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(doi: 10.12832/113796)

Reti, saperi, linguaggi (ISSN 2279-7777)

Fascicolo 1, gennaio-giugno 2024

Ente di afferenza:

Università di Torino (unito)

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SEMIOTIC AND COGNITIVE APPROACHES TO THE FACE, BETWEEN ALTERITY AND ALTERATION

Giovanni Pennisi, Massimo Leone

INTRODUCTION

The papers comprising the thematic section of this issue of «Reti, Saperi, Linguaggi» are the final outcome of the work carried out by the speakers who participated in the International Conference *Semiotic and Cognitive Approaches to the Face, between Alterity and Alteration*, held at the CUMO in Noto from December 14th to 16th, 2023. This conference arose from the desire to bridge the topics addressed within the Doctoral Program in Cognitive Sciences at the University of Messina (of which the CUMO in Noto is a branch), and those tackled by the post-doctoral researchers of the ERC project FACETS¹ (Face Aesthetics in Contemporary E-Technological Societies), hosted by the University of Turin. The organization of the event was the result of joint efforts between members of these two institutions, thanks to whom a large audience was able to attend talks by professors, researchers, and doctoral students from the Universities of Messina, Turin, Bologna, Cosenza, Liege, Lisbon, Milan, and Rome. Given the overwhelming number of presentations at the conference, it was not feasible to compile all the papers into a single issue of «Reti, Saperi, Linguaggi». Consequently, the decision was made to spread them across three issues of the journal. Before presenting a brief overview of the contributions selected for this particular issue, it is essential to outline the conference's foundational rationale and the epistemological insights that shaped it.

This article results from a project that has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (Grant agreement No 819649 – FACETS).

WHY THIS TOPIC?

The decision to center the theme of the conference around the face should be seen not only as a reflection of the burgeoning collaboration between participants of the FACETS project and members of CO-SPECS (Department of Cognitive Science, Psychology, Education, and Cultural Studies, University of Messina), but also as an organic outcome of the importance the face holds as a subject of study in both semiotics and cognitive sciences. This thematic focus underscores the interdisciplinary nature of the research, bridging distinct but complementary fields.

Paradigmatic, in this sense, is the existence of a series of scholars whose research stands at the intersection between the two disciplinary fields, and who have described the face both as a system of signification with more or less culturally universal features and as a biological feature with an essential evolutionary function. Consider, as an example, the work of US psychologist Paul Ekman, a pioneer of studies on the bodily manifestations of emotions and especially of facial expressions. In identifying the pan-cultural character of mimics linked to the onset of basic emotions, Ekman recognizes their adaptive value associated with the accomplishment of basic life tasks (see Ekman 1992; 1999), ascribing to them the ability to «coordinate our behavior and psychological states during survival-salient events and pleasurable interactions» (Nummenmaa *et al.* 2014, p. 646).

Albeit Ekman addresses this topic by sticking to the correlation between the universality of facial emotional expressions and the role played by them in the phylogeny of sapiens, he is also particularly indebted to semiotics, especially when it comes to delineating the different ways in which the face conveys information of a social nature, facilitating or hindering communication between conspecifics. As Schiller (2021) points out, this influence emerges especially from the lexicon used by Ekman, who not only admits to drawing on the vocabulary of semiotics so as to discriminate more precisely between different approaches to facial expressions (see Ekman 1982, 86; Schiller 2021, 362), but also refers about them as a «semiotic system» capable of conveying, through four different types of signals, a plurality of messages related to identity, gender, race, beauty, etc. (Ekman 1982, 45-46). This orientation straddling the naturalism dear to the cognitive sciences and the terminology of semiotics is referred to by Schiller

(2021) as *faciasemiotics*, and represents only one of the directions that it is possible to take in order to attain a definition of the face as a subject of interdisciplinary inquiry.

The desire to present the face as a privileged *trait d'union* between semiotics and cognitive sciences has also surfaced, more recently, from those texts analyzing how the former can help facilitate the exploration of an area developed within the latter, that is, Artificial Intelligence. This is a crucial issue for the researchers in the FACETS project, who have devoted to it thematic journal issues (Leone 2020a), volumes published annually (Leone 2020b; 2021; 2022) and essays (Soro *et al.* 2022; Giuliana, Leone 2023; Santangelo, Leone 2023).

In a paper published in one of these essays, which is titled precisely *Semiotics and Artificial Intelligence*, Leone (2023) addresses a topic – that of the *fake*, and of the technical reproducibility of the face – that lends itself to both a semiotic speculation and a naturalistic interpretation, merging the two perspectives:

The human species is inherently capable of intentionally producing false representations of reality, that is, representations that, while lacking an indexical origin, simulate one by creating an iconic sense effect. This ability was probably selected by the biological evolution of the species as adaptive, in that it allowed humans to mentally experience potentially dangerous situations without having to do so empirically [...]. In the human species, however, this capacity, expressed in and through language, has given rise to a kind of «exaptation» consisting of the ability to attribute pleasure and aesthetic value to intentionally false representations, which has in turn triggered an enormous production of fictional texts (pp. 41-42, our translation).

Leone goes on to argue that with the advancement in the field of Artificial Intelligence, and specifically with the development of technologies such as deep learning and GANs (Generative Adversarial Networks), the «problem» of generating hyper-realistic versions of oneself, of one's own and others' face – for example, through deep-fakes – needs to be addressed by keeping an eye on the distinctions posed by semiotics, such as that between *truth* and *reality effect*:

The digital fake is destined, in the long run, to be indistinguishable from the «digital real»; in the case of faces, for example, it is only a matter of time before one can no longer know from the digital photo of a face whether the photo was produced from a biological, ontological face or

whether it is a synthetic image [...]. The advent of digital, and of digital deep learning applied to image creation, undermines the ability to distinguish between a referential image endowed with a reality effect and a synthetic image that produces the same effect (p. 43).

We are faced with a central question for today's humanities, which leads to one of the possible keys to interpreting the theme chosen for the conference: the binomial alterity/alteration of the face. The opportunity to create digital versions of faces and bodies that are not discernible from those that occupy the physical world, in fact, can be seen both as a way of exposing the other to increasingly uncontrollable situations and events, and as a way of transforming the sensory and, above all, the social perception of the category of the «other», while manipulating phenomenal reality.

Consider the case of deepfakes and the Random Face Generator (<https://this-person-does-not-exist.com/en>). In the first scenario, deepfake technology has raised significant concerns over recent years due to its potential to erode trust in images and in interpersonal relationships. It enables the manipulation of an individual's physiognomy and actions, creating a false representation of another person and sparking a dynamic of producing an unreliable «other». In contrast, the Random Face Generator introduces us to the new psychological challenges associated with the uncanny valley – a concept first identified by Mori in 1970.

This phenomenon occurs when we encounter an entity that is eerily similar yet distinctly different from a human being. The uncanny effect generated by the Random Face Generator, unlike the discomfort traditionally associated with robots or anthropomorphic androids, is primarily semiotic. The discomfort arises not from sensory perception but from the cognitive dissonance of knowing that the realistic face before us is not linked to any «real» physical entity. It is not an index but an icon. The awareness that a seemingly «real» face is in fact «fake» plunges us into an uncanny valley, similar to when we are unaware of the falsity (see Surace 2021, 366). These instances highlight the pressing need for a collaborative approach between semiotics and the diverse fields within cognitive science, including psychology, robotics, artificial intelligence, and phenomenology, to address these emerging issues.

It is precisely during a reassessment of the ideas of a figure on the borderline between phenomenology and semiotics of the face – Emmanuel Lévinas – that Kozin (2004) asks a question that has fatally

to do with the purposes of the present collection: «What utility can we find in the semiotics of the face? How can the inaccessibility of the Infinite and the singularity of signification be incorporated into being?» (p. 245). In Lévinas' lexicon, the *Infinite* and the *singularity* coincide with two different ontological categories: the first is that of the *Other*, the second is that of the *individual*. When referring specifically to the face, this dichotomy can, in turn, be superimposed on a second essential semiotic distinction, that between *face* and *visage*.

The term «face» refers to the biological aspect that is directly perceptible to the senses: it encompasses the anatomical features observable at a glance, constituting the arena where the swift distinction between self and other unfolds. For philosopher Emmanuel Lévinas (1961), the face acts as a kind of sign that does not disclose any intrinsic details about the person's identity but rather «represents» and connects us to their profound otherness (as discussed by Kozin 2004, 237). This concept emphasizes the face as a medium through which we engage with the existential alterity of another being.

The visage, on the contrary, is the complex of features and expressions ascribable to a precise subjectivity, a mode of «presentation» of the face in which the physiognomic component merges with practices of signification determined as much by culture as by the person's tastes, choices, and wishes.

If we wanted to bring this differentiation within the alterity/alteration system of coordinates, we could, with good approximation, – and without any claim to dogmatism – annex the face to the domain of alterity, and the visage to that of alteration. Consider, for instance, how the face has been used as a marker of purported anatomical differences between human races, playing a pivotal role in the history of racial discrimination. The concept of scientific racism is grounded in theories like Petrus Camper's hypothesis of facial angles (refer to Meijer 1999), which sought to establish a hierarchy among different human groups. This was achieved by comparing skull shapes and measuring facial morphological traits, along with assessing variations in skin color.

The pseudoscientific results achieved by these studies, in turn, helped to reinforce the ideology that understands the supposed inferiority of nonwhite races as a proximity to other animal species, as in the case of *simianization*, that is, the association of certain races (and black people in particular) with the family of nonhuman great apes (Hund *et*

al. 2015). This peculiar mode of producing alterity and otherness does not only belong to a dark past, but periodically resurfaces in the present times (as it has been seen in accidents in stadiums² and schools³), and even in Artificial Intelligence⁴.

On the other hand, the visage serves as a battleground for resisting the categories imposed by history and society. It is here that individuals often wage their fight to reject these labels, using tools of alteration – whether through transformation or mutation – offered by cultural practices. These range from cosmetics, as discussed by Magli (2013), to more extreme forms of surgery and body modification, detailed by A. Pennisi (2021). Such interventions are employed as acts of personal agency and resistance against predefined social identities.

It would be wrong, however, to consider these examples as sufficient to cover the whole discourse on the relationship between the visage as the sign of individuality *par excellence* and the practices of alteration. Again, the field of AI offers valuable insights to reflect on this issue, as shown by those experiments that have tested the reactions of rejection to and/or assimilation of the hyper-realistic version of one's visage reproduced and manipulated by facial animation software (Shin *et al.* 2019; Weisman, Peña 2021; Wu *et al.* 2021). These experiments have proven useful for reflecting on how easily alterable is the boundary that separates what we perceive as «self» from what we perceive as «non-self» – that is, the line dividing the sense of self from a more or less latent sense of alterity (G. Pennisi 2023). Since the fluidity of this boundary is a feature of certain psychopathologies, investigating the potential application of tools for manipulating and creating digital faces to address disturbances in self-perception in mental illness presents another research avenue (G. Pennisi 2024, forthcoming).

The themes outlined so far amount to only a small part of the ways in which the concepts of alterity and alteration can be explored in relation to the study of the face as an interdisciplinary subject. Based on these themes, conference speakers were invited to present contributions that could – but did not have to be limited to – address the following questions:

– The face and Artificial Intelligence: what kind of influence do digital tools of reproduction, re-signification, and manipulation of the human face exert on the sensory and social perception of the self and the other?

– The face in social practices and spaces: in an increasingly polarized and digitized society like ours, is it possible to restore the ethics of contact with the Other that Levinas considered as inseparable from the dimension of face-to-face interaction, and which neuroscience deems dependent on processes that involve all senses? How have the forms of encounter (and conflict) with the Other, and the narratives about their body and face, changed?

– The face in psychopathology: psychopathology is a field where the dynamics of alterity and alteration are constantly merging. Schizophrenia and autism, for example, are characterized by a deterioration in the functionality of the system for the recognition of emotions in the others' faces; disorders of the body image, on the other hand, by an adulteration of the perceived features of the body (often, face included), which leads to peculiar forms of disembodiment and the emergence of a perspective of «alterity» or «otherness» with respect to the self. Is it possible to make a joint effort between semiotics and cognitive sciences to provide a clearer picture of the phenomenology of psychopathological symptoms, which can serve as a basis for a constructive dialogue between the humanities and the biological sciences?

– The face in media and art: how has the representation of one's and the other's face evolved throughout the history of art and media? Is it possible to integrate modern experimental approaches to the visual image – e.g., neuroaesthetics, «the neuroscience of film» (Gallese, Guerra 2022), etc. – with a semiotic gaze? What role do performance arts, which often challenge the boundaries of body alterability, play in defining the face as a subject of study?

Each of these discussion topics correspond to one of the four thematic sessions into which the conference was divided: *Semiotics and New Facial Technologies*; *The Semiotic, Social, and Sensorial Dimension of the Face*; *The Face in Cognitive Neurosciences and Psychopathology*; *Face Aesthetics, Arts, and Media*. The papers contained in this issue are a selection of the contributions presented in all four sessions. This choice reflects our desire to encompass the extraordinary variety and richness of the talks delivered during the event, rather than focusing attention on a single theme.

IN THIS ISSUE

The thematic section begins with a paper by Alexander Matthias Gerner, which tackles and delves into many of the issues highlighted thus far. The text, in fact, investigates the ethical and aesthetic dimensions of AI avatars, exploring how the concept of otherness – as framed by Levinas – shapes our understanding of faciality, human-avatar relationships, and the boundaries between realism and authenticity in the digital realm.

Maria Giulia Dondero provides valuable insights into the semiotics of the face and its multifaceted significance in various contexts, such as art, advertising, science, and religion, showcasing how the face is not merely a physical feature but a complex symbol that conveys meaning and undergoes transformations based on its interaction with different backgrounds and statuses. She introduces a post-structuralist and tensive perspective to study the face, highlighting the interconnectedness of this element with its surroundings and the societal context in which it circulates.

Rosalia Cavalieri's paper sheds light on the role of our face as a gateway to sensory knowledge. She discusses the intricate relationship between our senses, particularly smell and taste, and how they contribute to our understanding of flavor perception and to shape our cognitive experiences and interactions with the world.

Giovanni Pennisi explores the possible applications of the concept of *enfacement* – that is, an experimentally induced illusion that leads to perceiving another person's face as one's own – to study disturbances in the sense of self in schizophrenia, and to envision new clinical protocols for treating them. The implications regarding the therapeutic use of technologies for creating and manipulating digital faces are examined in light of data on Avatar Therapy, as well as of phenomenological considerations on the relationship we establish with our own and others' faces.

Federico Bellentani addresses the topic of the faces and face representations in urban spaces, highlighting the need for interdisciplinary research to examine specific representations and practices related to urban facial dynamics. He also evaluates the impact of digital technologies on capturing, editing, and sharing faces in urban environments through the Internet and social networks, touching upon the cultural nuances, political perspectives, and socio-economic considerations that influence how citizens navigate and utilize the spaces that surround them.

Alice Orrù investigates the function of the face as a mirror of one's profession in nineteenth-century Italy, emphasizing how facial features were believed to reveal aspects of a person's character, intellect, and moral traits. The debate surrounding physiognomy reflects a broader discussion on the semiotic value of facial expressions and gestures in identifying professions, which Orrù enriches with insights coming from the analysis of the role that masks and theatrical elements play in shaping social interactions and perceptions related to professions.

Gianmarco Thierry Giuliana suggests employing semiotics to design a virtual reality (VR) video game for face processing rehabilitation in children, particularly those with high-functioning Autism Spectrum Disorder (ASD). His idea is to create a narrative-driven game that challenges traditional approaches to face processing rehabilitation. By focusing on the use of non-realistic atypical faces, the proposed game aims to enhance users' cognitive strategies for processing faces and navigating social interactions.

Francesca Ferraioli and Carmelo Vicario present the results of a study conducted through virtual reality, EEG and EMG techniques to evaluate the involvement of facial muscle activity as a biomarker for assessing consumer responses and preferences in marketing research. They demonstrate the potential of integrating neuroscience, psychology, and behavioral economics in neuromarketing to provide a deeper understanding of consumer decision-making processes and improve marketing strategies based on objective measures.

Finally, Joel Osea Baldo Gentile uses a sensorimotor interactionist lens to analyze the complexities of intersubjectivity and the ways in which we establish connections with others while maintaining a sense of individuality. His paper illustrates how individuals negotiate the boundaries between self and other, emphasizing the interplay among sensorimotor interactions, mental representation, and the construction of identity within social contexts and through mirror self-face recognition.

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ENDNOTES

- ¹ Grant agreement ID: 819649. Principal Investigator: prof. Massimo Leone.
² <https://www.nytimes.com/2023/05/22/sports/soccer/vinicius-junior-racism-tebas.html>.
³ <https://nypost.com/2022/05/23/michigan-school-suspends-teacher-for-worksheet-comparing-obama-to-monkeys/>.
⁴ <https://www.nytimes.com/2021/09/03/technology/facebook-ai-race-primates.html>;
<https://news.sky.com/story/google-photo-app-labels-black-couple-gorillas-10353994>.

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