



## Leaks: Reflections of Digital World in Material Objects

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For the *Leaks* project, I developed a design method based on two key assumptions. The first provides that each material object created in a given period reflects current interests of culture. The second identifies contemporary culture as a phenomenon rich in digitally generated content and makes that content a medium for further work. The project assumes a reversal of the flow of aesthetic features of objects. In this case, it occurs from the digital to the material environment, and is not an attempt of materiality to create and expand its digital layer but rather of digitality to recognize the stylistic features of the world of algorithms and implement them into resisting materiality. A collection of post-jewellery objects engages tools derived from the areas of algorithmic-aided design or additive technologies and collides them with traditional materials and methods used in classic jewellery. The area of these attempts is our face – it identifies us in both the digital and material world. Are we willing to accept the leaks of digitality in our everyday materiality and to what extent are our digital versions separate from the bodily ones?

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### Goals and context

The aim of the project is to show how the aesthetics of digital artefacts can affect the aesthetics of traditional, material objects associated with the classic jewellery field.

Development of technological possibilities, such as neural networks, becomes the driving force behind a development of numerous cultural phenomena. It is safe to say that our daily, and often materiality, is woven of bits of information.

On a daily basis we deal with the effects of a lack of privacy. Artificial intelligence algorithms specialised in recognizing face/figure/way of moving are following us and collecting data even during our completely ordinary activities, such as shopping or preparing meals. It is impossible to imagine today's world of entertainment without the support of CGI (computer-generated imagery). We break away from the laws of physics, create, sometimes disturbing, human-in-human hybrids. Thanks to the immersive AR and VR experiences we can participate in games more fully. Dynamically developing market of computer games and special effects armed with better and better tools (Unreal Engine, Zbrush, Blender, After Effects to name just a few) already takes us where our bodies cannot go yet.

*Digital twin* (Zerza 2021, 8) is a term used to describe a virtual replica of a physical object or phenomenon. Electronic mail, maps or banking in the digital version are based on their analog predecessors, but it is not surprising anymore that we are buying digital properties (Metaverse, Decentraland) or works of art in the form of NFT tokens.

Our digital avatars function in a culture that allows self-promotion on an unprecedented scale. Note digital influencers such as Miquela Sousa or Shudu or the huge popularity of channels devoted to fashion, beauty, and self-care. It is no surprise that digital tailoring (*haute couture*) and makeup are booming. Leading fashion houses wanting to stay in the avant-garde are involved in the creation of progressive digital collections (i.e. Gucci), and the current situation accelerates the expansion of virtual makeup (Chanel, Dior).

Jewellery field in my opinion is one of those areas where we clearly observe what Lev Manovich calls “the remix between the interfaces of various cultural forms and the new software techniques – in short, the remix between culture and computers” (Manovich 2001). Undoubtedly, jewellery is one of the most physical and material of all the art forms. “On the one hand, jewellery becomes similar to face-filters, a tool for customising one's digital identity, digital representation, and image; and on the other, jewellery is an embodiment of a new type of craft – digital craft” (Hallik, Popolitova 2019). Nonetheless it still refers to its own, millennia-old tradition.

## Aesthetics

A tempting and often explored aesthetic strategy is search for the unreal, an escape into the unknown/disturbing/impossible. Digital aesthetics plays with the laws of physics, lives its own life and animates those with whom it coexists. Undoubtedly, digital manipulations are a derivative of changing technological possibilities and constitute the basis for dating artefacts produced with their use. We can distinguish a clear increase in the popularity of the triangle mesh based on the structure of STL files, visible, for example, in graphics, ceramics, furniture in the early 2000s. Or, nearly 2 decades later, wavy structures resulting from growth simulation algorithms.

As Mads Nygaard Folkmann claims, “aesthetics is a central way of understanding and investigating the communication and appeal of objects” (2020, 6). The *Leaks* project approaches the aesthetics of digitally present objects in a traditional art-historical way, by examining the formal-stylistic expressions of a range of digital content, yet it does not omit artefact’s capacity to affect experience. Jewellery has been a social narrative tool for ages (Siemelink 2010, 230-238) involved in emotional-to-economical human relations. Material objects evolve in a manner similar to the evolution of languages of signs. An item is recognizable when it refers to its predecessor. Therefore, a reference to the traditional jewellery forms may be a way to avoid the shock caused by radical proposals and speculate on evolution rather than revolution of material objects. Colliding well known concepts with features typical for algorithmic-aided design leads to hybrids based on geometries resembling anemones, inflatable balloons, sausages (growth algorithm, inflate functions etc.). We observe numerous examples of mirror symmetries, fractal structures, or reflexive surfaces, which, based on mathematical perfection, give more precise effects than those to which our eyes were used to in the era *before* computer-aided design and neural networks.

## Digital image/material object

The *Leaks* project assumes a reversal of the flow of aesthetic features of objects. In this case, it occurs from the digital to the material environment, and is not an attempt of materiality to create and expand its digital layer. I am not looking for the possibility of generating new computational representations of well-known objects, but rather trying to recognize the stylistic features of the world of algorithms and implement them into resisting materiality.

I now mention the concept of *compound interactor* by Michael Brian Schiffer (1999, 13). It concerns the issue of personal image, and it refers to all objects that communicate with us as one subject. The author lists here, for example, hairstyle, makeup, tattoos, clothes, or jewellery. Virtually all of these objects are represented in the digital world. If we look at the possibilities that

we have in creating digital avatars, one will quickly notice that simplifications and graphical pictograms are followed by an army of hyper-realistic CGI products made with procedural visual effects software, and whose further development seems inevitable. Here a question arises: to what extent are our digital versions separate from the bodily ones? Perhaps the need for internal consistency allows *leaks* from the digital world to get to the material world? Perhaps we willingly accept in our everyday materiality scratches of what is most tempting in the non-material world?

Classic jewellery is one of those areas that tend to be highly conservative. In the name of tradition, forms known for centuries are still used here, made of materials generally considered to be noble, and using tools that do not change much over the years. Of course, 3D printing has already made its way into this industry, but in order to be considered a manifestation of craftsmanship 2.0, it must be firmly embedded in the context of traditional metallurgy. Contemporary jewellery is, on the other hand, a phenomenon that uses additive technologies more freely, but it somehow programmatically rejects traditional jewellery materials. The *Leaks* project refers to a long jewellery tradition, but looks for inspiration in progressive methods of expressing oneself with the help of algorithms.

### Technology and materials

The project consists of two parts. The first is a collection of *post-jewellery* objects that may seem slightly abstract while isolated from the body. The second part is a series of photos illustrating that while worn these objects refer to the archetypes of jewellery: masks, earrings, head adornments.

All material objects are based on three-dimensional models interpreting the aesthetics of procedural visual effects but enriched with elements known from the classically understood jewellery. We are dealing here with 3D printing in Polyjet technology, that allows avoiding support structures of cured resin and therefore all the surface of printed part is evenly covered with digitally generated ornamentation of slices. Semi-translucent material catches light equally well as amber and other gemstones do. At the same time, its “invisibility” plays with the geometry of the wearer’s face and creates prosthetic-like effects. Adding UV light (385-395 nm) causes intense radiance of unprocessed amber and delicate glow of crystals such as aquamarine, but also refers to the visual preferences and effects known from the digital world.

The flexibility of the material (obtained by submerging the print part in hot water) was used in the process of stone setting. Created geometries are inspired by traditional stone setting methods – prongs and semi-bezel used to set gemstones in metal – but they have been adjusted to the durability, elasticity and density of the 3D printed parts.

Use of precious stones, such as pearls, directly refers to the preferences of many digital artists for use of lustrous, light-reflecting and glistening surfaces. Upgraded form of a traditional pearl necklace that covers the face is, on one hand, a reinterpretation of one of the most classic pieces of jewellery art, and on the other hand, a playful approach to the observed digital convention. Faceted symmetry of gemstones as aquamarine or amethyst is emphasised by using mirror symmetry of soft lines gently surrounding the wearer's face. Some of the stones, on the other hand, were hand polished to emphasise their irregular nature, that does not refer to perfect digital symmetry, but rather to an uncontrolled algorithm in *tentacle growth* style.

### Summary

The *Leaks* project invites viewers to imagine how materiality can take over the features of the digital world. It engages tools derived from the areas of algorithmic-aided design (workflow consists of Rhino Gold, Grasshopper, ZBrush, Blender) or additive technologies and collides them with traditional materials and methods used in classic jewellery (Petry 2012, 6). The area of these attempts is our face – it identifies us in both the digital and material world. In the objects themselves we can look for the echoes of traditional forms of earrings, necklaces or masks. In addition, the nature of the photos accompanying the collection emphasises that digital aesthetics can penetrate our everyday lives nearly imperceptibly.

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