

Avatar-AisthEthics

Algorithmic Body Hermeneutics and the Constitution Problem of the Data Body. *By Patrick Rupert-Kruse*

This article examines how immersive systems — understood as assemblages of sensors, interfaces, displays, and algorithms — translate and reconstitute the human body as a data body, raising fundamental questions at the intersection of perception theory, media theory, and digital ethics. Drawing on phenomenological embodiment theory (Merleau-Ponty), postphenomenological philosophy of technology (cf. Verbeek 2011), and critical analyses of surveillance capitalism (cf. Zuboff 2019), the article develops the concept of an *Avatar-AisthEthics* — a framework that insists on the primacy of *aesthetic* (perceptual-aesthetic) analysis as a precondition for any ethical assessment of immersive technologies.

The article proceeds from the observation that autonomy and freedom in immersive environments must be understood as dependent upon a system that produces a new order of perception and experience. Taking Peter-Paul Verbeek's concept of "technological intentionality" as a key theoretical anchor, the article argues that immersive assemblages simultaneously enable and structurally constrain the conditions under which autonomy can be exercised (cf. Verbeek 2011, 57, 60–61). The concept of autonomy thus shifts from a predicate of the individual subject to a property of the technological figuration of subject, sensorics, and algorithmics, including their inherent intentional limitations.

The article introduces the concept of algorithmic body hermeneutics to describe the process by which sensors and algorithms function not merely as translators but as active interpreters of bodily presence. In immersive systems, the lived body (*Leibkörper*) undergoes a re-embodiment as avatar: a semi-otic doubling in which the body is rendered present as a semi-otic artifact where it is not physically located. This translation is achieved through the coupling of advanced sensor technologies and algorithmic processes that continuously capture

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movements, gestures, and facial expressions and transform them into digital data points. The result is a hybrid-embodied interplay in which the boundaries between intentional bodily movement and system-computed or system-predicted motion increasingly blur.

A central argument concerns the constitution problem of the data body. In highly mediatized and algorithmically modeled environments, the relevant challenge is not merely one of data protection in the classical sense but rather a constitutive one: how is the subject brought to appearance as a data body within the techno-symbolic architectures of digital spaces? Digital subjectivity, the article contends, does not exist prior to the technology but structures itself through it, condensing in the figure of the avatar as the necessary data body that is a prerequisite for becoming visible and capable of action in immersive environments.

The concept of the formatted data body is developed through two technological case analyses. The examination of Apple's Spatial Persona for the Vision Pro headset demonstrates how facial recognition systems decompose the face into semantically defined regions (face landmarks) and feed sensor data into a blendshape system consisting of a limited set of parametric facial shapes. Every mimetic expression is generated through a combination of these shapes, so that no real expression is directly mapped but rather reassembled from facial data into a predefined formal language. Fine nuances such as micro-expressions, subtle asymmetries, and individual variations are inevitably lost in this parametrization. The result is a digital representation that, while based on individual facial structure, is algorithmically smoothed and standardized, a formatted data body optimized for technical transmissibility and social legibility.

The article further develops the concept of senso-motoric privacy to address the protective dimension of embodied performativity in immersive environments. This concept addresses the performative micro-dynamics of bodily presence: the gestures, glances, micro-expressions, and movements in which intentions and perceptions reveal themselves in embodied performance. In immersive interface-and-display ensembles, this performative dimension becomes a semantic resource for algorithmic interpretation, through which once ephemeral expressions are converted into behavioral biometrics: individual, behavior-based features through which subjectivity can be identified, authenticated, or predicted. The empirical reach of such identification is underscored by Nair et al. (2023), who

demonstrated that VR users could be identified from head and hand movement data — extracted from merely 100 seconds of motion — with an accuracy of 94.33%, suggesting that movement patterns in VR attain the status of biometric identifiers comparable in discriminatory power to fingerprints or facial recognition. Meta's Neural Band, which translates electrical muscle signals (sEMG) into steering commands in real time, further intensifies this dynamic by generating highly sensitive biometrics that allow inferences about intentions and actions before they are consciously articulated.

Drawing on Heidegger's concept of the *Ge-stell* (enframing), the article characterizes immersive display-and-interface ensembles as a specific mode of revealing (*Entbergen*) that renders embodied corporeality accessible as a technically available resource (cf. Heidegger 2000 [1953]). This Heideggerian framing is connected to the critique of surveillance capitalism (cf. Zuboff 2019) and cybernetic governance (cf. Nosthoff 2026): the avatar functions not only as a condition of virtual presence but as an interface within a cybernetic control architecture in which every gesture, every gaze, and every bodily motion is decomposed into data and translated into economic logics. Since sensory self- and world-perception is already technologically constituted, the revealing of the data body operates at the level of *aisthesis*. Consequently, any ethical assessment presupposes an *aesthetic* analysis, it is at this juncture that perception theory and digital ethics converge.

The article concludes by distinguishing between autonomy — self-determination over the conditions of action — and freedom — the range of possibilities for action within those conditions. Both are technologically constituted as figurations in immersive environments. Virtual freedom is thus to be understood as situated agency: embodied but digitally framed possibility of self-determination that must always be reflected in the context of its techno-symbolic conditionality. *Avatar-AisthEthics* asks not only what should be permitted in immersive space, but what kind of experience is induced, according to which principles the formatted data body is brought to appearance, and under what conditions the senso-motoric privacy of embodied performativity can be safeguarded. The article thereby argues that freedom and autonomy within immersive assemblages can only be realized through critical reflection on the processes and elements that determine the sensory-algorithmic refiguration of the lived body.

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Full Article

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