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POSTHUMAN GLOSSARY

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This regulation of group system dynamics can be seen as construction of a virtual repertoire, modelled as the production of an attractor layout, and affectively experienced as the background affect or mood of the group. A second-order body politic can also be studied psychologically, as it regulates inter-somatic affective cognition, the emotional and meaningful interchanges (1) among its members, and (2) between their collective affective cognition and that of other bodies politic, at either personal, group or civic compositional scales. In other words, groups have characteristic ways – a limited virtual repertoire – of making sense of what happens, on the basis of which decisions take place as actualizations or selections from that repertoire. These decisions can be seen as channelling toward an end state, modelled as the approach to an attractor in the group's state space, and experienced as a spontaneous agreement in which the collective subject makes up its mind: 'all of a sudden it dawned on all of us that this is what we had to do.' In terms of its temporal scales, a short-term event for a second-order body politic is an encounter of first-order bodies politic. In the mid-term, we see repeated patterns of such encounters or subjectification practices, and in the long term, we see the becoming-custom of such practices, their deep social embedding.

See also Alienation; Body Without Organs; Geopolitics; Posthuman Rights; Posthuman Disability and DisHuman Studies; Trans-corporeality.

John Protevi

BODY WITHOUT ORGANS

In 'To Have Done with the Judgement of God', a radio play broadcast on

28 November 1947, Antonin Artaud declared war on the organs, introducing the idea of a body without organs that would be free from the capturing confinements of automatic reactions and habitual patterns. In their co-authored philosophy books *Anti-Oedipus* (1972) and *A Thousand Plateaus* (1980), Gilles Deleuze and Félix Guattari propose Artaud's body without organs as a concept to critique western Enlightenment forms of autonomous subjectivity. While Deleuze and Guattari never explicitly relate the body without organs to the posthuman, the concept may be relevant to understand why N. Katherine Hayles in *How We Became Posthuman* can conclude that 'we have always been posthuman' (Hayles 1999: 291).

For Deleuze and Guattari the body without organs is an evolving concept. In *Anti-Oedipus* it is introduced in relation to the body of 'the schizo' that resists the habitual organization of the body. Hence the reference to Artaud, who in all his delirious and artistic expression points out that underneath the traditionally coded body with an assigned place and role in society, underneath the organs, there is a chaotic, messy world full of intensive potentiality. Men, women, children; all have their place in a social hierarchy. Physical labour, bearing children, sitting up straight in class; all have an orderly place for their organs. The (schizoid) body without organs defies the social code and deliberately 'scrambles all the codes' (Deleuze and Guattari 1972: 15). In *A Thousand Plateaus* Deleuze and Guattari invite us to 'make a body without organs', to experiment (artistically, socially and philosophically) and find new ways of relating to the body: 'Why not walk on your head, sing with your sinuses, see through your skin, breath with your belly?' (1980: 151) They elaborate the liberating

strategies against the stratifying regimes of the socially accepted body, starting with a call for doses of caution: the anorectic body, the masochist body, the addicted body, the paranoid body – they are all bodies without organs that demonstrate that such resisting strategies are not without danger and can turn out to be deadly. But there are no preset rules, except to be watchful and wise, acknowledging at the same time our fragility and need for freedom and the creation of new possibilities for life.

The body without organs is the sub-personal, not-yet-organized level of affective qualities that allows new perceptions, new connections and new affects. Because it dives below the categories and codes, the body without organs can make cross-cutting connections between the human and the non-human: materially on the level of the combination of human and animal DNA, or on the affective level of the proximity in movement (speed and slowness) in processes of becoming-animal (e.g. prowling as in a becoming-cat). So a second way of understanding the body without organs goes beyond the concept of the human body altogether, when transversal relations between species emerge. Thirdly, even further, the non-organic itself can be considered a body without organs. The earth is a body without organs, full of vibrant matter (Bennett 2010). Most fundamentally, metal is a body without organs. Metal elements can be found in all human, animal and inorganic matter. In its primordial and transformative quality, metal is even the prime conductor of all matter, indicating an immanent power of corporeality in all matter (Deleuze and Guattari 1980: 411). These in-human and inhuman extensions of the body, beneath the organs and beyond human corporeality and into the geology of the earth, make the body

without organs a posthuman concept (Pisters 2014).

More specifically, based on these transversal extensions, the body without organs can also be productive in the context of the technosphere. In her book *How We Became Posthuman*, Hayles discusses how the model of the human since the Enlightenment has been subjected to alienation by cybernetic machines and artificial intelligence. Hayles brings together both scientific theories and fictional narratives of literature that equally construct ideas about the posthuman in the computer age. She discovers two tendencies. On the one hand, there is an apocalyptic narrative that indicates the fear of the loss of humanity, loss of control and the dissolution of the human self. These are the stories where technology is conceived as separate from the human body: 'Only if one thinks of the subject as an autonomous self, independent of the environment, is one likely to experience the panic performed by Norbert Wiener's *Cybernetics* and Bernard Wolfe's *Limbo* (Hayles 1999: 290). On the other hand, Hayles emphasizes (scientific and imaginary) stories that propose a contrasting vision of the human in relation to the contemporary technoworld: 'When the human is seen as part of a distributed system. . . it is not a question of leaving the body behind but rather of extending embodied awareness in highly specific, local and material ways that would be impossible without electronic prosthesis' (290–1).

Hayles' conception of the posthuman is explicitly related to the articulation of the human with intelligent machines. However, by disentangling certain assumptions about the human conceived as an independent entity, she opens up possibilities for the posthuman to survive in close circuits with other life forms, human, otherwise embodied and inorganic, that

we depend on. The body without organs suggests that we did not have to wait for prosthetic machines, extensions of men by technology, to understand that the 'scrambling of the codes' is first and for all connected to a desire and fundamental need to deliver our automatic reactions and habitual self-contained forms of subjectivity. In acknowledging our deep and ever-changing transversal connections

to all other entities on the earth, the body without organs proposes indeed that we have always been posthuman.

See also Alienation; AI (Artificial Intelligence); Earth; In-Human the; In/Human; Contemporary, the; Otherwise Embodied Others.

Patricia Pisters

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registered as sensation by bodies that pass from one state to another.

As Jodi Dean (2010, 2015) argues, the uses of social media are driven by a search for affective intensity that orients and provokes the interest and curiosity of users as they move across platforms, click on links, share and comment, searching for a shiver of interest, amusement, anger or disgust. Intensity, or what Dean discusses as 'the drive', is that which drives the movements across sites and applications. What the users encounter on social media platforms, however, are not only other people but equally image and video files, animated GIFs, emojis, comments, algorithms, information architecture and routines of data mining. Although their parameters are of human design, these non-human factors curate the shapes that our sociability may take, what we can see and in what kinds of constellations on these platforms – and, perhaps to a degree, how we may feel about these interactions. Sarah Kember and Joanna Zylińska therefore argue that 'It is not simply the case that "we" – that is, autonomously existing humans – live in a complex technological environment that we can manage, control, and use. Rather, we are – physically and ontologically – part of the technological environment, and it makes no more sense to talk of us using it, than it does of it using us' (2012: 13).

Tero Karppi (2015: 225) points out how Facebook, the currently dominant social networking site, aims to cater for 'happy accidents' through its algorithms that are set to render visible things that users may not expect or actively search for. Similarly to the 'like' buttons, such designed serendipity aims at affective modulation, or amplification (Massumi 2015a: 31) in the positive register. The controversial Facebook emotional manipulation study of 2012, conducted by a team of psychologists from Cornell, encapsulates much of this. The

experiment involved the news feeds of 689,003 Facebook users, and analysis of some three million posts consisting of 122 million words, without the users' explicit informed consent (Kramer, Guillory and Hancock 2014). The research team tweaked the algorithms selecting the content visible in users' news feeds and manipulated them to show more or less positive or negative posts. The overall aim was to assess how this affected the users' emotional states. Their hypothesis – and finding – was that 'emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness' (Kramer et al. 2014: 8788).

Without further unpacking the limitations or conceptual nuances of this specific study here, it points to the centrality of affective modulation in and for the operating principles of much commercial network media – from social networking sites to online newspapers and clickbait. In other words, affective modulation is in-built in, and central to, the production of value as 'dependent on a socialised labour power organised in assemblages of humans and machines exceeding the spaces and times designated as "work"' (Terranova 2006: 28). As forms of affective labour, this value production involves the manipulation of affects, social networks, and forms of community alike (Hardt and Negri 2000: 293; also Coté and Pybus 2007). This is an issue of 'the corporeal and intellectual aspects of the new forms production' where 'labor engages at once with rational intelligence and with the passions or feeling' (Hardt 2007: xi). Not only do social media 'produce and circulate affect as a binding technique' (Dean 2015: 90) to attract returning and loyal users, but affective stickiness is also intimately tied to the production of monetary value.

Network media involves both personal and collective affective economies (Ahmed

2004) linked to memories, feelings, attachments, monetary value, politics, professions and fleeting titillations. Explorations of networked affect as the fuel for action help in mapping out how online platforms, exchanges and devices matter, as well as that which they affect – the purposes they are harnessed to and the outcomes that they facilitate. Here, any clear binary divides between the rational and the affective, the human and the non-human or the user and the instrument used are guaranteed to break down.

See also Affective Turn; Algorithm; Body Without Organs; Post Internet; Non-Human Agency; Political Affect.

Susanna Paasonen

NEURONAL AESTHETICS

At the beginning of the twentieth century Santiago Ramón y Cajal's Nobel Prize-winning discovery of the structure of neurons as separate cells which communicate via synaptic connections counts as one of the founding moments in neuroscience (Ramón y Cajal 1906); the 1950s discovery of the DNA and molecular biology was a second step in the establishment of modern neuroscience (Shepherd 2010), but in the posthuman era knowledge about and consciousness of the brain has taken on an entirely new dimension. As Rose and Abi-Rached have demonstrated in their book *Neuro*, a 'neuromolecular style of thought' has modified many basic and behavioural sciences by the prefix 'neuro-' in neurochemistry, neuropathology, neurophysiology, neurobiology, neuropsychology, etc. (2013: 41–3).

Jean-Pierre Changeux's book *The Neuronal Man*, published in France in 1983, contributed in important ways to

bringing scientific knowledge about the brain to a larger and more popular audience. Neuroscientific knowledge left the lab and has travelled into the world and into the domain of aesthetics, a field with strong humanist roots. 'Neuroaesthetics' is not uncontested but should nevertheless be connected to the posthuman. A neuronal approach of aesthetics enfolds a double danger of alienation. In the first place there is a risk of too rigorous a reductionism of aesthetic experience to bundles of axons and dendrites, and of forgetting an entire humanities tradition of sophisticated reflection on aesthetics (and other branches of philosophy). As Oliver Sacks acknowledges in *Musicophilia*, 'There is now an enormous and rapidly growing body of work on the neuronal underpinnings of musical perception and imagery ... but there is always a certain danger that the simple art of observation may be lost, that clinical description may become perfunctory. And the richness of the human context ignored' (2007: xiii–xiv). Moreover, the neuroturn cannot be uncoupled from the digital turn, which has extended the idea of human knowledge and experience in significant ways beyond the borders of the autonomous subject into a networked man-machine sphere. Neuronal aesthetics therefore symptomatically carries the double dangers of, on the one hand, reductionism of the human experience to the microbiology of our neurons, and on the other hand the dissolution of human agency into computed networks. But there are also opportunities for multi-layered and networked approaches to aesthetics and experience that may offer insights into important aspects of the posthuman condition as embodied, extended and networked forms of agency.

The term 'neuroaesthetics' is of fairly recent date and was coined by Samir Zeki

(2002; Chatterjee 2010). Neuroaesthetics as an emerging field of interest in neuroscience aimed at finding the neural basis of the creation and perception of art works. As such it is entirely defined by scientific experiments discovering laws of beauty and aesthetic perception in the brain. Principles of amplification (peak shift), symmetry, isolation, grouping and contrast are among the perceptual principles of the brain that distinguish normal perception from aesthetically organized perception (Ramachandran and Hirstein 1999). Also phenomena such as abstraction (parsimony), synaesthesia and the emotional response to art are areas of neuroscientific investigation (Hasson et al. 2008; Changeux 2012). These insights are important but cannot tell the entire story of art and aesthetics. It has to be said that certainly not all neuroscientists make this claim. Following an experimental methodology, they point out some of the material underpinnings of aesthetic experience. However, given the overwhelming emphasis on the brain sciences, it is important to emphasize that art cannot be reduced to the neurobiological laws that guide them, and to keep in mind that art is also a form of investigation itself. As Alva Noë has argued, art is a 'strange tool', an engagement with the world and our technologies, and ultimately a way to understand the way we organize and re-organize ourselves. (2015: xiii). Art therefore proposes its own manner of investigation and its own legitimate source of knowledge that goes beyond understanding the neuronal laws of beauty.

Just as importantly, art and culture are in constant communication with the brain. The brain is not a fixed and completely genetically determined entity. Precisely because of the now largely acknowledged plasticity of the brain, there is a very large role for 'epigenetics' determined by the environment, culture and education

(Changeux 1983). So once neuronal aesthetics is defined from these multiple perspectives and multiple disciplines that each keep their own method and level of investigation, we can get a more integral perspective on the various levels of material and immaterial aspects of experience that can neither be reduced to the intricateness of neuronal organization nor be completely cut away from the material conditions of life. Neuronal aesthetics in that sense would be a new materialist approach of aesthetics that calls for a revival of the salons of the early twentieth century where artists, writers, physiologists, medics and philosophers came together to discuss their findings and investigations into the interiors of the human body, brain and mind, such as the Zuckerkandl salons in Vienna around 1900, recalled by Eric Kandel in his book *The Age of Insight* (2012).

The second danger connected to 'neuronal aesthetics' has to do with the close connection between the brain, the computer and cybernetics. Very concretely, the rise of contemporary neuroscience co-evolved with the rise of digital technologies that allow visualizations of the brain via non-invasive scanning techniques such as Magnetic Resonance Imaging (MRI) and Computational Tomography (CT). On another level, the co-development of knowledge about the brain and computation has rapidly transformed into networks of human and non-human actors which interrogate many traditional assumptions of the autonomous human being. In *My Mother was a Computer* Katherine Hayles (2015) argues that the posthuman has entered the 'Regime of Computation', whose brain is extended in a 'global cognisphere': 'Expanded to include not only the Internet but also networked and programmable systems that feed into it, including wired and

wireless data flows across the electromagnetic spectrum, the cognisphere gives a name and shape to the globally interconnected cognitive systems in which humans are increasingly embedded' (Hayles 2006: 161). Humans are no longer the only ones that think; our machines are smarter and more cognitive than ever before. They perform many thinking and perceiving operations for us, and thus the incorporation of artificial intelligence and augmented intelligence into our daily lives questions the classical sense of human subjectivity, and the autonomy of consciousness that seem to be absorbed in this extended cognisphere. As if the world becomes one giant computed brain.

As Hayles points out, computation as a relational process that can run in the brain as well as in other media is more than a metaphor. Or rather, the computational metaphor is so powerful because if the technology for fast networked processing did not exist there would be no metaphor. And so 'means and metaphor are dynamically interacting' (ibid.: 163). What is important again is to see that the prevailing knowledge of the brain and the computer are supported by data provided by the empirical evidences of the sciences but just as much by cultural and artistic models that propose the organization and re-organization of our transforming conditions on another level, on the level of experience and understanding organized in aesthetic forms (narratives, images, music, performance). Again, we have to understand neuronal aesthetics as a multi-layered, embodied and embedded form of aesthetics of the posthuman condition as a computed brain.

See also Alienation; Plasticity; Neo/New Materialism; AI (Artificial Intelligence).

Patricia Pisters

NOISE

The contemporary understanding of noise straddles two worlds: on one side is qualitative sensation and subjective judgement; on the other is the quantitative calculation of objective probabilities. The former is highly context-dependent and may concern unwanted sound or information extraneous to a certain end; the latter is also relative to the analytic framework. There are a number of different quantitative conceptions of noise relating to randomness, including low-resolution transmission, information theoretic and psychoacoustic models, the analysis of noise into various colours corresponding to generic spectral densities in frequency distribution, chaos theoretic conceptions of nonlinearity, perturbations below the threshold of measurement, stochastic resonance and turbulence.

In information theory noise is conceived as the level of interference in the communication of a message, or the amount of information available at the receiver that did not come from the sender. Though transmission noise cannot be entirely eliminated, Shannon's innovation was to show that a certain degree of *redundancy* allows the receiver to discriminate between information and noise. The cybernetic conception of noise is defined as the forces that disrupt the organizational coherence of the system or hinder the attainment of its goal state. The confusion between these various uses of the term noise is compounded by three different specifications of the technical term entropy in thermodynamics, information theory and cybernetics.

We are thus presented with several conceptions of, or formulas for, the relation between noise and information that are highly divergent. In popular usage, noise is deemed meaningless by choice – its