2. The Paradoxes of Ultra-realism. The Uncanny Valley Hypothesis Reconsidered

by Massimo Locatelli

The degree of realism of computer-generated imagery has today reached levels that can often be compared or confused with the photographic image. We are talking about ultra-, hyper- or super-realism, or, drawing inspiration from the artistic field, of photorealism[1]. This technical and creative development has acquired significant economic weight, in terms of production value and as a marketing tool, and has become a central theme in contemporary media reflection.

The figure of the robot, both by its symbolic dimensions of merging human and non-human, and its actual spread and use in real-life contexts, such as medicine or caregiving, seems to be a decisive and problematic node at this stage. In particular, robotic engineering has developed a broad debate, soon reported also in the field of studies on animation, about the paradoxes of ultra-realism, summarised in the widely quoted formula of the *uncanny valley*: the eerie feeling of perceiving a face on the borderline between the human and the non-human, and which makes the appearance of the machine monstrous.

My contribution aims to reconstruct and contextualise this debate as a filmological worktool. The anthropomorphic robot in film and the media will prove to be a positive factor in the integration between photographic and graphic imagery in today's media culture, and in a negative sense the Trojan

[1] The literature on photorealism in visual art of the twentieth century is very extensive. Here I will only offer an overview, an updated bibliography and a critical reflection (Peariso, 2013).

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horse in the contemporary drive towards automation and the ultra-technologisation of subjective experience.

1. History of an idea

The first version of the theme appeared in a sociotechnical field, or in the sociology of science. A paradigm which was greatly discussed in the 1990s was that of the monstrosity of the cyborg, applicable in reality to different forms of relationship between people and technology. One side of the debate has always been wary of the integration of ever new technological instruments into contemporary society. Think of the crisis of rejection of film culture with respect to the electronic image well before the advent of digital[2], and in general of the reflections on the falsity of hyperrealism by Umberto Eco (1986) or Jean Baudrillard (1996). The monstrosity of the machine has a metaphorical value here, and includes both reflections on problems inherent in the technology of experience, such as those of control over individuals and the limits to their free expression, as well as peaks of veritable technophobia. It is again here that we find rooted the idea of a cruel and menacing inhumanity of the anthropomorphic robot, embodied in the popular culture of those years in the *Terminator* series[3] (Cameron; Mostow; McG; Taylor; Miller, 1984-2019) and related in critical literature to the Romantic and Freudian concept of the *Unheimlich*[4], finally translated into the catchier term eerie.

On the other hand, attempts have been made to deal with contemporaneity: in the socio-technological debate, the ideas of Bruno Latour (1993) have enabled us to reassess the agency of technological subjects, or rather, with reference to the subject that concerns us in these pages, of hybrids, while in the philosophical field, in a very influential contribution, Donna Haraway (1991) assigned to the cyborg, the individual integrated with mechanical

[2] «In sum, the cinematic exists as an objective and visible performance of the perceptive and expressive structure of subjective lived-body experience. Not so the electronic, whose materiality and various forms engage its spectators and "users" in a phenomenological structure of sensual and psychological experience that, in comparison with the cinematic, seems so diffused as to belong to no-body» (Sobchack, 2004, p. 152).

[3] The series includes *The Terminator* (1984), *Terminator 2: Judgment Day* (1991), *Terminator 3: Rise of the Machines* (2003), *Terminator Salvation* (2009), a reboot of the first episode in 2015, a sequel to episode 2 in 2019, a TV series based on the second episode in 2008, and several video games since 1991.

[4] As is well known, Ernst Jentsch (1906) describes in psychological terms the impression created by wax figures, automata and ingeniously constructed puppets.

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organs, characters that are actually resistant and revolutionary[5]. Such models have subsequently made it possible to reconceive the human-machine relationship within the logic of exchange and reconfiguration of the social network, in which the anthropomorphic robot, or android, can represent a central node.

At that stage, in any case, the question of the boundary between human and non-human in anthropomorphic robotic traits was still limited to a niche of professionals interested in a problem of planning and design in robotics. As is known, the notion of *uncanny valley* was put forward in this context by Masahiro Mori in 1970[6]. Using a graph, Mori represented the correlation between the feeling of affinity of an observer with various types of objects with anthropomorphic characters (puppets, robots, dolls) and thus detected a turning point, visually represented as a valley. At the point where these objects of the gaze, whether they be prosthetic limbs, androids or moving wax statues, come very close, we might say too close, to the impression of reality, the feeling of affinity quickly turns to aversion and repulsion; a sense of disquiet that disappears again when the object of observation is a real person. In short, Mori found that the more closely the artificial body resembles a human one, and vice versa, the deeper the repulsion. The Japanese scholar hypothesised that this aversion could be due, in an evolutionary logic, to the self-protective instinct that activates the feeling of disgust: the prosthetic limb or the almost-conscious face of the android recall disease, physical decay and death, seeing them as animate is an experience that recalls the feeling of seeing a corpse moving; and that of the corpse is precisely the most radical but closest example with which Mori compares the eeriness of the uncanny valley.

Mori's hypothesis was taken up in robotics studies when the creation of androids that could interact with humans became a reality and the problem of the effectiveness of this interaction arose. During the first decade of the 2000s, the hypothesis of the uncanny valley was tested and updated, among others, by McDorman and Ishiguro, who referred it to models of general

[5] «The cyborg is resolutely committed to partiality, irony, intimacy, and perversity. It is oppositional, utopian, and completely without innocence. No longer structured by the polarity of public and private, the cyborg defines a technological polis based partly on a revolution of social relations in the *oikos*, the household. Nature and culture are reworked; the one can no longer be the resource for appropriation or incorporation by the other» (Haraway, 1991, p. 51). For an in-depth analysis of the specific theme of cyborgs, see Virgil Darelli's essay in this volume.

[6] «I have noticed that, in climbing toward the goal of making robots appear like a human, our affinity for them increases until we come to a valley, which I call the uncanny valley» (Mori, 2012, p. 98).

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acceptance of the other: contrary to the clearly mechanical, or humanoid robot, which is not, so to speak, "recognised" as similar, the more similar the anthropomorphic robot is to a person, the more active the recognition mechanisms are, and in general what they define as the «subjective impression of familiarity or human presence» (MacDorman and Ishiguro, 2006, p. 309). An impression that has positive aspects, firstly in terms of the acceptability of the robot as a partner of interaction (pp. 313-314), and secondly for the study itself of the emotional field and interactions in psychology and social sciences. The imperfection of similarity, however, disturbs this impression, with an effect of eeriness that is all the greater, the greater the possible familiarity, due on the one hand, as in Mori, to fears that arise from an unconscious comparison of imperfection to death (p. 313), but on the other hand also from the violation of expectations relating to human behaviour in interaction (p. 309). As we will see below, subsequent studies have confirmed on a neuroscientific basis the importance of the violation of expectations in the experience of the uncanny valley, revealing an anomaly in a defined cognitive circuit of predictive coding, that is, of anticipation of known situations, in particular related to our familiarity with the other (Saygin *et al*., 2012).

All studies of the perception of anthropomorphic figures are actually based on images shown in the laboratory, in a short circuit that superimposes the design of a real robot onto the representation of a robot in media imagery. The theme of the uncanny valley has thus moved into the field of films and media studies.

The Freudian uncanny has always been a central subject in film studies, with the focus often on themes and genres specifically characterised emotionally, such as horror and the thriller. A highly representative and useful contribution to our reflection was that of the "philosophy of horror" by Noël Carroll (1990). The basic paradigm is that of a cognitivist theory of genres, which identifies in a basic emotion the use value of a certain class of cultural products (the genre, in fact), in his case first literary horror and then cinematic. The root of the problem is cognitive: horror differs from terror and from all forms of anxiety and fear, because it arises from the representation of "monsters", or creatures that violate the laws of nature and our capacity for recognition[7]. The characterisation of such figures gives us indications of the expected emotional responses, indications that enable us to describe this emotion in terms of repulsion, nausea, disgust, all the way to

[7] «An occurrent emotional state is one in which some physically abnormal state of felt agitation has been caused by the subject's cognitive construal and evaluation of his/her situation» (Carroll, 1990, p. 27).

the loss of meaning or, in fact, "indescribability" (p. 20). Within this framework, that is, of a culturally constructed emotionality, which Carroll calls art horror, it is possible to identify a twofold paradox: first, the paradox of fiction itself, which moves us but on the basis of fantasies, and which is resolved by assigning an emotional power to our imaginative capacity (for thought, in Carroll's model, pp. 87-88). And above all the paradox of horror: why do we seek such disturbing emotions? For Carroll, the fascination of everything that escapes our knowledge is a sufficient reason to motivate us (p. 195).

The emergence of the problem of the uncanny valley has brought the theme of eerie emotions and those related to the disgust of horror to the centre of attention. In a recent contribution in Italian, Bruno Surace (2021, p. 361) refers to a theme that Carroll (1990, p. 20), citing the work of Lovecraft, also brings into play: *eisoptrophobia*, meaning fear of the mirror, or of what we see in the mirror is like us, yet different from us, thus restoring the difficulty of recognition to the identity itself of the beholder. Surace also refers to another theme with strong references to cinematography, *pediophobia*, the fear of china dolls, but the game could lead us to include coulrophobia, that fear of the clown that has deeply marked much film imagery from *The Man Who Laughs* (Leni, 1928) to the saga of the Joker in the *Batman* series (1940-)[8]. In particular, Surace restricts the character of the mirror, that is to say being like us yet radically different from us, to the face of the double, the doll, the android. Based on fictitious but photorealistic faces, which are therefore indistinguishable from real faces, built today by GANs (generative adversarial networks), he suggests we should interpret the phenomenon in its cultural construct dimension, a kind of openness to the new and the search for meaning, in which we engage perhaps, as Carroll posited, from a thirst for knowledge[9].

In particular, the release of the first short films and especially of the first commercial feature-length film created in computer graphics, *Toy Story* (Lasseter, 1995), turned the attention of both specialists and critics to the problem of the graphic representation of the quasi-human in animation. Already in 1991, with an approach that was in the first place philosophical, Robyn Ferrell presented the problem of the general ambiguity of the animated image (in her example, photographic animations based on neo-Gothic texts by Angela Carter, p. 132). As already in Ernst Jentsch's seminal

[8] For an exhaustive list of the multiple appearances of the Joker character in graphic and audiovisual imagery, see the dedicated Wikipedia page: https://en.wikipedia.org/wiki/Joker.

[9] «Uncanniness, in terms of a semiotics of passions, cannot be seen as a state of complete disturbance. It should rather be framed in a tense and wait-and-see regime» (Surace, 2021, p. 362).

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reflection, the doll, the statue, the animal give rise to the impression of the *Unheimlichkeit* when they suddenly give a sign of humanity in a gesture or a look. The point of fracture is therefore identified in the juxtaposition of a mechanical animation (giving movement to the drawn image) and an "animistic" animation (giving a soul to the drawn image)[10], a twofold operation that works until the one enters into conflict with the other. Vivian Sobchack (2009) recognises in animation a sign of the contradiction of the technological being, or of automation[11], and Lisa Bode (2019) emphasises how important it is for the viewer to recognise or be able to project an agency into the animated drawing or the anthropomorphic robot, which removes the mechanicity of the quasi-human from its spectral unnaturalness. The field of animation thus opened up broader reflections on the visual cultures of the contemporary, such as those by Keith Moxey (2008): «The ways in which objects call to us, their animation, their apparent autonomy, stem only from their association with us. To insist on their 'secondary' agency is not only a means of recognizing their independence but also their dependence on human culture. They may haunt us but their autonomy is relative. They cannot exist without the power with which we invest them» (p. 142).

Bringing the case study of the uncanny valley back to film cultures has meant in more recent years also evaluating it as a borderline case in the attribution of the character of photorealism of a film image. As is well known, at least from the remake of *The Lion King* (Favreau, 2019), CGI becomes almost indistinguishable from the photographic image also on the film screen, and this high degree of realism has become an integral part of the marketing of many video games. For this reason, in the context of Anglo-Saxon film aesthetics, photorealism has recently been interpreted as a specific case of a general imaginative process, which George M. Wilson (2016) defines as *Imagined Seeing*: an attribution of perceptual properties and the status of reality to fictional elements of the film, for example the unity of space of a sequence with many frames shot in the reality of the profilmic in different locations, or the colours of the cinema in black and white, and on a more specific level the illusion of the unity of space created with masks or backscreens (p. 67). The model is basically that of the "myth

[10] The purpose of such an operation is, moreover, «to problematize any simple distinction between life and movement, animism and mechanism, human and nonhuman, animation and cinema, film and world» (Cholodenko, 2007, pp. 487 and 501).

[11] Sobchack had already proposed an important reflection on the uncanny character of the instability inherent in the then new technologies of morphing and CGI in a collection of essays she curated: «Morphing's dramatic emphasis on process thus foregrounds not only metaphysical but also political contradictions» (Sobchack, 2000, p. xii).

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of total cinema" taken up by André Bazin[12], and in this respect we might think that the quasi-human dimension of the android, as well as still today the human face created in CGI, represents a violation of this imaginative process. Seyama and Nagayama (2007) offer a possible evolutionary explanation, pointing out that photorealism is the perceptual norm of reality, to which we have been phylogenetically accustomed. While it is true that the transparency of the photographic image needs to be strengthened by an imaginative act, the emergence of the artificial in the uncanny valley betrays and disappoints our very efforts to adhere to reality.

2. Phenomenology

Over the last fifteen years, laboratory studies of the uncanny valley hypothesis have multiplied. In general, the existence of this perceptual phenomenon has not actually been confirmed and verified in its entirety, nor falsified in absolute terms, despite a constant search for objective criteria against which to test it. The field of the psychology of perception itself has finally had to recognise the need for a broader and more complex interpretation, which will have to take into account the conditions of reception and the experiential context of the encounter with the quasi-human[13].

A 2015 study on a comparative basis enabled Jari Kätsyri, Klaus Förger, Meeri Mäkäräinen and Tapio Takala to effectively outline the three main existing types of approach and interpretative proposals: Mori's original approach, which can be attributed to the problem of affinity between human and non-human and therefore of the affective state that is generated in relation to the limits of humanity; the cognitive model that motivates the phenomena of uncanny valley in terms of a predictive coding error; and the perceptual model, which is based on the recognition of a perceptual mismatch in liminal cases, such as the anthropomorphic robot[14]. From each

[12] «Film as a total and complete representation of reality» (Bazin, 1967, p. 20). For a critical discussion of the influence of the translation of Bazin's essays in the US debate I refer to Carroll (1995).

[13] «A comparative interpretation of findings to date and inconsistencies between these suggests that an uncanny effect is not generalizable across different individuals, stimuli, situations, tasks, and time. As this topic indicates, research is shifting toward the development of a differentiated understanding of specifically when, under what conditions and why effects consistent with the uncanny idea occur» (Cheetam, 2017, p. 5).

[14] Note that the basis of the meta-data is related to research that used fixed visual stimuli consisting of a succession of faces or real hands transformed in succession into CGI robotic entities with morphing procedures. Therefore, research into different stimuli, for example

emerge limits and, for the authors, incongruencies. Mori's model, as mentioned, was initially superseded, above all in studies applied to robotics and experimental psychology. The problem is the model's inapplicability in the general sense: the uncanny valley hypothesis is not always confirmed, as stimuli vary; and the hypothesis that the uncanny valley is a generalisable phenomenon is considered a naive theory in the field of human sciences. Kätsyri and colleagues (2015) point out in particular the difficulty of determining the conceptual categories used by Mori, and recall the problem of translation itself from Japanese of terms such as *bukimi* and *shinwakan*, i.e. the terms used by Mori in the construction of his scale of perceived affinity, generally translated respectively by "eeriness" and "familiarity". The ambiguity of the conceptual framework prevents one from establishing a measurable emotional value in the laboratory, and consequently makes it impossible to compare the different experiments that have dealt with it (p. 21). But quite apart from this methodological problem, Mori's original hypothesis appears to be contradicted where the stimulus, or the context of exposure to the stimulus, do not have negative connotations in themselves, as in the case of Mori's corpse (p. 27).

Studies of the difficulty of perceptual and categorical recognition have thus spread, partly due to their clearer applicability to the strict conditions of laboratory research. The observation of mechanisms of perception and comprehension in the recognition of the human traits of a robot or animation has led many scholars to relate the feeling of eeriness to particularly ambiguous stimuli, and has provided two interpretations that we might think are complementary. First, we find scholars who prefer a cognitive interpretation of the phenomenon, namely Predictive Coding Error Theory (Saygin *et al*., 2012). In this case, the axis of occurrences (the stimulus images constructed in morphing) that ranges from the most human-like to the least human-like is related to the difficulty of categorisation according to the categories of human and non-human. In the passage from the still-human face to the dehumanised face and vice versa, in short, we would have a problem of categorical recognition that would cause the feeling of eeriness. This data finds a verified neural correlation with research based on functional magnetic resonance imaging: «Bilateral mid-fusiform areas and a different right mid-fusiform area were sensitive to physical change within the human and avatar categories, respectively, whereas entirely different regions were sensitive to the human-to-avatar (caudate head, putamen, thalamus, red nucleus) and

video games, or more complex ones, such as multi-modal stimuli, are excluded (Kätsyri *et al*., 2015).

avatar-to-human (hippocampus, amygdala, mid-insula) direction of category change» (Cheetam, Suter and Jäncke, 2011, p. 1). Hence there is a cognitive process underlying recognition within the individual categories, and different processes for switching respectively from one category to another and vice versa. The idea that it is originally a problem of semiosis is a very interesting one. Bruno Surace (2021) makes the point that the error of prediction comes when stimuli are involved, and it is difficult «to define whether they are iconic signs, that is, completely artificial, or indicative, that is, that they still belong to some physical instance of which they are a trace» (p. 364). In this sense, the human-non-human axis identified by psychologists as a frame of reference becomes the threshold between a physical experience of the world and the experience of mediatisation and artificiality itself. The vertigo that seizes us in the face of the humanised inhumanity of the android is the vertigo that oppresses us when faced with the abyss of meaning.

The purely cognitive interpretation, however, has conceptual limitations. Firstly, we do not always discriminate against humanity on a scalar basis, for example, not a comparison with other primates. In this case, two categorically distinct fields no longer appear (Campbell *et al*., 1997). Secondly, we would not be aware in this way of differences in detail, such as lifeless eyes in a realistic face (Cheetam, Suter and Jäncke, 2011). Therefore, the tests on discriminatory abilities have been accompanied by more specific hypotheses regarding the possibility of a deficit linked to details that do not correspond to non-cognitive but perceptual expectations, the so-called Perceptual Mismatch Theory. In this case, it is precisely the "out of place" detail that causes the sensation of eeriness, because it does not fit into a precise perceptual scheme (MacDorman *et al.*, 2009). Studies of this type also work on a multimodal mismatch, for example by linking inhuman voices to human faces, and vice versa (Mitchell *et al.*, 2011), or practices of graphic exaggeration of detail, which are particularly interesting for the field of animation (Mäkäräinen *et al.*, 2014). However, not all timbres of sound or types of graphic exaggeration automatically lead to effects of creepiness and phenomena attributable to the uncanny valley. In this case too, therefore, the problem again arises of how far the basic hypothesis can be generalized. Yet, in recent years, studies focusing on the affective states that can characterise the phenomenon of the uncanny valley have once again become the centre of the debate.

Probably, it is the general reflection on the concept of emotion and affectivity itself that has reached a higher level of complexity within a constructivist framework (Feldman Barrett, 2017). It is thus possible to reassess the research into the uncanny valley.

A very exhaustive study by Tinwell (2015) conjectures that the sensation of eeriness is caused by a blockage of our powers of identification, in the same way as in other situations of "lack of empathy", such as certain pathological states or even botox facial treatments (pp. 143-144). The unrecognizable element interferes with the empathic system, causing a negative affective state. As indicated by a comparative study by de Borst and de Gelder (2015), the link between the uncanny valley phenomenon with the empathic systems and in general with mirror neuron mechanisms has also been identified in the research on movement, already indicated by Mori (2012, p. 99) as a variant capable of increasing the emotional value of the stimulus: positively, if consistent with the attribution of humanness-non-humanness, negatively in the curve of uncertainty and incoherence. Although the comparative indications at present do not enable us to find coherent indicators that can lead to recognizing unique mechanisms, research of an affective-cognitive character into the understanding of emotions in the expression of robots and avatars is a very promising front. McDorman (2019) assessed the impact of the use of anthropomorphic avatars in audiovisual narrative. He was able to recognise an interference of the phenomenon of the uncanny valley in the empathic response of the spectators-participants only in the case of the positive hero with a tragic end (classical Aristotelian tragedy), with a precise link therefore with the narrative genre and its affective components.

The very term of affinity derived from Mori has been subjected to procedures of validation and re-categorisation, for example in the work of Ho and McDorman (2010; 2017). By applying psychometric methods, this seeks to determine possible descriptors of the emotional impact of potentially uncanny stimuli. The aim is to identify reliable indicators for the work of robotic design and graphic animation, precisely in the light of the variability of the field of expressions referring to affective states and emotions. The preparatory work consists in the collection of semantic expressions typical of untrained observers and referring to the emotional value of different images of robots, animated characters and real people. This collection is used to build a series of conceptual pairs that can be referred to three main indices (humanness, attractiveness, and eeriness) based on their positivity or negativity. It is therefore possible to cushion or avoid the sense of eeriness and in general the phenomenon of the uncanny valley by manipulating not only the indices of humanness, that is, increasing the familiarity of the stimuli, but also their attractiveness, or likeability. The work of Ho and McDorman gives a full account of the complexity of emotional experience, built upon the basis of fundamental affective states but together determined by cultural constructs and by each person's individual history.

We also now know that mechanisms for recognising human traits and our ability to distinguish between non-human and quasi-human traits are learned mechanisms. Burleigh and Schonherr (2015) showed how the negative effect associated with the phenomenon of uncanny valley can be related to the degree of exposure of an individual to stimuli. The two scholars point out that the sensation of eeriness is a variable of both the formal (categorical) properties of the stimulus, as well as the frequency with which the observer is subjected to the stimulus, and can therefore modify his level of categorical understanding. Their observations are consistent with the evolutionary psychology studies by Lewkowicz and Ghazanfar (2012). In their research, they subjected children aged 6, 8, 10 and 12 months to the viewing of pairs of human images, realistic avatars and unrealistic avatars, finding a negative emotional reaction corresponding to the phenomenon of uncanny valley in adults only in the 12-month age group. Results that once again suggest «that perceptual experience with real human faces is critical to its emergence» (p. 124). Złotowski and colleagues (2015) have shown that the various emotional components of the uncanny valley, hence both likeability and eeriness, can be modified by interaction with a robot.

> Likeability of a robot was mainly affected by its attitude and this effect was especially prominent for a machine-like robot. On the other hand, merely repeating interactions was sufficient to reduce eeriness irrespective of a robot's embodiment (Złotowski *et al*., 2015, p. 103).

McAndrew and Koehnke (2016) have tried to reframe the general problem of creepiness accordingly, framing it from an evolutionary point of view. The two authors hypothesise that the feeling of horror stems from that set of responses to situations of possible danger that humanity has acquired in its evolutionary history. In particular, it has to be interpreted within the framework of a system that defines agency-detection, that is, the search for active causes for possible dangers. The phenomenon of the uncanny valley would then be placed in the context of that broad field of emotional activation mechanisms that we relate to the circuit of tension, fear and anxiety[15].

[15] «In exploring additional brain areas otherwise associated with affective processing, the amygdala was found to be responsive to category change in avatar–human face pairs. The amygdala is responsive to natural and computer-generated human faces, human like but unnatural faces, novelty, uncertainty, unclear predictive value, and ambiguous valence» (Cheetam *et al.*, 2011, p. 11; Phelps and LeDoux, 2005).

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3. Prospects

In the middle of the last decade, the many contradictory studies without a consistent result verifiable in the laboratory, and above all the improvement in the definition of graphic images, especially in the videogame sector, have led some insiders to hypothesise a theoretical and factual superseding of the whole uncanny valley phenomenon. In a certain sense, graphic imagery and photographic imagery, after almost two centuries of running on parallel tracks, will be able to meet.

> Within a decade or so, computer game characters will be as indistinguishable from filmed humans as their movie counterparts (Perry, 2014, p 48).

The focus is shifting to other perceptible elements, such as perception thresholds, which are becoming central to the public debate. However, while the bar of hyperrealism is being raised, the impasse of meaning implicit in these technologies of representation still re-emerges strongly: deep fakes are the new horizon of the *Unheimlichkeit* (Conte, 2019), clones the last source of our eeriness (Yonemitsu *et al.*, 2021).

In fact, while it is true that the perceptual-cognitive basis of our experience can activate embodied responses and affective states in typically bottom-up ways, the broad debate about the uncanny valley hypothesis confirms once again that in complex cultural cases the social and formative factors are not only predominant, but can in turn reorganise physiological response systems, in a logic of re-entry.

It is precisely due to the complexity of the possible responses that the anthropomorphic robot, in its variants of real interface and graphic avatar, still has an essential symbolic value, even beyond our ability to learn to live with it. The ultra-realism that the anthropomorphic robot, the deep fake, the clone, represent is the decisive boundary of our experience in the contemporary world. The classical filmology has always considered the possibility of access to experience for different degrees of attribution of the status of reality (Mitry, 1963, p.119); and this same process of attribution enables us to align a correct and socially useful emotional assessment of the affective states experienced in viewing. If therefore, as I have tried to show in my previous work, to which the reader is referred (Locatelli, 2017), «the sense of reality is hypothetically a discrete, scalic value which, at the moment in which the stimulus is processed in conscious states with emotional and autonoetic significance (memory, understanding, attribution of sense, etc.), may refer to various different levels of representation (relating to objects,

memory, fantasy, dreams, hallucinations – or, indeed, to media)» (p. 274), the thresholds of ultra-reality in which the awareness of the algorithmic and ultra-technological origin contrasts with the photorealistic perception will short circuit precisely this referability of the emotional and autonoetic meaning to representation. The feeling of eeriness is then always conveyed by the impossibility of building our emotional experience according to the common emotional categories of reference, and it is our cultural competence that comes to our help to understand it, face it and describe the traits of the *Unheimlichkeit*.

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