Body identity alterations in selected literary works from the 19th and 20th centuries

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ABSTRACT

Introduction and objectives. Establishing identity is an essential function of the mind. It enables the identification of one's own features, enabling differentiation between the self, on the one hand, and other individuals and the environment, on the other. The semiology of identity alterations is well described, with the main examples being delusion of negation of the self (Cotard syndrome) or of others (Capgras syndrome), out-of-body and near-death experiences, and reduplication of the body in the form of specular hallucinations, as in the figure of the double or doppelgänger. These alterations are described in numerous literary genres, particularly in the 19th and 20th centuries. This study describes these findings.

Methods. Reading of different literary works revealed various discoveries related to these disorders. Relevant findings are extracted, reviewed, and analysed through the lens of neurological semiology.

Results. *1)* Fyodor Dostoevsky's *Demons* describes a case of Capgras syndrome, 50 years prior to its description by Capgras and Lachaux as *l'illusion des sosies*. *2)* Tolstoy's *The death of Ivan Ilyich* describes a near-death experience that is highly suggestive of an out-of-body experience. *3)* In the science outreach book *The mind of a mnemonist*, Alexander Luria describes reduplication of the body produced at will by a real patient. The individual detached his mind from his physical body, thus avoiding pain when visiting the dentist. *4)* The plot of *The circular ruins*, a fantasy short story by Jorge Luis Borges, is based around the creation through dreaming of an individual who will be inserted into reality, with the features of the dreamer. *5)* In Guy de Maupassant's *La folle* (The mad woman), the protagonist suffers a corporeal abandonment that leads to her death after a clinical syndrome of depression and fever, with ideation about her own death, suggesting Cotard syndrome.

Conclusion. Literary authors described many of these alterations before clinicians, as in the case of *Demons* and other works cited. These findings enable us to review the history of these disorders and interactions with frontier areas (eg, cultural anthropology, neuropsychology, and philosophy). The richness of the findings is underscored and ideas are proposed to continue in this line of research.

KEYWORDS

Body identity alterations, 19th- and 20th-century literature, Capgras syndrome, Cotard syndrome, out-of-body experiences

Introduction and objectives

According to the dictionary of the Royal Academy of the Spanish Language, the second definition of identity is the "set of characteristic traits of an individual or collective which differentiate it from others." This individual characterisation entails the need for a person to be conscious that they are themself, and are different from others, as noted in the third definition of the term in the same dictionary.[1] Thus, language itself introduces identity as a basic function of consciousness. This concept represents none other than self-awareness (indeed, the term "conscious" is derived from *scientia*, science or knowledge, and the prefix *cum*, meaning "with," attributing *scientia* to the subject or referent).[2] It is only through

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this consciousness or self-awareness that the self can be constituted, thus enabling recognition of the other, referring to other individuals and to the environment in general.

The complexity of consciousness can be characterised through three basic concepts: "awareness," or knowing what is occurring around us and happening to us; "consciousness," or being awake and attentive; and having a "conscience" that, as the social beings we are, situates us on a moral or normative plane as regards our acts. From a linguistic perspective, Spanish distinguishes between this moral sense for differentiating good from bad (*conciencia*) and the concepts of awareness and consciousness (*consciencia*). In practice, the first term is used almost exclusively.[3]

As a neurologist, I will focus on the concept of consciousness as awareness of oneself and others, which is the origin of the concept of the identity of our own body, differentiated from our general surroundings, including other individuals. This awareness and the identity that is derived from it can be affected by numerous alterations, with specific semiology. These concepts are consolidated in clinical neurology and can also be identified in different literary texts. The best known alterations (Table 1) are delusion of negation of the self (Cotard syndrome) or of others (Capgras syndrome), out-of-body and near-death experiences, and reduplication of the body in the form of specular hallucinations, as in the figure of the double or doppelgänger, which will be addressed in another article. This article will focus on the former group, alteration of one's own identity or that of those around us, and near-death experiences. The purpose of this article is to describe findings of body identity alterations with reference to the self or to other bodies in 19th- and 20th-century literature.

Methods

Through my reading of literature over the years, always accompanied by a neurologist's curiosity, I have found various descriptions that are highly suggestive of body identity alterations. The works in question are fundamentally by universal classic writers whom I consider relevant due to their recognised impact on the history of literature, and specifically the literature of the 19th and 20th centuries. Works were considered to be neurologically relevant when they included findings specific to this discipline; these findings were incidental and (in this case) were not the primary objective of the reading. Therefore, the selection of works for discussion in this article was fundamentally retrospective, after having identified and signalled their medical and neurological semiology. This work focuses on signs corresponding to classical clinical criteria for body identity alterations. These were identified and selected for analysis through the lens of neurological semiology. Descriptions had to meet valid clinical criteria, in accordance with the specific literature on the subject, which is provided. The findings are described below.

Results

1) *Demons*, by Fyodor Dostoevsky

In the novel, the protagonist Nikolai Vsevolodovich Stavrogin has the following conversation with his wife, Marya Timofeevna Lebyadkina[5(p277-278)]:

> "Who knows who you are or where you popped up from! Only my heart, my heart sensed the whole intrigue all these five years! And I'm sitting here, wondering: what's this blind owl up to? No, my dear, you're a bad actor, even worse than Lebyadkin. Go bow as low as you can to the countess for me, and tell her to send someone cleaner than you. Did she hire you? Speak! Does she keep you in the kitchen for charity? I see through your whole deception, I know you all, to a man!"
>
> He seized her firmly by the arm, above the elbow; she was laughing loudly in his face:
>
> "You look very much like him, you do, maybe you might be this relative—sly people! Only *mine* is a bright falcon and a prince, and you are a barn owl and a little merchant! […] As soon as I saw your mean face, when I fell and you picked me up—It was as if a worm had crept into my heart: not *him*, I thought, it's not *him*! […] Tell me, impostor, how much did you get? Did you agree for a big sum? I wouldn't give you a kopeck. Ha, ha, ha! Ha, ha, ha!"
>
> "Ohh, idiot!" rasped Nikolai Vsevolodovich, still firmly holding her arm.
>
> "Away, impostor!" she cried commandingly. "I am my prince's wife, your knife doesn't frighten me!"
>
> "Knife!"
>
> "Yes, knife! You have a knife in your pocket. You thought I was asleep, but I saw it: tonight, as you came in, you pulled out your knife!"
>
> "What are you saying, wretched woman, is this the sort of dreams you have?"

Table 1. Systematic summary of the main alterations of body identity.

SYNDROME	DESCRIBED BY	CORE OF THE DELUSION	COMMON CAUSES	LESION TOPOGRAPHY	DESCRIPTION BY LITERARY AUTHORS
Cotard syndrome	Jules Cotard (1880)	Negation (body, spirit, whole or parts of the body)	Severe emotional disorders, schizophrenia, degenerative dementias	Right temporoparietal cortex	Guy de Maupassant, in the short story *La folle* (The mad woman)
Capgras syndrome	Capgras and Reboul-Lachaux (1923) Dostoevsky in *Demons* (1873)	Delusion of doppelgängers or impostors (the more accurate name would be Timofeevna delusion)	Degenerative dementias, toxic syndromes, schizophrenia	Fusiform gyrus, limbic system (amygdala), and the connection between the two	Fyodor Dostoevsky in *Demons*
Out-of-body experiences (autoscopy, heautoscopy, and both together)	Lhermitte (1951) Hécaen (1957) Lukanowicz (1958) Alfred de Musset in the poem *La nuit de décembre* (1835)	Bodily reduplication	Near-death experiences	Unilateral (right) or bilateral parieto-temporo-occipital junction	Leo Tolstoy in *The death of Ivan Ilyich* Alexander Luria in S or Salomon (real patient)
Fregoli syndrome	Courbon and Fail (1927)	People close to the patient are believed to be disguised persecutors	Schizophrenia, emotional disorders	Unknown	None
Intermetamorphosis syndrome	Courbon and Tusquets (1932)	Person A transforms into B, B into C, C once more becomes A, etc.	Schizophrenia, extensive cerebral infarctions	Right temporoparietal cortex	None
Syndrome of subjective doubles	Chistodoulou (1978)	Exact physical doubles of the self exist, formed from people in the patient's surroundings.	Schizophrenia, various right-hemisphere lesions	Right temporoparietal cortex	None

Modified from Álvaro.[3(p109)]
The Borges story *The circular ruins* is not included in the table as it would be categorised under bodily reduplication in the form of doppelgängers, the subject of a forthcoming article in this journal; the "anti-Capgras syndrome" seen in social media use (see Discussion section) is also excluded, but would merit a dedicated article.

The wife presents symptoms of delusion, believing that the man who appears to be her husband is no more than a bad actor. She accuses him twice of being an impostor, a vulgar individual who is far below the nobility of her husband. She believes that he is working for pay and seeks to kill her with the knife that she is convinced he is carrying. This description corresponds to Capgras syndrome, in which patients believe that those around them are not their family members (who in this disorder are nearly always believed to be dead), but rather subjects identical in all ways who supplant the true relatives of the patient by maintaining the original physical features. These would be true impostors, the term that, curiously, the character Marya Timofeevna repeats twice. The objective of these supplanters or doubles was to take ownership of the subject and their belongings; in this case, the character believes herself to be the target of a (non-existent) knife. This would naturally cause further suffering of the patient, as occurs in the case of Marya Timofeevna in the novel.

2) *The death of Ivan Ilyich*, by Leon Tolstoy

The end of this novella presents the interior monologue of the protagonist in the moments before his death[6]:

> He searched for his former habitual fear of death and did not find it. "Where is it? What death?" There was no fear because there was no death either.
>
> In place of death there was light.
>
> "So that's what it is!" he suddenly exclaimed aloud. "What joy!"

> To him all this happened in a single instant, and the meaning of that instant suffered no change thereafter. For those present, his agony lasted another two hours. There was a rattle in his throat, a twitching of his wasted body. Then the gasping and the rattle came at longer and longer intervals.
>
> "It is all over!" said someone near him.
>
> He caught the words and repeated them in his soul.
>
> "Death is over," he said to himself. "It is no more."
>
> He drew in a breath, stopped in the midst of a sigh, stretched out and died.

This description corresponds to a mental experience of the end of life. Typical accounts describe light, which is often bright and white, in line with Tolstoy's description. A feeling of joy is often described, as in this account, in contrast with the sorrow and suffering that invade the character over the course of his severe disease. Furthermore, from his assertion that "death is over, it is no more," we may intuit the existence of an out-of-body experience in the form of autoscopy, such that the mind detaches from the body, with the subject observing himself in the distance, in that extenuated, bubbling body that the victim also sees. From this detachment, the mind assures itself that death does not exist, that what is ending is death itself, rather than the mind/soul of Ivan Ilyich.

3) Salomon, the lifelong patient of Alexander Luria

The book *The mind of a mnemonist: a little book about a vast memory*,[7] is dedicated almost in its entirety to the patient S, or Salomon, whom the prestigious neuroscientist followed up for over 30 years. His prodigious memory aroused Luria's insatiable curiosity. He is relevant to the present study because, among his abilities, he had great control over his own body, thanks to a mind that essentially functioned by associative visual mechanisms. Thanks to these capacities, he was able not to feel pain during visits to the dentist, for instance. To achieve this, Salomon simply split himself into two equal beings, placing the double above the original patient. The procedure was performed on the latter, who felt no pain, as his mind had been displaced into the double. This out-of-body experience is described as follows[7(p141)]:

> Let's say I'm going to the dentist. You know how pleasant it is to sit there and let him drill your teeth. I used to be afraid to go. But now it's all so simple […]. I'd sit in the chair but imagine it wasn't really me but someone else. I, S., would merely stand by and observe "him" getting his teeth drilled. Let him feel the pain … It doesn't hurt me, you understand, but "him." I just don't feel any pain.
>
> Record of January 1935.

4) *The circular ruins*, by Jorge Luis Borges

This short story is included in Borges' collection *Ficciones*. The work narrates the story of an unnamed character who arrives at the site of some ruins that he knows to have been a place of worship of his ancestors, a sacred temple. As the plot develops, this character, who lacks a name, lets his purpose be known: to dream a creature, to mould a man from the material of dreams, as though he were a sculptor. With the help of a god, he is able to reduplicate himself in the dream, transforming into a clay phantom which believes itself to be real, like the dreamer. This creation by reduplication in a dream leads to the discovery of the common origin of both the magician and the clay phantom: both are dreamt, one by the unnamed man and the other by his god, in a universe which is presented at once as terrifyingly real and dreamlike, within a narrative of devastating literary logic. In the words of Borges[8]:

> […] The circular enclosure […] which once was the colour of fire and now was that of ashes […] a temple, long ago devoured by fire […]. He knew that this temple was the place required by his invincible purpose […].
>
> The purpose which guided him was not impossible, though it was supernatural. He wanted to dream a man: he wanted to dream him with minute integrity and insert him into reality. This magical project had exhausted the entire content of his soul; if someone had asked him his own name or any trait of his previous life, he would not have been able to answer […].
>
> At first, his dreams were chaotic; somewhat later, they were of a dialectical nature. […] clouds of silent students filled the gradins […] would redeem one of them from his state of vain appearance and interpolate him into the world of reality […].
>
> One afternoon […] he dismissed the vast illusory college forever and kept one single student. He was a silent boy, sallow, sometimes obstinate, with sharp features which reproduced those of the dreamer.

Faced with the difficulties of his hard task, the dreaming man soon stopped dreaming; one afternoon, he realised that he had not dreamt:

> He comprehended that the effort to mold the […] matter dreams are made of was the most arduous […]. He comprehended that an initial failure was inevitable. […] he sought another method. […] Then, in the afternoon, he purified himself […]. Almost immediately, he dreamt of a beating heart. […]
>
> Within a year, he reached the skeleton, the eyelids. […] He dreamt a complete man, a youth, but this youth could not rise nor did he speak nor did he open his eyes.
>
> This Adam of dust was the Adam of dreams fabricated by the magician's nights of effort.

The creation of this character by the magician does not take on life, and the man nearly destroys his creature; at the feet of a statue within the ruins, he begs his god for succour.

> This multiple god revealed to him that its earthly name was Fire, […] and that it would magically give life to the sleeping phantom, in such a way that all creatures except Fire itself and the dreamer would believe him to be a man of flesh and blood. […] In the dreamer's dream, the dreamed one awoke.
>
> […] Gradually, he accustomed the boy to reality.
>
> […] His life's purpose was complete; the man persisted in a kind of ecstasy. After a time […], he was awakened one midnight by two boatmen; […] they told him of a magic man in a temple of the North who could walk upon fire and not be burned.

At this time in the narration, he realises that Fire (and he himself) are the only creatures in the world who know that his son is a phantom:

> He feared that his son might meditate on his abnormal privilege and discover in some way that his condition was that of a mere image. Not to be a man, to be the projection of another man's dream, what a feeling of humiliation, of vertigo! […]
>
> The end of his meditation was sudden […] then, […] what was happening had happened many centuries ago. The ruins of the fire god's sanctuary were destroyed by fire. […] He walked into the shreds of flame. […] they caressed him and engulfed him without heat or combustion. […] he understood that he too was a mere appearance, dreamt by another.

5) *La folle* (The mad woman), by Guy de Maupassant

Maupassant was the author of fantasy stories including those printed by a French publishing house in the aptly-named collection entitled *Tales of suicide*, which contains *La folle*, which includes a description of semiology relevant to this article.[9] The following excerpts were considered clinically relevant:

> J'avais alors pour voisine une espèce de folle, dont l'esprit s'était égaré sous les coups du malheur. Jadis, à l'âge de vingt-cinq ans, elle avait perdu, en un seul mois, son père, son mari et son enfant nouveau-né. […]
>
> La pauvre jeune femme, foudroyée par le chagrin, prit le lit, délira pendant six semaines. Puis, une sorte de lassitude calme succédant à cette crise violente, elle resta sans mouvement, mangeant à peine, remuant seulement les yeux. Chaque fois qu'on voulait la faire lever, elle criait comme si on l'eût tuée. On la laissa donc toujours couchée, ne la tirant de ses draps que pour les soins de sa toilette et pour retourner ses matelas. […]
>
> Pendant quinze années, elle demeura ainsi fermée et inerte.
>
> La guerre vint ; […] les Prussiens pénétrèrent à Cormeil. […] l'officier d'à côté […] n'en crut rien sans doute, et s'imagina que la pauvre insensée ne quittait pas son lit par fierté, pour ne pas voir les Prussiens […].
>
> Et bientôt on vit sortir un détachement qui soutenait un matelas comme on porte un blessé. Dans ce lit qu'on n'avait point défait, la folle, toujours silencieuse, restait tranquille, indifférente aux événements tant qu'on la laissait couchée. Un homme par derrière portait un paquet de vêtements féminins. […]
>
> On ne revit plus la folle. Qu'en avaient-ils fait? Où l'avaient-ils portée! […]
>
> Et soudain je compris, je devinai tout. Ils l'avaient abandonnée sur ce matelas, dans la forêt froide et déserte; et, fidèle à son idée fixe, elle s'était laissée mourir sous l'épais et léger duvet des neiges et sans remuer le bras ou la jambe.
>
> […] Et je fais des voeux pour que nos fils ne voient plus jamais de guerre.

> [I had for a neighbor a kind of mad woman, who had lost her senses in consequence of a series of misfortunes. At the age of seven and twenty she had lost her father, her husband, and her newly born

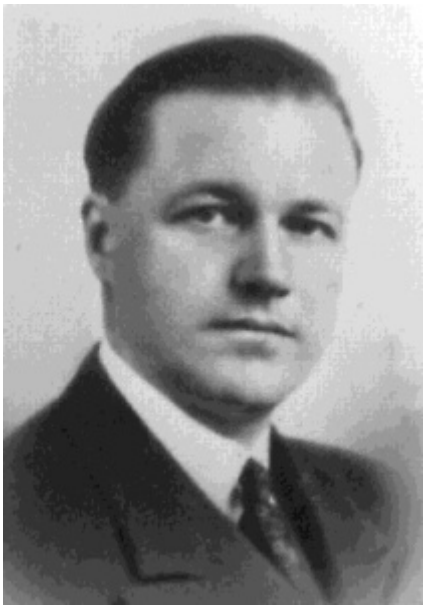

Figure 1. Jean Capgras, who described his eponymous syndrome as *illusion des sosies* or delusion of doppelgängers. He published the article with his intern Jean Reboul-Lachaux, whose photograph I was unable to find on the Internet.

> child, all in the space of a month. […]
>
> The young woman, overwhelmed with grief, took to her bed and was delirious for six weeks. Then a species of calm lassitude succeeded that violent crisis, and she remained motionless, eating next to nothing, and only moving her eyes. Every time they tried to make her get up, she screamed as if they were about to kill her, and so they ended by leaving her continually in bed, and only taking her out to wash her, to change her linen, and to turn her mattress. […]
>
> For fifteen years she remained thus inert and secluded.
>
> The war broke out, […] the Germans came to Cormeil. The officers next door […] no doubt […] did not believe it, and thought that the poor mad creature would not leave her bed out of pride, so that she might not come near the Prussians […].
>
> Soon a party of soldiers was seen coming out supporting a mattress as if they were carrying a wounded man. On that bed, which had been unmade, the mad woman, who was still silent, was lying quite quietly, for she was quite indifferent to anything that went on, as long as they let her lie. Behind her, a soldier was carrying a parcel of feminine attire.
>
> […]
>
> Nothing more was seen of the mad woman. What had they done with her? Where had they taken her to? […]
>
> And suddenly I understood, I guessed everything. They had abandoned her on that mattress in the cold, deserted wood; and, faithful to her fixed idea, she had allowed herself to perish under that thick and light counterpane of snow, without moving either arms or legs.
>
> I only pray that our sons may never see any wars again (emphasis added)].

Maupassant's description leaves us with the bitter taste of sorrow repressed by the cruelty of war, for which the writer finally expresses his loathing. This feeling, which impregnates the reader's mood, rests upon a description of clinical value: an immobile patient with mutism, who for 15 years was washed and fed by others. Due to the final lines, noting that "faithful to her fixed idea, she had allowed herself to perish," the clinical picture is rather suggestive of Cotard syndrome, which would have led to the patient's being abandoned to her fate; all of these signs appeared after a major reactive depressive syndrome, the most frequent situation preceding Cotard syndrome.

Discussion

Capgras syndrome in literature and in clinical practice

Capgras syndrome was described in 1921 by the French psychiatrist Jean Capgras and Jean Reboul-Lachaux, a medical intern at the time (Figure 1). They described a patient who was convinced that her five children had been kidnapped and replaced by another five children, who were sick and did, in fact, successively die. The description could almost have been taken from a crime novel, as the patient had been to the police, who had begun searching, even in the basements of Paris. The intervention by Capgras and Lachaux made it clear that the patient was delusional, believing herself to be a descendant of Louis XVIII and of the viceroy of the French West Indies, and a millionaire who had been deceived and robbed of her fortune by other impostors.[10] The authors named the disorder *l'illusion des sosies* (illusion of doppelgängers), a reference to Plautus' play *Amphitryon*. Sosia was the

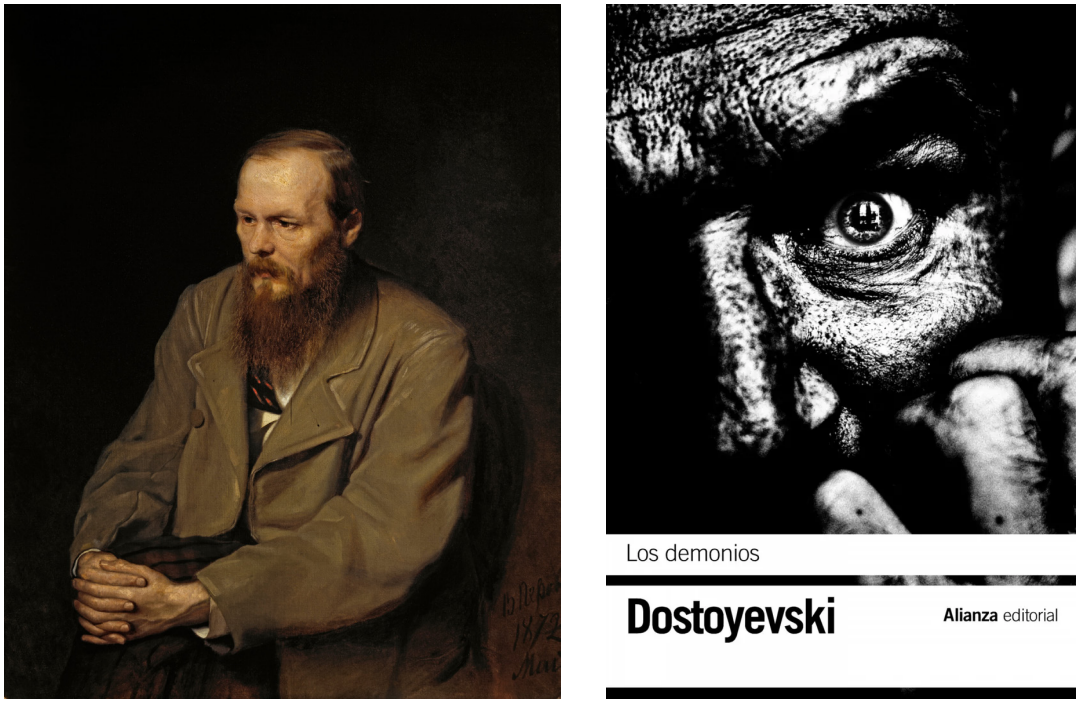

Figure 2. Left: Fyodor Dostoevsky, painted by Vasily Perov (1872). Public domain image. Right: the front cover of the Spanish-language edition of his work *Demons* used for this study. Capgras syndrome or *illusion des sosies* should more accurately be named after Timofeevna or Dostoevsky, as it was described in this character more than 50 years before the clinical description by Capgras.

servant of general Amphitryon. In order to seduce the general's beautiful wife Alcmena, he disguised himself, achieving an extraordinary likeness of the general, with whom he was mistaken.[3] Thus, the term *sosia* is used in common Spanish to refer to a lookalike or a double of another person,[1] whom they are trying to impersonate or supplant.

It is worth noting the dates of Dostoevsky's novel, published in 1872, and the description by Capgras and Lachaux, 51 years later in 1923. In my opinion, the description by the Russian author is more precise and accurate, as the character lacks any awareness of her identity alteration, and is therefore truly delusional, whereas Sosia in Plautus' play acted out of free will and self-interest. It seems unlikely that the two French physicians would have known Dostoevsky's novel. Had this been the case, their syndrome should more accurately have been called Timofeevna syndrome or delusion, after Dostoevsky's character, rather than after Sosias. As has occurred on other occasions in medicine, and specifically in neurology, the observational ability of narrative writers preceded the true clinical description by several years.[10] This should be identified and acknowledged, even if the consolidated names remain.

Until the last quarter of the 20th century, Capgras syndrome belonged to the sphere of psychiatry, particularly in the context of schizophrenia and other psychotic disorders. It was attributed for many years to psychodynamic mechanisms of ambivalent feelings towards people in the environment. In delusion, there is a reduction in the tension between the death drive and the life drive, as it is easier in our society to consider oneself a victim of deception or supplantation than to accept our true desire to kill a loved one.[11] Since the late 20th century, the syndrome has been considered a neurological disorder, with the recognition of classical neurological aetiologies.[12] For

instance, it has been described in relation to migraine,[13] tumours,[14] and pharmaceutical and recreational drug use.[15] However, it is fundamentally associated with neurodegenerative diseases,[16,17] in which it is most frequently observed, to the extent that the syndrome is now as familiar in neurology as in psychiatry, and all neurologists will have observed a case, particularly in patients with dementia.[18,19] According to the official account, this long journey began a century ago with Capgras and Lachaux, overlooking the fact that it had actually appeared 50 years earlier with the genius of Dostoevsky (Figure 2).

Out-of-body experiences: clinical signs and presence in art

Out-of-body experiences (OBE) include such phenomena as autoscopy and heautoscopy. They were described in the mid-20th century by classical French neurologists, with publications by Lhermitte[20] and Hécaen,[21] and systematised some time later in English-language publications by Lukianowicz.[22] More recently, Olaf Blanke has dedicated many years of research to studying the origin and mechanisms of these phenomena. He has been able to demonstrate that the parieto-temporo-occipital junction, in one (preferentially the non-dominant side) or both sides of the brain, is active during these experiences, and is therefore considered fundamental in their origin. Within these experiences, classical neurology distinguishes between the aforementioned phenomena of autoscopy, heautoscopy, and OBEs. In the first, autoscopy, the reduplicated body appears opposite the original, where consciousness resides, with both bodies standing. In contrast, during an OBE, the original body is lying down, with consciousness located in the double, also horizontal, which is elevated above the original, a levitation reminiscent of Christian doctrine. In these OBEs, the "soul" leaves the body, which is nearly always dying, as this mental experience is fundamentally associated with near-death experiences. Around half of cases present with visual involvement, in the form of bright dazzling lights and sometimes true hallucinations,[23] which may be visual, auditory, or even kinaesthetic.[24] The case described by Tolstoy precisely suggests an association between these visual phenomena of lights and shimmering with OBE, and even heautoscopy, which is none other than an alternation and oscillation between autoscopy and OBE.

These mental phenomena are typically experienced at the end of life, though this is not exclusively the case as they may also be secondary to structural lesions to areas of the parieto-temporo-occipital junction. Their expressivity is unquestionably influenced by social or cultural factors, and as a result they have been and continue to be an object of study in diverse disciplines, including anthropology, philosophy, and psychology. They may approach mysticism, ecstasy,[25] or such pseudoreligious doctrines as theosophy. Thus, it should be no surprise that these phenomena are represented in classical (Figure 3) and abstract paintings (see the works of the Swedish painter Hilma af Klint[26]), as well as literary creation. As in the case of Capgras syndrome, the first description of OBEs was in literature. In 1902, Binet and Sollier[27] published a series of 12 of their own cases, the majority of which were secondary to persecutory delusion or various types of hysteria. At the end of that article, they reproduce Alfred de Musset's poem *La nuit de décembre*, in which they identified the semiology of autoscopy. The poem is part of the poet's larger work *Les nuits*, written between 1835 and 1837 after the end of his relationship with George Sand. In this case, there is no specific name for these phenomena of altered body identity, which, once more, should be differentiated from that of the French poet Musset (who described them over a century before their clinical systematisation) or, in any case, those of the prestigious psychologists Binet and Sollier (whose publication appeared half a century before the currently accepted semiology, published in the 1950s).[20-22]

The situation of the patient reported by the father of neuropsychology, Alexander Luria, is similar. It is described in what is probably his most relevant science outreach work.[7] Oliver Sacks himself acknowledges the influence of this book, which was decisive in his decision to write popular science works on neurology.[28] Like his master Luria, Sacks dedicated years to his patients, spending periods of time or travelling with them before he transformed them into the characters of his wonderful essays. The patient Salomon was extraordinary due to his synaesthetic memory, with complex and diverse forms that included visual-auditory, olfactory-tactile, and other combinations. Thanks to this ability, he developed an eidetic technique that enabled him to place any object, word, or idea from his imagination into a specific place in the organised space of his mind. His visual mind was associated with sensations. He linked any semantic content, previously marked or labelled with a sensation, with the partitioned space of his visual mind. This explained his extraordinary capacity not to forget, which so fascinated Luria. This synaesthetic mind, in turn,

Figure 3. El Greco's painting *The burial of the Count of Orgaz* (1586-1588). The lower part depicts earthly life, where the deceased count is buried, with the upper part symbolising heavenly life, with the zenithal figure of Christ receiving the souls. In the centre, the count's soul, detached from his deceased body and lifted by an angel, adopts the ideal form to be reborn into life, that of a chrysalis. The lighting moves from cold tones and darkness in the lower part of the painting to an explosion of whites in the upper level. This is an excellent example of the cultural influence on artistic expression of autoscopic phenomena and out-of-body experiences

afforded him excellent control over his own body. Thus, he was able, for example, to imagine that he was running after somebody, and at once observe that his heart rate jumped from 70 to 100 beats per minute; or to make each of his hands have a different temperature by imagining that one was placed into cold water and the other into a fire. Following the same procedure, he imagined that, at the dentist's consultation, his mind was detached from his body. The body was "him," the other whom Salomon observed, painlessly, thanks to the distance of autoscopic detachment, as his mind was separated from the original body that was undergoing the intervention, which he was unable to feel. This is a true case of an OBE generated at will.

Autoscopic detachment associated with doppelgängers: an introduction

Moving a step beyond the voluntary bodily reduplication of Salomon, a real character described in essays, let us consider fiction and the great writer Jorge Luis Borges. Identity, precisely, is one of the most important elements of his work. Regarding this concept, his analysis turns once and again to the use of mirrors as metaphor, to the other as a reduplicated reflection, to dreams, to the survival in time of the original or of the reflection, and to memory as the backdrop for his descriptions. The best of his short stories, including *The circular ruins*, are born of the interaction between variations of all these elements. The first noteworthy feature of this story is the fact that the protagonist, the dreamer, has no name; in contrast, the man he dreams is aptly named Adam, and the dreamer's god is named Fire, referring to the element fire (lower case), which will be the revelatory element of the story. The anonymity of the dreamer is distressing, as it applies to everybody, including the reader. It is noteworthy that the dreamed man, Adam, unfolds into a creature with "sharp features which reproduced those of the dreamer." Therefore, the dreamer replicates himself, a reduplication that he conveys, through dreaming, to impose Adam on reality as a creature of flesh and blood, as only the dreamer and his god (Fire) know of his existence. Appropriately, the dreamer experiences an inevitable failure: according to the doctrine of Christianity (the religion of Borges), only God has the power to create. It is for this reason that we see the revelation of his god, Fire, thanks to whom the dreamer is finally able to create the man, who could only be Adam, from the material of his dreams.

The intrusion of fiction into reality is an invention of Borges, a subgenre of his own that is repeated in other important works (eg, *Tlön, Uqbar, Orbis Tertius* and *Pierre Menard, author of the Quixote*). This Borgesian invention has been used by other authors, including such an influential figure as Nabokov in one of his best novels, *Pale fire*.[29] This powerful literary technique goes beyond literature, and has constituted a philosophical current within epistemology, the theory of knowledge. It was Descartes, whose methodological doubt led him to the *cogito* of "I think, therefore I am" as the only certainty, who used the technique to propose a universe (our own universe) in which we may all be simple objects in the dreams of the creator, in a structure that is otherwise identical to the universe we experience on a daily basis; alternatively, he imagined that the same universe may result from the actions of a malevolent demon who is able to manipulate us at will, without our knowing it.[30] These are situations of radical scepticism, whose existence we can neither affirm nor deny with any certainty.[31] Despite this, knowledge and science continue to progress, resting on foundations that are fallible but solid. Cartesian doubt and scenes of a universe created in the dreams of gods or by manipulative demons have also been explored in cinema, in such films as *The Matrix*, *Inception*, and *The Truman Show*. These give rise to similar reflections to those discussed above with regard to Borges' *The circular ruins*, in which a new identity is born through reduplication in a dream. This new identity penetrates reality as a real creature that, in a masterful twist, leads the protagonist to discover that he too was dreamed by the god Fire, who is revealed to be the true creator of everything and everybody; these verbal and visual metaphors emerge from Borges' pen, just as they had in the thought of Descartes. In literature, it is the alteration of identity, with its own semiology, that has led us to describe this existential scenario, on a path from literature and philosophy to the realm of neurology.

Jules Cotard, Charcot, and the mad women of Maupassant

Maupassant's description in the short story *La folle* is suggestive of Cotard syndrome, to which we may add the label "probable": the differential diagnosis remains open, as the story does not reveal sufficient details to have certainty of the diagnosis. Onset with a six-week episode of delusion suggests a possible febrile, infectious cause, such as typhoid fever, which has been reported to precede Cotard syndrome.[32]

Other possible entities include catatonia, hysterical conversion disorder (Charcot's hysterical patients had been presented at public clinical sessions [the *leçons de mardi*], which Maupassant frequented[33]), or such other disorders as locked-in syndrome secondary to a pontine lesion of the brainstem, which we may infer from the fragment "she remained motionless, eating next to nothing, and only moving her eyes." The differential diagnosis is certainly broad. However, we must insist that the patient's desire to die, as well as the previous history, mean that the description can be taken to refer to Cotard syndrome for illustrative purposes. The key detail in Cotard syndrome is the opposite of that of Capgras syndrome, in which the patient's loved ones are believed to be dead; in Cotard syndrome, patients believe themselves to be deceased, with either the entire body or body parts being dead. Some patients even perform amputations on themselves, convinced that their limbs are lifeless; they may even sense a fetid odour, deny a pregnancy,[34] or present with paralysis of one or more limbs.[35] Neglect and abandonment of bodily hygiene, and neglect of the body due to their belief in their own death may lead to actual death without timely intervention, as is the case with Maupassant's character. In this context in which an individual is convinced of their own death, cases have been reported of self-amputation of limbs or the nose, as mentioned above.[36,37] The well-known example of Van Gogh and his ear has been attributed to Cotard syndrome, among other possible causes.[38] Variants of Cotard syndrome with spiritual manifestations have also been described.[39] These are delusions of negation in which the subject believes that their soul has died or been separated from their body, setting off on a journey that will bring them to universes that may be welcoming or punitive, usually accompanied by a loved one or family member.[40] For instance, we may cite Dante's journey in the *Divine comedy*, in which he is guided by Virgil, who shows him the three possible destinations of the soul, culminating with the inferno and the revelation of unending suffering.[41]

Jules Cotard (Figure 4) was a renowned French psychiatrist, neurologist, and army surgeon. He had an excellent education, counting Charcot among his masters.[42] In addition to a capacity for learning, Charcot expected loyalty of his students, and any who questioned his methods, as did Axel Munthe (whose criticism was well-founded), were expelled from the influential service at La Salpêtrière.[43] Cotard employed his master's anatomical-clinical method to demonstrate that lesions secondary to embolisation in rabbits resulted in brain atrophy, similar to lesions secondary to cerebrovascular disease in adult humans or perinatal hypoxia in newborns. However, he observed that in older children, hemicranial atrophy of various causes did not necessarily have clinical repercussions, even when language areas were affected (Jules Cotard was a contemporary of Paul Broca). With this finding, he was implicitly describing brain plasticity, the brain's ability to use spared regions compensate for the functions of an injured area, which is mainly observed in children. He reported these findings a century before the term "plasticity" was consolidated with reference to the brain. He also described altered consciousness secondary to hyperglycaemia, that is diabetic coma; this is a highly relevant detail as, until then, it had been thought that impaired consciousness was the result of structural lesions due to cerebrovascular disease or trauma.

Figure 4. Jules Cotard (1840-1889), a French army physician who counted Charcot among his masters. His most distinguished contributions include the delusion of negation that bears his name, in which patients believe parts or the whole of their body to be dead or not to exist. Public domain image.

However, Jules Cotard is fundamentally remembered due to the *délires de négation* or delusions of negation that bear his name, which he described in one of his patients. As is also the case in Capgras syndrome, not all cases are secondary to psychotic disorder or severe

depression. Cases are reported in association with a wide range of causes,[44] including infections (typhoid fever, herpes, HIV), temporal lobe epilepsy, migraine, parietal tumours, and, above all, degenerative dementia.[45] The disease preferentially affects temporoparietal regions, particularly on the non-dominant side. As a consequence, patients are not able to associate faces (or bodies) with the normal emotive load. If the lack of emotional significance refers to the faces of others, then the patient would have Capgras syndrome, whereas if it refers to one's own face or anatomy, then it will result in Cotard syndrome. These delusions are the consequence of a disconnection between the fusiform gyrus of the base of the temporal lobe, responsible for recognition of faces, and the amygdala, which gives them their emotional value, resulting in a cognitive-emotional dissociation. This mechanism was posited some years ago by Ramachandran and Blakeslee,[46] at a time when an appropriate anatomical-clinical basis had been established based on SPECT imaging findings.[47]

On Facebook, we have hundreds of friends (sometimes over a thousand). This supposes an association of emotional value to subjects who we have never met or seen in real life. We lack that revelatory expression, the brilliant or clumsy action, the tone of voice at the critical moment, the scent or touch that only real-life contact can show us. Thus, calling somebody a friend or acquaintance based on the scarce details that define an individual online is in reality an "anti-Capgras" syndrome, attributing familiarity to that which we do not in fact know. This is a social phenomenon, as noted by Robert Sapolsky.[48] This phenomenon may be characterised as a dissociation due to excessive trust, which makes us highly vulnerable to impostors. It is truly the reverse of Capgras syndrome, in terms of its manifestations, consequences, and even its epidemiology: whereas Capgras syndrome is extremely rare, this "anti-Capgras" syndrome on Facebook is alarmingly common.

Open field for research in the history of neuroscience

The scope of this article was limited to the semiology, analysis, and discussion of the body identity alterations identified in 19th- and 20th-century literature. However, we could have gone much further. Thus, we might have considered, for instance, the body alteration in Cervantes' *El licenciado Vidriera*, which has previously undergone semiological analysis,[49,50] like other works by the author.[51]

We might also find unexplored terrain if we turn our attention to the study of identity in such works as Miguel de Unamuno's *Mist* (1914), in which the character Augusto Pérez discovers that he is fictitious after paying a visit to Unamuno, whom he accuses of being "nivolistic," another character in the "mist" of the universe of existence; or Benito Pérez Galdós, whose character Máximo Manso in the novel *Our friend Manso* (1882) also rebels against the author, asserting in the first line of the novel that "I do not exist."[52] Particularly relevant is the work of the Sicilian writer Luigi Pirandello, an extraordinary student of the idea of identity as alienation in his seminal works *The late Mattia Pascal* (1906), *One, no one, and one hundred thousand* (1926), and his best-known play, *Six characters in search of an author* (1906). Pirandello is known to have influenced Unamuno, with *Mist* showing clear Pirandellian elements; the same is not true of Galdós, as a simple matter of chronology: though this technique is attributed to Pirandello, it should probably be called Galdosian, above all, although the Italian developed it more fully and it is not known whether he read Galdós.[53]

Our research may go even further, seeking common alterations in Alzheimer disease, which has been cited extensively in literature in recent years. This disease frequently shows identity alterations, affecting others (prosopagnosia) and the self (autoprosopagnosia). This study, which is no doubt incomplete, may be expanded with these suggestions, which I hope may serve as inspiration for the research of inquisitive and curious readers. For now, this research shall be limited to the present study and the forthcoming analysis of the semiology of doubles and doppelgängers.

This article and potential future projects lie at the frontier between science and the humanities, and more specifically between the neuroscience of clinical neurology and literature. This is an extensive field that has demonstrated the contributions and mutual enrichment between areas of knowledge that are only superficially distant. For instance, as noted above, literature has contributed pioneering clinical descriptions that preceded the strictly clinical description by decades, in some cases. The most classical examples are Pickwick syndrome and sleep paralysis,[11] which appeared in literary works before they were described by physicians; more recently, we may cite the clinical and literary precision, in addition to the added didactic value, of the clinical descriptions of Maupassant (in other stories than that cited here)[3] or Galdós.[54] Without the extraordinary

capacity for observation of these authors, who lacked any clinical training, the expressive and artistic value of these descriptions would no doubt be lessened. And medicine would be deprived of the added didactic value mentioned above. Furthermore, it is noteworthy that the writer himself is introduced into the mental experience of suffering of his characters and, at once, into the mechanisms by which they adapt to and overcome their disease; this experience is reflected in the reader, who gains knowledge of such a rich, complex phenomenon. The reverse is also true: the moral standing of some literary works and characters is of undeniable moral value to the reader, even more so if he/she is a physician, as the behaviour described has real value for medical and neurological practice.[43] It seems obvious that the improvement and advancement of society, to which medicine and neurology are so necessary, can only be achieved harmoniously when there is collaboration between disciplines, including the humanities. After all is said and done, this enrichment is and will be mutual, with the shared objective being to improve social thought and social justice.

Conflicts of interest

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