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# EMPIRICAL AESTHETICS

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It. *Estetica empirica*, Fr. *Esthétique empirique*, Germ. *Empirische Ästhetik*, Span. *Estetica empirica*. The idea of an empirical approach to aesthetics is rooted in 18th century philosophical empiricism, which attempted to distinguish a naturalistic view on aesthetics from the tradition of speculative aesthetics. Today, empirical aesthetics designates all research that involves the use of evidence aimed at investigating the factors (formal and material characteristics of an object or artwork, context, education, or experience) that contributes to a person's aesthetic experience. In a more specific sense, empirical aesthetics focuses on people's cognitive and affective responses in front of natural and artistic beauty and is today mainly defined as *experimental* aesthetics, where the subjective responses to art and beauty are analysed by means of rigorous experimental methods from psychology and neuroscience, in order to develop insights on the workings of our mind during our aesthetic experience.

## ORIGINS

In the 18th century the subjective dimension of aesthetic response gained emphasis through philosophical empiricism. Moreover, references in the works of Baumgarten and Kant hinted at the possibility of an empirical investigation of beauty and aesthetics, but these remained only programmatic suggestions. With Gustav Theodor Fechner (1801-1887), founder of modern psychophysics, we have the first attempt at an experimental science of aesthetics. He defined his psychophysical investigations (*Vorschule der Aesthetik*, 1876) as an aesthetic "from below" (*von Unten*), founded on a solid inductive approach and on controlled measurements of subjects' basic reactions towards elementary aesthetic stimuli, such as simple shapes. He saw this approach as opposed to the traditional philosophical aesthetic from "above", mainly focused on overarching philosophical theories in which artworks were considered according to their complex symbolic and cultural meanings. Renowned are his experiments on the golden ratio, a classical canon of pleasant proportion that has never been experimentally verified by observing people's responses to it.

In the 20th century, the empirical approach to aesthetics developed in different research directions. One of the most important is the work of Gestalt psychologists (Wolfgang Köhler 1887-1967, Max Wertheimer 1880-1943, Kurt Koffka 1886-1941, Wolfgang Metzger 1899-1979). Describing in detail the laws of perceptual organization, they allowed the investigation of the aesthetic role of formal features in visual compositions, such as, among others, order, balance, and "good shape". These principles organize our perception of forms and allow them to express dynamic and affective properties. The Gestalt principles have been notoriously applied to art by scholars like Rudolf Arnheim (1904-2007) and Ernst Gombrich (1909-2001). Although their approach is considered a paradigmatic example of the psychology of art and empirical aesthetics, their works are mostly descriptive and differ from Fechner's purpose in using rigorous experimental methodologies.

## THE CONTEMPORARY DEVELOPMENT

Fechner's line of research continued steadily but more or less unnoticed for almost a century (for a review, Valentine 1962; Pickford 1972), and then re-emerged with Daniel Berlyne's (1924-1976) *New Experimental Aesthetics* in the 70's (Berlyne 1972). Berlyne, working from a psychobiological perspective, argued that arousal and curiosity are relevant mechanisms in aesthetic experience, influenced by qualities like novelty, complexity, and surprisingness.

From that moment on the interest in the research community increased progressively, extending its scope from the study of appreciation of abstract sensory stimuli to more complex cognitive and affective factors implied in the appreciation of real artworks, artefacts or natural entities.

Among the most notable example of these approaches, Ramachandran and Hirstein (1999) suggest universal rules for aesthetic appreciation based on underlying biological and neurological mechanisms, in particular the "peak shift" principle according to which we are aesthetically drawn to deliberate distortions and amplification of a stimulus. A wide range of empirical evidence substantiates phenomena like the "mere exposure effect", that shows how the liking of an artwork increases with repeated fruition (Cutting 2006), or the role of "processing fluency" in aesthetic appreciation, that is the familiarity and ease with which information is processed in the human mind.

Research in empirical aesthetics has begun to include not only aesthetic reaction and reception, but also production, investigating the mechanisms underlying artistic skills and creative processes. In fact, while early models mostly emphasize perceptual mechanism and automatic, bottom-up visual processing in aesthetic experience, recent proposals try to integrate perceptual experience with later stage cognitive processes that account for complex aesthetic judgment (Leder *et al.* 2004, for a review see Pelowski *et al.* 2016). A common aspect of contemporary models is the assumption that aesthetic experience is the complex product of different processes that involve perception, attention, memory, emotion, and a person's social and cultural background.

The main feature of these models is the investigation of the relationships between specific *input* factors and *output* responses by means of different experimental methodologies and measurement techniques.

The input includes the formal and perceptual qualities of an observed object (e.g. a natural scene or a work of art), but also all the complex components that make up the viewer's personality, his affective states, his experience and level of expertise, cultural and social influences and also all contextual factors related to the context of aesthetic fruition (exposure length, environmental conditions, and background information). The inputs are elaborated on by the subject's internal mechanisms and produce different responses, such as observable affective and behavioural outputs, but also physiological reactions that can be recorded using neuroscientific methodologies (e.g. functional neuroimaging, electroencephalography). While physiological reactions (heartbeat, dermal conductance) or behavioural manifestations such as eye movements during the aesthetic experience are automatic, responses can also manifest themselves through the choices a subject makes in tasks in which he needs to evaluate different options, or through the answers he gives in questionnaires and evaluation scales, or through his verbal reports. What a person says constitutes the most articulate form of aesthetic judgment and appraisal, revealing the intellectual significance, interest or novelty of what she has experienced. The output dimension can also include all longitudinal effects on the person, showing the effects of art and aesthetic experience on personality and worldview (Lasher *et al.* 1983), or even on health and wellbeing (Cuypers *et al.* 2012). The study of the role and functions of art in human groups has also contributed to the development of evolutionary approaches to aesthetics (Dissanayake 1988).

In the last decades, empirical aesthetics has been dominated by cognitive and neuroscientific approaches (the latter known as "neuroaesthetics") and led to the development of different alternative models. The establishment in 2013 of a Max Planck Institute on empirical aesthetics in Frankfurt, Germany, is a sign that the research field has finally been institutionalized. The future of empirical aesthetics will likely see an increase in research specialization and methodological complexity, especially in neuroaesthetics, but also attempts to include aesthetic experience and art appreciation "beyond the lab" and in their cultural complexity, including all conceptual and symbolic factors that are central to our daily understanding of art (Pelowski *et al.* 2017). Finally, the ongoing development of empirical research areas in different aesthetic domains (visual arts, music, literature, cinema, etc.) is also a sign of the field's maturation.

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