Hostile interactions between body and self

Our body houses the various selves we are. It continuously informs us about the position of its limbs, both relative to themselves and relative to the trunk and head. It allows us to feel touch, to reach out and touch others, and to differentiate between passively received and self-delivered touch. It provides us with information about temperature, pressure, and gravity, and it mediates basic sensations, feelings, and emotions, from pain, fatigue, and hunger to relaxation, lust, and ticklish joy. Enabling us to look up to the stars, it even shows us how small we are, how limited in reach, and how alone most of the time. Only our body is constantly present; it is the only object that abidingly stays with us throughout our lives. It is perhaps this continuity that binds together the different components of our self—sensory-receptive, motor-agentive, emotional—and makes us feel that we are one self in one body.

All this said, we note that there are various neurological conditions in which the unity between body and self is thoroughly shaken. We may no longer acknowledge ownership of parts of the body, or we may deny agency over bodily actions. We may feel alienated or spatially separated from our body, or project the experience of touch into objects in extracorporeal space. Although not obligatorily eliciting a morbid reaction, such disintegrations between body and self occasionally induce overt hostility. The present note provides a glimpse into some major types of auto-aggression after body-self fragmentation.

The anachronic hand

While the “alien hand sign” designates the feeling of non-belonging of one’s own hand, the sign of the “anarchic hand” involves the loss of control over complex goal-directed motor behavior that runs counter to a patient’s intentions.1 Antagonistic actions range from the mildly annoying (unzipping a just-zipped jacket; taking back coins just handed over to another person) to the highly embarrassing (public masturbation), to overt acts of self-aggression. The latter come again in degrees: an anarchic hand may simply induce pain (e.g., by beating the head or pinching the nipples) or actively try to kill the patient (by drowning,2 but most frequently by choking). The anarchic hand sign occurs after anterior lesions of the corpus callosum and the supplementary motor area. In contrast, the alien hand sign is reported in corticobasal degeneration and related progressive degenerative diseases, but also after focal, vascular, or space-occupying lesions to the posterior part of the corpus callosum encompassing adjacent parietal cortex. Both alien and anarchic limbs (lower extremities can be affected too) are thus interhemispheric disconnection syndromes, in which either ownership of (posterior disconnection) or agency over (anterior disconnection) a limb is no longer acknowledged. Both left and right hemispheric lesions may lead to contralateral alien and anarchic hands, but in right-handed patients serious self-destructive behavior appears to be more common if the left hand, i.e., the right hemisphere, is affected.3

Mental autotomy

One of the most bizarre disorders of the relation between body and self is a condition labeled “body integrity identity disorder” (BIID).4 Psychiatrically otherwise healthy individuals express the explicit wish to have a fully functional limb amputated. Hostility against the unwanted limb takes various forms, from pressure cuffing to freezing, and to mechanical injury severe enough to enforce professionally performed amputation. Sometimes, the borders between elective amputation attempts and less drastic forms of self-injury are blurred.5 The cerebral mechanisms...
underlying the often compulsive rejection of a body part await detailed description. Clinical data point to a parietal lobe dysfunction, more evident in the right hemisphere (left-sided limbs are more frequently affected than right-sided). From a biological perspective, it seems most appropriate to conceptualize the desire for amputation as an attempt at autotomy, ie, the self-amputation common among many vertebrate and invertebrate species. As the physical realization of autotomy has been lost during evolution, human individuals’ desire for amputation must be considered an atavistic behavior trait. Despite the fact that persons with BIID who manage to have the desired amputation performed do experience phantom limbs (Brugger and Blanke, unpublished observation), we assume that these are more transient, less elaborate, and less vivid compared with regular amputation phantoms. Individuals with mental autotomy typically indicate that they have experienced the desire for amputation “as long as they can remember.” This suggests that no proper representation of the critical limb has ever been established during early ontogenesis, ie, despite successful “incarnation” of a limb, its animation failed. This is in direct contrast to those cases of congenitally absent limbs, whose failed incarnation did not prevent an animation in the form of vividly experienced phantom sensations.6

Somatoparaphrenia and misoplegia

Some patients with hemiplegia deny their paralysis (anosognosia) and actively disclaim ownership over the disabled hemibody (somatoparaphrenia7). The paralyzed limbs are typically attributed to the nurse, a relative, or an unknown person. In some cases, this “foreign part of oneself” may take a consoling role, in others a dispute arises, and physical aggressions like beating or biting the paretic side have been reported. The related sign of misoplegia, ie, hatred of one’s paralyzed limbs,8 designates the personification of the affected body parts. These are given derogatory nicknames, and are cursed at and beaten (Figure 1a). Both somatoparaphrenia and misoplegia are more often seen after right than left parietal damage, and the association of specifically self-threatening and self-destructive interactions with the left side of the body is compatible with the assumption of enhanced
suicidal ideation after right-hemisphere dysfunction. The fact that caloric vestibular stimulation can transiently abolish somatoparaphrenic denial speaks for the important role of the vestibular system, not only for anchoring the body in space, but also for maintaining the unity between body and self.

**Malevolent shadows**

A frequent illusion in patients with psychiatric or neurological disorder is the feeling of the presence of a person nearby. Several observations make clear that this “person,” often referred to as a shadow, is nothing more than a projection of the own body representation into extra-corpooreal space. For instance, the shadow follows the person wherever he or she goes, and it is frequently felt to mimic all bodily movements. While most feelings of a presence are emotionally neutral, there are a considerable number of cases in which anarchic and malevolent overtones are evident. In a recent report of the experimental evocation of a felt presence by focal temporoparietal cortex stimulation, the illusory shadow person engaged in antagonistic behavior and produced discomfort by clasp- ing the experient from behind. A large-scale analysis of reported emotions during unilaterally felt presences revealed a marked “sense of evil” in the case of left-sided shadows, whereas personal pleasantness was emphasized after right-lateralized illusions. The motif of physical threat is taken up in belletristic accounts of the feeling of a presence, notably by authors who had experienced the phenomenon themselves. In August Strindberg’s *Inferno*, an autopathography of his psychotic illness, the Swedish author attacks his shadow person with a dagger. Guy de Maupassant’s novel *Le Horla* (“the one out there”; *Figure Ib*) ends with the protagonist’s decision to commit suicide after he failed to kill his shadow double. These highly dramatic person-shadow interactions are perhaps only surpassed if the phantom of oneself takes the form of a fully visualized double that may act quite independently of, and often in contradiction to, the person’s intentions.

**Antagonistic doubles**

Heautoscopy, the encounter with one’s own double (*Figure Ic*), is more than a “visual hallucination of the self.” It is a multimodal illusion of bodily reduplication, comprising visual, proprioceptive, postural, and vestibular impressions. Accordingly, the cortical site most often compromised in heautoscopy of neurological origin is the multisensory association cortex along the borders of occipital, parietal, and temporal lobes. Reports about hostile interactions between a person and his or her double abound, in clinical reports and belletristic accounts. Patients may experience being persecuted and tortured by their double, may seriously self-injure during heautoscopy or strive to harm or even kill their reduplicated self. We have observed the intriguing case of a young man who, during a complex partial seizure, was assaulted by his double, but subsequently turned into the attacker himself. More and more scared by the fact that he had become unable to tell which of the two he really was, he jumped out of the window in order to kill himself. *Table I* lists four major variants of “heautoscopic suicide” as an actively imposed or passively experienced form of self-injurious behavior.

The vast exploration, in the belletristic literature, of the themes of mirroring and doubling in all their shades and the exploitation of anarchic limbs and antagonistic *dop-pelgangers* in the movies give testimony to a deep fascination with the fragile unity of body and self. Previous neuroscientific accounts of self-fragmentations have focused on relatively low-level aspects of sensorimotor (dis)integration and action control. The contents of an individual experience were largely neglected. On the other hand, the psychodynamic approach to disembodiment and splitting often felt obliged to uncover some symbolism assumed to be hidden in a patient’s report. A successful neuropsychiatry of the hostile interactions between body and self will have to respect both bottom-up and top-down views of corporeal awareness and self-experience. As phantom limb and phantom body (ie, one’s own double) are conceptually related phenomena, antagonistic behavior displayed by a single limb should perhaps not be regarded as principally different from that of a reduplicated figure of one’s entire body. An understanding of the complexity of interactions between a person and his or her double will barely be possible without the preceding understanding of the mechanisms allowing a single hand to live a life of its own. Although there is no direct clinical or neuroanatomic evidence for a primary callosal pathology in cases of heautoscopy or its nonvisual precursors, it is not entirely implausible to assume an interhemispheric disconnection at the basis of heautoscopic aggression. One thing is certain: more than anything else, it is the careful observation of neuropsychiatric
disorders from which we can learn about the relations between body and self. In the words of the French novelist Marcel Proust (Le côté de Guermantes): “It is in moments of illness that we are compelled to recognize that we live not alone but chained to a creature of a different kingdom, whole worlds apart, who has no knowledge of us and by whom it is impossible to make ourselves understood: our body”

### Key reference from clinical literature

| (1) Self-injury/suicide in an attempt to escape the double | Fenestration in order to get rid of double
|---------------------------------|---------------------------------
| (2) Self-injury/suicide claimed to be inflicted by the double | Double is blamed to have cut patient’s tongue
| (3) Self-injury/suicide in an attempt to kill the double | Patient’s self-mutilations re disguised as attempts to kill left-sided double
| (4) Observation of the doppelgänger’s self-injury/suicide | Severely depressed patient meets her double who had hanged herself

**Table I.** Four variants of “heautoscopic suicide,” ie, the attempted or symbolic killing of oneself in the course of heautoscopy. Only the least dramatic form, passive observation of one’s double’s suicide, could not be found as a literary motif.

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