image be improved digitally to satisfy ego ideals? Can digital image replace the mirror image? What would be the reaction of the self, if it were to face with its ego ideals, realized, in the form of a projected image? Even though this project is set up like an experiment with many hypotheses, all the observations and judgments are based on subjective interpretation. Perceivable Interface is not a psychological study on the behavioral effects of technology. It is a creative thinking exercise and a reflection on the interaction between human nature and technology. Perceivable Interface exemplifies how interactivity can be used as a new medium for generating ideas. By reenacting a unique scenario, it brings mirror stage dialogue to the age of interactivity and creates a simple yet new mode of experience, an anachronism in a technological age.

Perceivable Interface was originally performed for the first time as part of Tufts Festival of Arts. Participating dancers had no previous experience interacting with a 3D sensor for gesture tracking. This was the base condition for selecting dancers for the project, for it explored the moment of first interaction between the projected image and the sensing bodies. During a period of two weeks, dancers trained under the direction of a choreographer, learning how to interact with the equipment and improvising with different music types and tempos. The dancers'

[1] Even though the infant might get the best possible view of the mirror by standing upright, getting support from the reflective surface, the reflected-I still fails to fulfill the ego ideal.

first reaction to the sensor was an observable sense of impression. Prior to first interaction, the dancers were not informed about the details of the project or the performance. Being talented representatives of their artistry, dancers volunteered for the opportunity to practice their skills in an alternative way: in the digital environment. The custom software, written for the project to transform gestural data to animation, wasn't used in the first rehearsals. Instead, dancers interacted with the software using generic software that displayed tracked presence as a linear stick figure. No projectors were involved during these rehearsals as well. In doing so, the computer screen became the sole medium through which dancers were introduced to their digital, tracked selves. The dancers seemed intrigued to see an exclusive visual action of their representation on the screen. Just within a few minutes of rehearsing, they quickly established an awareness of the digital self, as an entity that resided within the confines of the screen, in contrast to the physical space of their own. They adapted to the sensor-regulated environment, becoming a natural extension of it. The prosthetic nature of the practice space didn't disturb the natural gestures, with which dancers expressed emotion. Dancers' enthusiasm demonstrated, once more, the interactive arts' potential for drawing engagement. The expressive range enabled by the new technologies pushed the dancers to develop unique styles or creative "voices". In their attempts to adjust to the detection range of the sensor, dancers put a conscious effort in recognizing the spatial limits of the practice space. The raised awareness of the virtual space, reflected as a raised awareness of the physical space, set an example of how digital can expand the frontiers of our ability to visually analyze our world. When the dancers started practicing with the custom software, their interaction noticeably changed. Custom software detected gestural data and organized this digital information into a visual representation, more sensually pleasing than the stick figures. Depicted in contrast to a black background, bodies were

transformed into clouds of swarming pixels, radiating with the changing parameters of depth and camera angle. When dancers interacted with the sensor and saw the enchanting silhouette respond to their movements, their reaction altered from the initial state of curiosity to that of their bodies.The projected image gazed back on the dancers, making them self-conscious of their bodies. The dancers' experience of the projected image, in which their awareness of a digital answering gaze, in a way animated their improvisation and the projected-image, created an experience that can be set against the experience of gazing at oneself in a mirror: the dancers looked in the projected image too see a satisfying representation of themselves.

The second stage of Perceivable Interface was a 4-minute live performance, a multi-sensory project achieved with the integration of large-scale projection, stereo sound, and lighting. Large-scale projection played a crucial role in conveying the ideas behind the project. It acted as the allegorical mirror in this platonic dialogue with Lacan. The dancers' ability to see themselves, projected against the 13-foot wall, enabled them to experience their bodily relationship real-time with its digitalization. The projection became what can be labeled as the expansion of the "exosomatic organs" [2] for dancers, meaning above all extending the range of the vision and imagination, compensating for the imperfections of the real-self, or finding substitutes for its limited totality. Dancers performed with the recognition of this augmented image. This recognition gave their improvisations an energy and a dynamic edge that lacked during rehearsals. Being minimally exhibitionist beings like any other human, the dancers channeled energy from the projected-image. For dancers, the projected-image created in the

[2] "The notion of 'exosomatic organ' has been used by Kapp, Lotka and Gehlen. Its locus classicus is Marx (Capital)." See. MacLaury, Robert E. *Anthropology of Color Interdisciplinary Multilevel Modeling.* Amsterdam: J. Benjamins Pub., 2007.

virtual space became an outlet for the image of the ego. Technology not only guided the dancers into a new form of realization, but also altered the visual truth. Through the pixel-modifying algorithms, the sensor-detected visual reality was reinterpreted in real time into the subjective interpretation of the coding artist. Dancers didn't seem to be perturbed by this manipulation. In allowing them to be affected and entertained by the performance, they performed with great ardor. Even though images were tied to the screen and the audience stared at the flat rectangular surface, with this new relationship between body and image, the surface opened up in the space of dancers' bodies like a window, and dancers fell into the illusion of the projected-self. Like we often mistake mirror's specular-I for the self, overlooking the fact that specular-I is just an image of the self, not the self itself, dancers –mistakenly- took the projected-image as the self. They took pride in the beauty of how organic and fluid the silhouette appeared in projection, ignoring -for a brief moment- the digitally augmented nature of the projected-image. The projection brought, in a symbolic way, their ego-ideal to the physical world. Interactivity as a medium facilitated a playful dialogue with the ideas from the mirror-stage theory. The expressive power of interactive arts was something Lacan couldn't experienced, yet this reinterpretation unified this unlikely duo in implementation and the projected-image became a third variable to the duality between the self and the mirror-image.

Aside from engaging the dancers in a new mode of experience, Perceivable Interface created an alternate experience for its spectator. During the live performance, the audience didn't give its undivided attention to the dancers performing in the physical space. Instead the audience switched its attention back and forth between the physical presence of the dancers and their digital representation on the screen. The projected-image took the audience under its domination

and a paradox, associated with the living image of the living[3], manifested itself. The living image, in a manner of speaking, stole the show away from life, and audience' attention shifted to the screen. This shift marked a transition to a new mode of experience, from what the devised interaction aimed to stimulate in the first place. The mixture of sound, image, bodies, space synched in such way that the narrative about the mirror-stage slipped and an affect dominated, allowing the performance to hit multiple senses at once. As if finding the perfect harmonic resonance, this experience created a sense of temporal materialization of the digital information, the sensor data. Beyond the experience that was accessible to the dancer, this temporal materialization has created a temporal feeling on the audience: a "wow factor". This wow-factor became the unexpected experience of the interactive performance and gave Perceivable Interface an aura in its most Benjaminian sense[4]. Even though the wow-factor was specific to the day of 16 April 2015 and the hour at 12:34 pm, the exact date and time of the original live performance, the reproducibility of this interactive performance promised a possibility to recreate this aura, in each consecutive performance.

Perceivable Interface was neither meant to challenge Lacan's theory of the mirror-stage nor it was a pseudo-experiment without any shortcomings. The observations on the interactions were interpreted 'very' subjectively in order to create a narrative that would support mirror-stage's importance in defining subject's relation with the body. It demonstrated, nevertheless, a case about the possibilities of the current state of technology. The project became a personal testing-the-waters attempt, in exploring some functions and limits of interactivity as a mega-

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[3] Referencing Jacques Derida,
Dyson, Frances. *Sounding New Media Immersion and Embodiment in the Arts and Culture.*CA: University of California Press, 2009.

[4] Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction*. London: Penguin, 2008.

medium of our Zeitgeist.[5] It showed how interactivity can open up the realm of fantasy and an unbounded freedom of communication; allowing many permutations of different media and stories to convey unique ideas. I experienced the possibilities of combining art with technology in providing an open space for questioning the weird, whimsical, or the inscrutable. Perceivable Interface utilized such a workspace to think further about the relation between a theory and technology and showed that the possibilities of augmenting such experiences hold no limits beyond an artist's creative limits. It is okay to think subversive as long as you can invite others to interact with your ideas. I wonder what would actually happen if an infant were to only see its digital avatar, instead of its mirror-image, during the development from 6 to 18 months? It is important to hold on to such imaginative scenarios, for we begin to migrate the human experience into a digital world. The key to keeping storytelling medium alive and human experience at the center of our focus, lies in researching tomorrow's technologies for communicating today's primary messages.

[5] Referencing Marshall McLuhan's theory about media as container; each new medium includes within the previous forms, like a container
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