

Introduzione/*Introduction*

## MEDICINE AND COLOUR

The perceptual experience of colour is necessarily defined in relation to the anthropological-cultural context which produces it. The Greek world is not an exception. The archetypal paradigm of the Homeric poems provides remarkable examples of how the words used to express colours, are closely related to the concreteness of the object, that is the vehicle of the colour itself. Only at a later time, thanks to the refined associative pathways of poetry, the nouns used to define the colours acquire the general and abstract value that we know. An example is the epithet ῥοδοδάκτυλος: it is referred to Ἡώς (the Dawn) and it belongs to the family of *bahuvrihi* compounds, in which the chromatic-luministic modifier is transferred by means of synecdoches and metonymies to the part of the body expressed by the profile determinant. This linguistic phenomenon starts with Homer and gets to the Hellenistic poetry, passing through the *Farbenkomposita* of choral poetry. In fact, as M. Z. Lepre has very skilfully highlighted, the weighty significance of the epithet arises from the analogies implied in the relationship between the modifier and the profile determinant: it happens when the modifier ῥόδον, freed from its chromatic value, is meant in the literal sense of flower. As a matter of fact, starting from the common denominator between fingers and rose, that is the number five, the epithet is charged with three levels of meaning: they deal with colour, movement and tactile sensation which associates the skin to the surface of the flower petals. The most common kind of rose, either wild or cultivated, had five petals (τὰ μὲν γὰρ πλείστα πεντάφυλλα), as the expert botanist Theophrastus claims (*Hist. plant.* VI 6, 4).

The expressive power of analogy in noun compounds is only an example of the productivity of the analogical process. It works deeply

and crosswise from an anthropological-cultural viewpoint by conditioning the representation and interpretation of the body, the disease and the healing. In this sense, colour is an effective key to interpret the linguistic and conceptual paths which led priests, physiologists and physicians to the conceptualisation of physiology, diagnostic codification of symptoms and the identification of the healing practices. The power of analogy in the colour perception links these three elements in a prodigious circle of continuity between microcosm and macrocosm.

That's why all of the ten contributions of this volume explore the topic of colour from the history of medicine viewpoint: they highlight that the lexicon of colours for the ancient people was not the shallow abstraction of a palette, but the stratified complexity of a civilization. As a matter of fact, wise men, physicians and philosophers seem to have never neglected the meaning of the colour as a σημεῖον, often by dealing with *longue duree* topics which cross the history of medicine from Antiquity to Middle Ages, as it happens in this volume.

The contributions naturally found their place in relation with the theme, referring to each other through the persistence of some motifs, such as the principle of analogy, the humoral theory, the Aristotelian teleology of the parts, the relation between microcosm and macrocosm. Thus, the articles of Gabriella Bevilacqua and Daniela Cavallo share the reflection on the properties of stones and plants (*de virtutibus lapidum et plantarum*). Focusing his work on a topic that explores both diagnostics and therapy through colours, Francesco Lopez leads us to remarks about the semeiotic and semantic value of the vocabulary of colours in physio-pathology as treated in the contributions by Franco Giorgianni and Amneris Roselli. A section about Aristotle follows, in which Alberto Jori and Berenice Cavarra investigate on the theory of vision, while Luciana Repici focuses on the descriptive and functional relation between colours

and animal bodies. Lisa Sannicandro's work on hippiatry in medieval treatises deals with animals, namely horses, and the identification of their diseases through the method of chromo-diagnosis. The work of Paola Carusi ends up the volume: it deals with the relation between colour, dreams, passions, and disease in the Arabic tradition and it shows once more the long persistency of iatromancy and humoral theory in western tradition, thanks to the wise mediation of the Islamic culture.

The contribution of Gabriella Bevilacqua identifies in the use of medical amulets a syncretic trait of ancient culture that links religion, philosophy and the science of nature. The belief that stones had healing properties, especially because of their gemmological characteristics, above all their colour, is a constant theme in the history of medicine: since its codification in Ptolemaic age, it goes through the centuries, reaching Byzantine erudition and Medieval encyclopedism with renewed vitality and interest. The source of reference for the identification of the healing properties of coloured stones is mainly Plinius's *Naturalis historia*, that points out a hidden but permanent link between *ars medica* and *magicae vanitates*: meaningful in this sense is the relation between the inscription on an agate sphere coming from Gorgippa and the Hippocratic treaty Πεὶ παθῶν. Namely, the focus on the chromatic qualities of stones or metal plates, in relation with the images and inscriptions engraved on the amulets, allows us to identify analogic, symbolic, and associative processes that justify the correspondence between a certain colour on the one hand and the organs and body fluids on the other. After all, Theophrastus's classification, that traces back the origin of the qualities of the stones, and their colour as well, to the mixture of the four elements, brings us back to the field of pre-Hippocratic anthropogeny, reinforcing the analogic scheme *similia-similibus*.

Daniela Cavallo proposes an accurate reading of the books 15 and 23 of the *Naturalis historia* by Plinius the Elder, the former dedicated to

the olive and fruit trees, the latter to their healing properties. In the wide review which sees the colour as a means of interpretation, the words chosen to indicate the shades of colour point out distinctions in the gradation of light for the same colour tone, or totally different shades in relation to the different plants and to the fruit ripening stage. Very meaningful is the example of the olive, that is green, if it is unripe, and black, if it is ripe. In the book 23, Plinius provides the reader with a medical matters centred on the trees described in the book 15. He identifies different parts of the plants and the way to use their properties, also combining these parts with emollient ingredients and emulsifiers, then he associates the properties with the diseases to be healed. The healing properties are defined also in relation to the chromatic variations: the white olive is more suitable to the stomach disorders, the black one to the intestinal disorders. The contribution ends with an inspiring investigation on the traditional Chinese medicine, in which colour represents one of the parameters from which it is possible to infer the close mutual dependence between nature and man's body.

Francesco Lopez analyses the symbolic and religious meaning of colours in pharaonic Egypt, focusing his attention on the green colour. Green, black, white and red form a basic set, that starting from the natural perception of the colour widens its semantic range, by means of analogy, up to connoting the interpretation of the divinity and of the body physiology. In particular, the green/blue (*w3d*), that seems to slip away from the Greeks' perception of light, is the colour of water and vegetation, thus of life, that in its regenerating dimension is permanently associated with Osiris. In Greek, the meaning of *χλωρός* varies between green and yellow producing, in medicine, a complex diagnostic phenomenology, always negatively connoted. However, the use of the green pigment powder in the healing of wounds allows us to identify an interesting convergence point between the Egyptian therapeutic approach and the Greek one. Papyri witness the use of

Verdigris in surgery and cosmetics, as well as the CH, that uses it to slow the suppuration of the fresh wounds thanks to its soothing and cicatrisation power. The myths of Phormion, Telefus and Iphicles witness that the therapeutic convergence took place in the temples, since the treatment prescription with powdered iron and Verdigris is recommended by the oracle.

Franco Giorgianni's contribution is dedicated to the green colour, to ποικίλος and to the red colour. It proposes a synoptic reading of literary and medical sources. The choice to contextualise some references to colours in archaic poetry linked to the phenomenology of love through a comparison with medical treaties, leads to a series of preliminary methodological remarks. Being aware that we deal with different kinds of texts, the objective nature of the archaic Greek poetry imposes its return to the anthropological-cultural context it belongs to. The conceptualisation of the body and its physiology is not an exception: it seems to associate to ποικίλος, χλωρός and ἐρυθρός/πόρφυρος a state of emotional alteration that can shift from a state of excitement to serious disturbance. As a matter of fact, the ποικιλία shows itself as erotic seduction due to the stunning effect of chromatic variation it produces. The κηληθμός of Aphrodite's girdle is the result of the changing colours of the needlework, that is able to arouse desire. Hera knows it, the elderly Anacreon, seduced by a maiden with a colourful sandal, knows it too. Hesychius's gloss to *Il.* XIV 214 confirms that the erotic effect (very close to the languor caused by the musical ποικιλία) is the result of the colourful deception of the art. The Hippocratic use of the lemma is less poetical because it expresses either the different shades of manure or of medical cares, that are more impressive than effectively useful to the patient. The term χλωρός, which varies between the lush green and the pathological paleness, expresses the effects of the fear of unrequited or lost love, as it happens in Sappho's sublime Ode: it is the same paleness that affects the Homeric heroes when close to death.

The psychopathology of love turns into malaise and madness also in the prayer to Aphrodite: in this ode, the word usage is in perfect harmony with the effects of bile or phlegm transfer into the patients' brain, when they are affected by the sacred disease. Fever, trembling, paleness, and nausea are the symptoms of pregnancies characterised either by blood loss or excess of phlegm that flows from the head into the entrails (*Mul.* I 25 e 39). However, the upsetting of θυμός produces devastating effects also in case of sexual abstinence: in the treaty Περὶ παρθενίων, the accumulation of menstrual blood in the heart and diaphragm area, due to uterine shrinkage, leads to delirium and the wish to die. To sum up, both the abandonment issues and a general disorder due to the imbalance of humours, coexist in Sappho's usage of the adjective χλωρός. As regards the red colour, in the Greek archaic poetry there are many attestations which recall both beauty and seduction. It is often connected to the worship of Eros and Aphrodite; it is also the σημεῖον of a specific complexion or imbalance of humours. For instance, women characterised by intermediate moist and heat are defined οἰνωποί (*Hr. Mul.* II 111). Also the dietetic prescriptions are defined (*Salubr.* 2) on the base of the face colour, which is connected to the greater or lesser capacity to expel menstrual blood. As a matter of fact, if it is true that the μίξις causes a heat in the blood and a fever which leads to death when the lover is not loved in return, the flush is a symptom of love-sickness both in poetry and medical treaties.

The contribution by Amneris Roselli is dedicated to the interpretation of χλωρός compounds in *Epidem.* VI 3, 13 e 2, 6. The scholar focuses her attention on Galen's exegetic strategy as regards the Hippocratic passages taken into examination. In the first case, Galen reads the aphorism in diagnostic perspective by interpreting the shades of nasal bleedings as a result of the humoral theory. In fact, from the discussion on three adjective compounds, ὑποχλωρομέλανες, ἐρυθροχλωροί and ὑπόχλωροι, it appears that they deal with indi-

viduals in which the yellow bile is mixed with black bile and blood in the first two cases, with nothing or phlegm in the third one. The pre-verb ὑπο-, by causing a decrease of intensity, the theory of the four humours, the noun compounds for the colour adjectives seem to suggest an equivalence between ὑπόχλωρος and λευκόχλωρος. As a matter of fact, the edition of the Arabic version of Galen's commentary to *Epidem. II* (Vagelpohl 2016) may encourage us to ascribe λευκόχλωρος to the Hippocratic text. As regards the *hapax* χλώρασμα, Galen doesn't succeed in identifying a medical meaning for this colour shade. He links it to another *hapax*, χλωράζειν, that means "eat green provender". The solutions proposed by the former interpreters don't satisfy Galen, who ends up meaning it as an unusual colour for healthy people.

Another important aspect about the medical reflexion on colours is the theory of perception. In this regard, Alberto Jori guides us through a wide *excursus* ranging from the so-called presocratic thinkers to Aristotle. Empedocles already offers us insights on the relation between the roots of things and colour on one side and the theory of vision on the other. The fire, that is white, and the water, that is black, are the couple which stimulates the lantern-eye: it looks like a fire surrounded by water, which receives, through the pores, the emissions coming from the objects. The colour is the result of the mixture or predominance of a root on the others in the composition of things. For Democritus and the atomists colour is a matter of convention since it doesn't objectively exist: atoms have only got quantitative properties and colour is perceived as an interaction between object and subject, as Galen testifies, because the *eidola*, emitted by the things, come into contact with our eyes.

Plato expresses an original synthesis of the former tradition. In the dialogue *Timaeus*, he associates a geometric solid to each Empedoclean root, recovering the Pythagorean tradition. The psychic origin of sight produces a visual *medium* with the external light

because of the dynamic attraction between equals. The object imprints its seal on this visual *medium* which leads it to the surface of the eye and hence to the soul. The colour is a third fire in the shape of tetrahedrons which are distinguished by dimensions in relation with the shades that they vehicle. Aristotelian approach to the colour is empirical and is based on the definition of the concept of potential transparent (darkness) and actual transparent (light). The properties of *diaphanum* are better clarified in the treaty *On sense and the sensible* in terms of prerogative of all the bodies but in different quantity: the colours of the body and its parts are defined in relation to this degree of transparency, that is maximum in the fire, minimum in the earth. The presence or absence of light is the condition for the transparent to be potential or actual. The chromatic opposites are white and black; all the other colours spring from juxtaposition, overlapping and complete mixture. As regards the theory of vision, Aristotle reduces it to a faculty of the soul. Sight has the colour as its proper visible: it receives the sensory impressions. The presence of a *medium* between the viewer and the object perceived is necessary to make the vision happen: this *medium* is the transparent, that, if actual, transmit the shape and colour of the object perceived to the eye. Berenice Cavarra dedicates her contribution to *μίξις*, *diaphanum* and *sensorium* with a keen eye both on the Aristotelian text and the *interpretamenta* of the early commentaries. The *μίξις*, as a process of diversification of the colours, is only possible if the elements of which the *μίξις* is the result, may exist separately as substances. In the mixture, the starting substances are not destroyed, but keep on being potentially. The intermediate and homeomeric compound shows moderate qualities compared to the pure elements, due to the process of action/passion which operates in the *μίξις*. This is John Philoponus's interpretation, which may be also extended to the diversification of the colours; Alexander of Aphrodisias, instead, links the phenomenon to the extremes of fire (maximum) and earth (mini-



mum). In the correlation between subject and object, as regards the perception, the light is the actual *diaphanum* that vehicles the colour. The *diaphanum* is actually a trait of continuity between the celestial spheres and the sublunary earthly region in a sort of *scala luminum*. Lastly, the definition of *sensorium* is pretty problematic: the perception induces a transformation in the sense organ, which makes it of the same colour of the object perceived. Otherwise, it is necessary to presume a complex physiological process that involves both the sense organ and the seat of perception.

Luciana Repici recognises the accidental properties of the colour as an effective parameter through which Aristotle explains some characteristics and the physiological processes of the animal bodies. The colour of the fur, for instance, distinguishes men from animals because in the former the graying is linked to the physiological transition from youth into old-age; in the animals, instead, the colour of the fur depends on the skin colour that occurs in man only in conjunction with dermatological diseases. The colour, as a sensible of sight, represents a common characteristic of all the bodies and allows to classify animals as monochromatic, polychromatic and multi-coloured. However, the effectiveness of classification according to the chromatic perception goes so far as to identify the internal and external parts of the animal body, by detecting a functional link between colour and anatomical morphology. As for the external parts, the comparison with man, as the best known parameter, is a must; for the internal parts the comparison with man is excluded due to the lack of anatomical dissection. Lastly, the colour plays a key role as regards both the mechanisms of reproduction and the body fluids, the former being homeomeric, the others anhomeomeric. For example, the chromatic variations of the eggs show the reproductive processes and the stages of development of the embryo. As regards the secretion of internal fluids, they are distinguished in waste material, useful emissions (such as maternal milk and seed) and the four

humours. The evaluation of the dynamic polychromy of these secretions becomes a σημεῖον of what happens inside the body at the functional or pathological level.

The diagnostic value of the colour also occurs in hippiatry. The contribution of Lisa Sannicandro is dedicated to this topic. The reference work is the *Chirurgia equorum*, known as *Albertusvorlage* because it is the source of *De equis* by Albertus Magnus. It is the most ancient and famous medieval work on hippiatry in Latin, as the wide manuscript tradition testifies. The mss. *N* and *O*, on which the redaction of Richard de Fournival is based, offer a preliminary distinction between hippology and hippiatry according to the characteristics of the *mascalcia*. The section on hippiatry follows the scheme *a capite ad calcem*. The hippology contains a section about the colour of the horse mantle, which is linked to the animal's character. The most ancient and extensive catalogue belongs to Palladius's *Opus agriculturae* which flows into the medieval treatises on the topic through Isidore of Seville. The most surprising aspect is the variety of the shades and the lexical richness that defines it. The hippiatry of the *Albertusvorlage* is based on the humoral theory and the colours of the four humours. The humoral imbalance causes diseases which are characterised by specific hues: the colours can be used as diagnostic tools. The excess of blood is recognised as a cause of ulcerations, tumours and internal damages. It often shows itself in the red colour of the urine, the turbidity of the eyes, the pustules which cover the body of the horse. The excess of phlegm causes *lampastus*, which takes its name from the French *lamper* (to sparkle), due to the pale colour produced by the inflammation on the palate of the animal.

The humoral theory also rules the relation between dreams and the colour of passions in the Arabic sources, not only and not necessarily medical sources, to which the contribution of Paola Carusi is dedicated. Dreams dealing with the relation between body and soul are distinguished as regards the movement from the body to the soul

and vice versa. In the first case, a pre-Hippocratic, Hippocratic and Galenic long tradition recognises the dream as a tool through which the soul gathers the signals on the state of the body in the form of images. Under pathologic conditions, the experience of iatromantic dream, that from the healing temples seamlessly moves to the CH, detects the presence of humoral imbalance in chromatic terms. On this topic it is possible to identify a convergence between oneiromancy and medical treatises. This link is also present in the Islamic tradition which holds in high regard the interpretation of the true dream. It doesn't surprise that the great physician and philologist Ḥunain ibn Iṣḥāq translates Galen's and Artemidorus of Ephesus's works. In particular, the physical dreams inform us about the condition of the body through the colour. In the Islamic handbooks of oneiromancy they are defined as false because their interpretation is not in the competence of the oneiromant, but of the physician. In this sense, the work of the physician al-Ṭabarī (IX century) identifies in the movement of the fluids the origin of dreams, which often vehicle images that are chromatically linked to the dream that generates them. Also in the *Kitāb al-manṣūrī* by Abū Bakr al-Rāzī the colour of dreams becomes a diagnostic tool and, more in general, a persistent factor in the interpretation of the physical dream, as Rāzī and Avicenna testify. Besides this medicine, that brings the oneiric chromatism back to the humoral state of the body, a spiritual medicine exists in the Islamic tradition and it heals the diseases of the soul which also produce an effect on the colours of the body, such as the paleness in the envious and the flushing in the men affected by wrath.

In conclusion, the colour in its descriptive and dynamic relation with nature and the body of the living, promotes historical medical research in various ways. This topic allows us to recognise the syncretic and multidisciplinary character of the history of medicine and the differentiated and integrated approach it requires. Colour in

medicine, which has recently achieved a renewed interest among the scholars, is a *specimen* of how the historical, philological, philosophical and linguistic investigation may contribute not only to clarify complex nosological frames and therapeutic strategies, as they are transmitted by the ancient sources, but also to identify the methodological paths of the science. As a matter of fact, medical knowledge, in the continuous delimitations of its boundaries, crosses diversified textual genres which are difficult to detect and interpret.

Berenice Cavarra e Marco Cilione