



Review

History of plastic surgery: Art, philosophy, and rhinoplasty



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Summary The 200th anniversary of K. F. Graefe's "Rhinoplasty," E. Zeis' naming of the specialty of plastic surgery in 1838, and the continuing discussion on what is plastic surgery have prompted this historical–conceptual review with a semantic insight into the meaning of the word "plastic." A literature search has revealed that this term contains dual aspects: artistic and philosophical. The progressive development of these two connotations can be traced from their origin in the ceramics and the myths of ancient Greeks to their metamorphoses in fine arts, science, and philosophy of plasticity of the modern day. Although the names of plastic procedures and the title of the specialty carry both the artistic and philosophical features, the philosophical notion is less evident. This article underlines the importance of etymology in the interpretation of the concept of plastic surgery.

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Two hundred years ago, the publication of Karl Ferdinand von Graefe's "Rhinoplastik"¹ ("Rhinoplasty") and its Latin version "Rhinoplastice"² brought the word "plastic" to the naming of reconstructive procedures, which eventually led Eduard Zeis to the titling of the specialty of plastic surgery ("plastische Chirurgie") in 1838.³ The full title of Graefe's monograph is constructed as a dictionary entry for his coinage "Rhinoplastik," which alone is a laconic definition of nose

reconstruction as a creative tissue manipulation. The stylishness of the novel name, together with the success of the described techniques, has worked as a catalyst in propagating restorative surgery. The elegance and simplicity of many modern medical texts also owe much to composite words with "plastic." While the origin of this term is described in countless sources, little has been said about the cultural context that may have influenced Graefe's remarkable

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contribution to the surgical lexicon. The controversy over the concept of plastic surgery also prompts a deeper insight into the relevant etymology. Admittedly, both Graefe and Zeis had plenty of other lexical options. Why “plastic,” then?

The word “plastic” comes from “plasticus,” which is a Latinization of the ancient Greek adjective “plastikos” (“πλαστικός,” “fit for moulding”⁴).^{5,6} “Plastikos” stems from “plastos” (“πλαστός,” “formed,” “moulded”⁴), the past participle⁵ and verbal adjective⁶ of “plassein” (“πλάσσειν,” “to form,” “to mould”),^{5,6} the dictionary form of which is “plasso” (“πλάσσω”).^{4,7} The semantics of “plastic” has mainly been linked to the use of the feminine form of “plastikos” in the phrase “plastike techne” (“πλαστική τέχνη,” “moulding art,” “plastic art”), which is “plastike” (“πλαστική”) for short.⁴ “Plastike” corresponds to the Latin substantivized adjective “plasticus” and its grammatical form “plastica.”⁷ Both the German noun “Plastik” and the adjective “plastisch” translate into English as “plastic.”⁸ “Plastik” also stands for the English forming noun “-plasty” (formation⁵).⁸

A search of the contemporary literature has revealed that words derived from the Latin root word “plastic” had entered erudite vocabulary long before the issue of Graefe’s monograph. Interpretation of “plastic,” however, varied significantly depending on the context. Conceptually, two meanings of this term are discernible: an artistic materialistic and a philosophical speculative.⁹ In Graefe’s times, they transpired as plastic art and plastic nature, respectively.^{10–12} The evolution of these two notions can be traced from the ancient Greeks to the modern days.

Evidently, the history of the artistic purport of “plastic” began with the use of its Greek precursor “plassein” in ancient ceramics. The written record of the Greek “plastike” in relation to art dates back to Plato’s (around 428–347 BC) dialogue “Laws.”^{4,13} Dictionaries cite Vitruvius (around 80–15 BC) and Pliny (around 23–79 AD) as the earliest writers to use the Latin root word “plastic.”⁷ The Roman architect Vitruvius integrated it into a single phrase “rationis plasticae” to indicate a common feature of the architect’s and sculptor’s professions in his “De architectura.”¹⁴ Of momentous consequence was the highlight of the word “plasticus” as the heading of the chapter on the ancient Greek art of clay and terracotta modeling in Pliny’s “Naturalis historia.”^{15,16} In the same episode, Pliny refers to the decoration of surfaces with reliefs, an ancient art that became termed as “plastering” (which originates from “plassein” through Latin “emplastrum”^{5,6}). Later, the Greek sophist Philostratus the Elder (around 190–230 AD) denominated under “plastike” all figural arts.¹⁷ However, the impact of Pliny’s narrative on “plasticus” exclusively as an art of modeling in soft materials was felt up until the middle of the 19th century. This can be seen from the texts of medieval Christianity,¹⁸ the Renaissance,^{19,20} and the modern era.^{10–12,21} Of mention also are G. Tagliacozzi’s “De curtorum chirurgia” (1597) lines about modelers’ (“de plastis”) and sculptors’ (“de sculptoribus”) art as a contrast to surgery.²² A pivotal breakthrough in the artistic perception of “plastic” took place in 1778 with publication of J. G. Herder’s essay “Plastik”^{23,24} influenced by earlier contemporary writings of J. J. Winckelmann and G. E. Lessing.²⁵ Herder’s allusion to the Pygmalion myth in the full title of his essay synonymized “plastic” with sculpture and illustrated his aesthetic notion of “plastic sense” (“plastische Sinn”) — a touch- and experience-related ability of creative

appreciation of the three-dimensional form.²⁵ Around the same time, the word “plasticity” was gaining ground⁹ as a term for the property of being plastic.⁵ In 1790, I. Kant structured the realm of plastic into sculpture and architecture,²⁶ but Herder’s “plastic sense” seems to have already irreversibly softened the boundaries of this art. This can be judged from the appearance of such expressions as “plastic music” (“plastische Musik”)²⁷ and “plastic poetry” (“plastische Poesie”).²⁸ The trend of diversification of the artistic materialistic connotation of the root word “plastic” is equally evident from the proliferation of the “rhinoplasty-style” names of surgical procedures in the first half of the 19th century^{3,29} as well as from the adoption of the term of “plasticity” in the emerging theories of neuroplasticity in neuroscience³⁰ and material plasticity in physics³¹ at the end of the century. Moreover, at the verge of the 19th century, “plastic” entered copyright lists with the Plasticine brand,³² which was preceded by a similar product with the royalty-free name Plastilin.³³ Neoplasticism, which is an avant-garde genre of abstract painting (plasticism being the traditional plastic art⁵), aimed to encompass virtually all visual and nonvisual arts in the early 20th century.³⁴ The meaning of “plastic” underwent marked “materialization” in the 1930s, when the term “plastics” was established as a generic name for artificial synthetic materials.³⁵ Plastician, the occupation title that has been shared by artists, plastic surgeons, and specialists in plastics, also emerged in the first half of the 20th century.⁵

The origin of the figurative function of the root word “plastic” has been associated with the use of the Greek word “plassein” in the portrayal of shaping of mortals by deities in Hellenic mythology.⁹ The Greek Biblical texts also mention the word “plassein” in an analogous capacity.³⁶ Of note are Plato’s metaphors where this word translates as “to form by training or education” and “to form in the mind.”³⁴ Galen in around 170 AD used the terms “diaplastike” and “diaplasia”³⁷ (“διαπλασις,” “putting into shape,” a descendant of “plasso” through “plasis,” “moulding”)⁴ in his theory of the embryologic “formative faculty” (“dunamis diaplastike”)^{37–39} considered to be an extension of the ideas of Aristotle and Hippocrates.^{38,39} The early Christian theologian Tertullian (around 150–240 AD) is the author of the famous Latin expressions “plastica Dei” and “plastica manus.”⁴⁰ Apparently, he adopted the Plinian “plasticus” but treated it exclusively from a spiritual perspective. A noteworthy later development of the philosophical meaning of “plastic” occurred only in 1580, when J. Schegk elaborated on the “facultas plastica,” his version of Galen’s “diaplastike,” in a treatise devoted entirely to the issue of the formative power in embryology.³⁸ In the middle of the 17th century, H. More, R. Cudworth, and other thinkers known as Cambridge Platonists theorized a system of “plastic nature” as a universal creative force and a cause of change.^{10,11,41} Their principle, alternatively called as “plastic power” or “plastic principle,” was centered on Plato’s idea of anima mundi (“the Soul of the world”).⁴¹ Interestingly, H. More’s phraseology included “plastical Operations” (and “plastick Operations”) of the “Spirit of Nature.”⁴² This philosophy influenced many prominent figures, including I. Newton, and spread far outside Britain,⁴³ which must have further popularized the word “plastic” in Europe. In the 18th and 19th centuries, a number of poetic expressions were designed on the theme of plastic

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