SUMMARY

Dissertation title:
REALITY MOCK–UPS

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The dissertation entitled "Reality Mock-ups" is an art installation consisting of objects in physical space and virtual reality (VR and AR), using Mixed Reality (MR) technology[1]. The purpose of the installation is to merge layers of reality, from the physical to the digital world. The shells of the presented objects intermingle, operate on the deficyt or lack of reality and send contradictory signals to the senses. The installation is a tool for testing digital reality. Building it I wanted to find an answer to the question how much can we believe our senses, standing on the verge of the Metaverse[2]. Creating the installation, I also wanted to test how technology and progress in digitalization affect our perception of reality and to what extent W. Welsh's diagnosis, that were made over 20 years ago, holds:

„We are destroyed by what makes us happy. Technologisation has changed our reality so much that our relatively lazy, naturally conservative senses are not only unreliable but even counter-productive, they have become agents of falsehood."[3]

The installation's overview can be described as follows: opposite of a cardboard mock-up of a Ferrari Testarossa lies a flat, printed on canvas photograph of human skin. Both objects are wast, at a scale of 1:1. When the VR headset is put on it activate the Mixed Reality overlay and one can see a human shape (a digital 3D scan), that appears over the skin. In place of the cardboard mockup of the Ferrari stands a perfect, digital 3D model of it. The used media presents the shells of the objects with inherent precision. The objects associated with the body are unsettling by their stillness and verisimilitude. The whole installation emphasize the kind of information or illusion that the chosen medium offers to our senses. There is no immersion – on the contrary, it is about a peculiar lack of completeness, coherence and disjointedness of the portrayed objects/images. The viewer is confronted with an image of a Ferrari Testarossa and a man spread out into digital layers. The strangeness of the elements, taking them out of context, various types of deficits and deformations are intended to stimulate the viewer's cognitive and imaginative perception. Spectator can test main digital ingredients using which major technology companies are creating today's digital Metaverse. Their use and juxtaposition in Mixed Reality are the most important contexts of the installation.

Equally important as the final work was the process of its realization - especially the difficulties accompanying it, the unforeseen effects and the necessity to improvise. It is how I verified assumptions, revealed contexts, and triggered reactions of random viewers. An integral part of the installation is photographic and video documentation. It shows the artistic process of shaping, obtaining and then combining forms, which is also a test of contemporary technological possibilities and an examination of human perception of presented mock-ups. In my artistic assumptions, I do not directly connect the meanings of the body and Ferrari Testarossa. Rather, I am concerned with their comparison, the juxtaposition of a living (?) and an inanimate object. It is about their contrast, the difference in the way they are manifested in MR. The installation does not ask the question which version of the car or human image is more realistic (more

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[1] AR is a technology that superimposes virtual elements on top of a real image, while VR is created as new digital world, separate from our own. AR and VR allow us to interact with their environments in real time. Mixed Reality (MR) is a combination of VR and AR. MR does not cut the user off from the environment, allowing him to simultaneously view and interact with digital objects in three dimensions.

[2] A term coined by Neal Stephenson in his science fiction novel "Snow Crash", published in 1992. In Stephenson's book Metaversum is a virtual world that exists parallel to the real world.

[3] Wolfgang Welsh, "Aesthetics and anesthetics"

faithful to the original), but rather focuses on the differences from the original or what type of information the given object contains.

The Ferrari was created by cutting and molding cardboard on a previously prepared frame, taking measurements from technical drawings, photos of the original, a 1:20 scale toy car and an image of the Testarossa from my imagination. The skin and 3D scan were taken directly from the surface of my body using digital techniques that allow fast, permanent and hyper-realistic recording of its surface. As a result, each element of the installation is a deformed mock-up of the original. The binder of the installation is the MR (Mixed Reality) space superimposed through a VR headset. The goggles allow simultaneous viewing of the objects and the exhibition area through real-time video streaming from the environment.

Assumptions of the object set:

01. Photogrammetry of human skin operating with the maximum realism offered by the 2D digital world, devoid of 3D body shape information.

02. 3D scan operating solely on body geometry without texture (a factor that gives digital 3D models the illusion of realism).

03. A 3D digital model of the Ferrari Testarossa accurately reproducing the materials, proportions and dimensions of the original car in the Mixed Reality medium.

04. Ferrari mock-up built from cardboard and sticks. A physical form clumsily rendering the shape of the original, annexing the space that the real car would have occupied.

By wearing the VR headset, we physically cut off eye's ability to see reality other than that displayed on the lens inside the goggles. The image of the environment is captured by the small cameras on the front of the headset in real time and displayed with an almost imperceptible delay. Ultimately, we see black-and-white video of the environment, in reduced quality and deformed on the sides. In addition, the algorithm detects the contours of objects and highlights them in red. This makes it possible to avoid collisions with objects, move freely in space, distinguish between people and elements of the environment, but not much more. The simplified video takes away most of the detail from the richness of the environment we know (observed before putting on the headsets, with our own sense of sight). Spatial objects (a 3D scan of a man with a fig leaf and a perfect Ferrari model) are present in the streaming video and stand out clearly.

Traditionally, touch was our sense by which we made sure that „something comes from our reality" and „it is real." Mixed Reality makes the question of the „realness" of a given object that we perceive ambiguous and fuzzy. When touching a scan of a human being, no resistance is encountered - in physical space, the space occupied by it is filled only with air. In contrast, when trying to touch a Ferrari model, the viewer's hands will encounter resistance: the texture of painted cardboard, a cheap material that contrasts with the smooth, shiny sheet metal of the simulation. In addition, differences in the representation of the solids mean that sometimes the resistance of the cardboard will appear a little earlier than the corresponding curvature of the digital body, other times a little later. These differences increase the dissonance between expectations and the actual tactile-visual impulse. Despite the overall similarity in shape, identical scale, occupation of the same points in space and physical intermingling of objects in both realities, the Testarossa models remain two separate objects that are difficult to cognitively merge into one. Paradoxically, it is the skin and the geometric 3D scan

that are easier to combine into a complementary, though still disjointed image of the man. The installation as a whole allows us to commune with several levels of reality and imaginativeness at once, in the same moment.

The transfer of the physical world into the digital, the simultaneous interpenetration of realities, the exploration of the relationship of shapes and meaning of each element separately and then putting them together is the sense of the installation's intermedia experience. When the VR headset is donned, the installation as a whole manifests itself as a subjective streaming video of the surrounding reality with 3D models superimposed on it, projected on lenses right before the viewer's eyes. This is another aspect of the installation's environment: by putting on the VR headset, we subjectively connect the physical world with the digital world, but we are left alone in experiencing it. The installation assumes only one viewer with an electronic overlay over his eyes, acting on his senses and evoking a subjective interpretation. People left in the physical world are visible through VR's cameras, but they do not know what the viewer in the goggles is experiencing. Observed by the other visitors of the exhibition, the person in the VR headset exploring the installation seems to moves unnaturally - as if trying to find something in a new environment or wandering in the dark. Watching the person in the headset moving and touching the installation's invisible objects is a kind of intro and an integral element of the installation.