Artistic Portraits of Strange-Face Illusions
Produced through Eye-to-Eye Gazing in
Dyads or Mirror-Gazing

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Strange-face illusions are apparitional perceptions of deformed faces, unknown people and monstrous beings produced by prolonged staring at one's own face in a mirror or when staring eye to eye at another person in a dyad, at low-level room illumination. In the authors' experiment, portrait artists drew illusions they perceived during a 10-minute eye-to-eye gazing session while paired in dyads with naive participants. Dissociation was measured through standard self-report questionnaires. Results showed that portraits became more abstract and less figurative as the artists experienced higher levels of nonpathological dissociation. Statistically, a significant correlation was found between art-abstraction ratings and dissociation scores by judges and portrait artists, respectively. Findings are discussed in relationship to portraits à la manière de Scipione and Francis Bacon.

Modern artists Scipione (1904–1933) and Francis Bacon (1909–1992) created human portraits characterized by deformed, stretched, flowing and melting facial features. In fact, modern visual artists acting as phenomenological neuroscientists have investigated mental processing and neurophysiological limitations of the visual system through their paintings [1]. In connection to face processing, experimental psychologists have found that, at low-level illumination, mirror-gazing at one's own reflected face [2] or eye-to-eye gazing within a dyad of individuals [3] produced perceptions of facial deformations and apparitions of unknown faces—the so-called strange-face illusion—that look like faces portrayed by Scipione and Bacon.

Further research has shown that dissociation [4] of the subject's consciousness is produced during strange-face illusions [5]. The nonpathological dissociation produced by mirror-gazing has a short-term effect that is completely dissipated within 15 minutes of the end of the session [6].

Dissociation of consciousness has different facets: derealization (detachment from the external world), depersonalization (detachment from self-body) and dissociative identity (compartmentalization of a second identity or personality). Some authors have conceptualized dissociative experiences as a progression on a continuum from normal integration of consciousness to derealization, depersonalization and finally dissociative identity [7]. From a cognitive viewpoint, these three dissociative levels can correspond to deficits of integration at the three levels of self-referential processing: bodily-self, minimum-self (in particular, body-ownership) and identity-self, respectively. In turn, these three different impairments of self-consciousness produce distinguishable effects in strange-face illusions.

In the present study, our hypothesis was that greater levels of strangeness of portraits created by artists could be associated with higher levels of the artists' dissociative states. From an operational viewpoint, this hypothesis can be stated as follows: that progressive levels of dissociation in the artist's consciousness should be shown by the progressive detachment from a realistic portrait toward a higher level of abstraction in their drawing. In order to test this hypothesis, we used the eye-to-eye gazing test (Fig. 1) for producing nonpathological dissociation in dyads. Seventeen portrait artists (mean age 23.3 years; st.dev. 4.2) were randomly paired with 17 naive participants (22.5 years; st.dev. 2.2), thus forming 17 artist-naive dyads. (Artist-artist dyads were excluded to avoid prior knowledge between members.) All individuals were white Europeans who took part voluntarily in the research. Portrait artists were invited by one of the authors (GL) on the basis of their skills to create face drawings. Naive participants consisted of students and members of the general public. The two groups were both age and gender balanced.

Participants of each dyad met for the first time at the laboratory, where they were introduced to the experimental setting and gave their informed consent. The experimenter explained that the aim of the research was "the perception of the face of another person." Each pair of participants sat in two chairs positioned facing each other. They received the following written instructions: "Maintain a neutral facial
expression. Your task is to look at the other participant. Keep gazing in the eyes of the other participant. The session will last ten minutes.”

Members of dyads took the experimental task seriously and had no difficulty in maintaining eye-to-eye gazing without laughing or crying. In fact, the onset of strange-face illusions starts, on average, after one minute of gazing [8] and is usually accompanied by a sort of “lucid” consciousness [9].

When the 10-minute test finished, participants were asked to fill in a self-report questionnaire of dissociation adapted from the Clinician-Administered Disassociated States Scale (CADSS). Then we invited the artists to sketch drawings by memory, with pen or pencil, of the illusory faces they might have perceived in place of the actual face of the other member of the dyad.

The results of the questionnaire showed a large range of dissociation among the artists (CADSS total score mean ± SEM = 26.9 ± 2.3; range = 12–45) and naive participants (23.8 ± 2.3; range = 10–44). This difference (of dissociation scores between the artists and naive participants) was statistically nonsignificant (ANOVA; F(1,32) = 0.92; p = 0.34; eta-squared = 0.028).

All 17 artists sketched portraits. None of the portraits corresponded to the other’s physical faces in the dyads. Eight portraits are displayed in Fig. 2, which show drawings from (a) to (h) at increasing levels of self-reported dissociation. They can easily be classified into the categories of strange-face illusions previously reported in the mirror-gazing test [10]. Portraits show figurative differences in relationship to the level of the artist’s dissociation of consciousness. For ex-

Fig. 1. The eye-to-eye gazing test was conducted in a dark room that was lit by a small light (20 W) placed between the two participants under a flat opaque panel. Illumination of the faces was 0.8 lux. Drawing by Alberto Conti. © Giovanni Caputo

Fig. 2. Portraits of strange-face illusions sketched by eight artists and sorted at increasing levels of nonpathological dissociation. According to the artists’ descriptions, the portraits represent: (a) an unknown woman; (b) a woman of a different race; (c) an unknown woman wearing imaginary glasses; (d) a man with multiple eyes; (e) an unknown dead woman; (f) an alien presence; (g) multiple apparitions of cartoon-like faces; (h) an evil witch. © Giovanni Caputo
ample, at low-level dissociation, which is characterized by
derealization at the early level of visual processing, strange-
d-face illusions are represented by temporary loss of face details
(Fig. 2a) or changes of colors and facial features (Figs 2b and
2c). At intermediate-level dissociation, characterized by dep-
ersonalization, momentary loss of bodily-self cohesion (Fig.
2d), dead faces (Fig. 2e) or portraits of a “presence” (Fig. 2f)
are shown. Finally, at high-level dissociative identity, appari-
tions of multiple cartoon-like faces (Fig. 2g) or dissociative
personalities (Fig. 2h) are likely to manifest.

Our hypothesis is that portraits become less figurative,
yet increasingly more abstract, as dissociation of conscious-
ness increases. In order to test this hypothesis, we printed
17 sheets with same-size portraits of strange-face illusions.
Subsequently, we separately asked four independent judges
with formal expertise in figurative art to sort the portraits
from very realistic to very abstract. Rankings were statisti-
cally correlated to artist dissociation scores (Spearman
rho = 0.35; p = 0.005), with an acceptable level of inter-judge
ranking reliability (Cronbach alpha = 0.44).

We obtained similar results in another experimental ses-
sion that used mirror-gazing (see the Mirror-Gazing-Test
(MGT) setup in the online supplemental material) and
sorted at increasing levels of dissociation. Portraits illustrate
the three levels of increasing dissociation: derealization (de-
formations of facial features: Fig. 3a); toward incremental
depersonalization (body-ownership changes: an “aura” or
“presence” behind the subject: Fig. 3b; “detachment” of the
face as if it were a mask: Fig. 3c); and finally, the abrupt in-
terruption of self-identity and apparition of an “inconceivable”
dissociative identity (in the artist’s words, “a sorceress with
phosphorescent yellow sclerae”: Fig. 3d).

It is noteworthy to observe that, at the highest levels of
dissociative identity, portraits can look either realistic (as
in Fig. 2h) or hallucinatory (as in Fig. 3d). Indeed, a cou-
ples of portraits from dyads showed realistic dissociative
identities that look like hallucinations (so called pseudo-
hallucinations), for example, a “shining adolescent” or an
“unknown individual with an exceedingly intense emotional
mood” (see portraits in the online supplemental material).

The comparison between mirror-gazing and eye-to-eye
gazing is instructive. Strange-face illusions during mirror-
gazing are very unsettling, because the subject is forced to
acquire consciousness of self-apparitions. From a different
perspective, eye-to-eye gazing produces interpersonal pos-
sibilities of twofold-unconscious melting within the dyad
(i.e. each dyad subject cross-projects their dissociative illu-
sions onto the other’s face) and thus opens up a potential
for creativity.

None of the participants, either artists or naive individuals,
experienced strange-face illusions before the experimental
session. This finding reflects a sort of uneasiness in confront-
ing such unsettling experiences. Mirror-gazing during the
night is connected to some forms of magic and spirituality
[11,12]. Anthropology, theology and art history attest that the
usage of mirrors as a tool for awakening is rather common
across cultures [13,14], religions [15,16] and arts [17,18].

Nevertheless, it is well known that great artists used mir-
rors extensively in their ateliers. For example, Leonardo da
Vinci was fascinated by mirrors, as declared in his Trattato
della Pittura [19] and by Vasari in Le vite de’ più eccellenti
pittori, scultori, e architettori [20]. It is said that Leonardo
da Vinci had a black room containing a mirror, which he
presumably used for meditation [21]. His painting Saint John
the Baptist, in author Caputo’s opinion, is a portrayal of his
experiences with unsettling spiritual images of strange-face
illusions, which surface from the lucid obscurity of a reflec-
tive mirror.

In addition, Francis Bacon possessed a large round mir-
rors that emerged like a magical self-presence within his
junk-filled atelier. Since a low level of illumination is re-
quired for triggering dissociative states of consciousness in
healthy individuals, further biographical research is needed
to discover whether artists such as Scipione and Bacon did
indeed conceive their portraits in dim light settings—only
afterward switching to normal light illumination for cor-

Fig. 3. Portraits of strange-face illusions sketched after a 10-minute session of mirror-gazing. Portraits were sorted in order of increasing levels
of non-pathological dissociation. The mirror measured 0.4 m x 0.4 m and was mounted on a stand placed in the center of a dark room, at a distance
of 0.4 m from the participant’s eyes. The small light [20 W] was positioned on the floor at a distance of 0.3 m behind the chair, the spotlight pointed
to the floor. Illumination of the face was 0.8 lux [see Mirror-Gazing Test in the online supplemental material]. (© Giovanni Caputo)
rect usage of oil colors. Other ways to produce dissociative states of consciousness are psychophysical trauma and psychoactive substance intake—and these tools should also be considered in the biography of artists of strange-face paintings. Francis Bacon’s portraits—single-figure, two-figure and “in a mirror” paintings—investigate and represent the entire hierarchy of dissociative states (for review of dissociative states, tools for dissociation in the laboratory, roles of personality differences and possible neurophysiological explanations see Caputo, Lynn and Houran [22]): (i) derealization (e.g. huge deformations and animal faces); (ii) depersonalization (e.g. detachment of the face as if it were a mask with holes, and a ‘presence’ perceived/represented in the shadows and through doors); (iii) dissociative identity (e.g. doubles lying side by side on a bed or a grass field). In conclusion, the experience of strange-face illusions can unlock new horizons for both artistic achievements and individual self-knowledge.

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