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(Article begins on next page)

The Notion of field between physics, psychology and philosophy of experience

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In 1920 Wolfgang Köhler published *Die physischen Gestalten in Ruhe und im stationären Zustand*, in which the notion of «field» introduced by J. C. Maxwell and M. Faraday played a central role. The notion of «topological field» instead became one of the focal points of Kurt Lewin's perspective. Alongside the empirical and experimental dimension, the philosophical and theoretical aspect was an essential component of the Berlin Gestalt school. This essay examines the following aspects which, from a philosophical point of view, characterized the use of the concept of «field» within the Berlin Gestalt movement: the opposition to those investigations of experience which took mechanical physics as a model; the critique of Kant's dualism between the form and matter of knowledge; the affirmation of the idea that the senses capture values and meanings autonomously, without top-down interventions; the introduction of the concept of «requiredness» and an objectivist vision of expressivity.

Keywords: Field, Contents of experience, Form and matter of intuition, Tertiary qualities, Berlin Gestalt school.

1. *The concept of field and the Kantian dualism between the form and matter of experience.*

The concept of field (*Feld*) played a central role in the Berlin Gestalt school. First of all, it constantly appears in reference to the mereological relations between the parts of a perceptual whole and to the role exercised by the context in the perception of objects, starting from the most simple and fundamental segmentation of the visual field: the figure-ground relationship (see Rubin, 1915; Gelb 1929; Wertheimer 1923; Köhler, 1947). The more specific notion of «field» introduced by J. C. Maxwell and M. Faraday was instead at the centre of Wolfgang Köhler's interests within his investigations to demonstrate the existence of an isomorphism between the neurophysiological and perceptual-phenomenal levels (Köhler, 1920, 1940). Instead, Kurt Lewin must be thanked for the introduction to Berlin Gestalt movement of the notion of topological field, which he used to investigate group dynamics, social phenomena and interpersonal relationships in daily life (Lewin, 1926, 1935, 1936). But the notion of field also took on a forefront role from a general philosophical point of view: it became a privileged ground for asserting a conception of the sensible world which aimed to overcome both the Kantian dualism between the form and matter of sensuous knowledge, and – albeit limited to our perceptual relationship with the world – the traditional dichotomy between facts and values. It is precisely this use of the concept of field that will be dealt with in this essay.

In the debate in late nineteenth-century and early twentieth-century Germany, an attempt to look at the world of the senses in a different way to Kant is already found – in particular – in Johann F. Herbart and then in Ernst Mach, who was familiar with Herbart's thinking. Beyond the epistemological contrasts linked to the phenomenism professed by the great Austrian physician and philosopher and the critical realism upheld by the Berlin school, Mach was an author of prime importance in the movement of ideas that provided the background to the moulding of the Gestalt mindset. Mach's conception of the *Sinnenwelt*, of the dimension of sensible experience indeed distanced itself from Kant's dualism between the form and matter of knowledge and, at the same time, criticized the methodological centrality – in the investigation of sensibility – given to the most eminent of the sciences, mechanical physics: it was a centrality was typical of the great investigations by von Helmholtz, who tellingly was a constant target for criticism both by Mach and the Gestalt tradition. Instead, as far as the bond between the area investigated by mechanical physics and a Kantian vision of experience is concerned, it appeared evident both to Mach and the exponents of the Berlin Gestalt school that an elementistic and destructured conception of the sensible world formed the presupposition both for Kant's transcendental basis of experience and – more in general – for any conception (including the empiricist one) which postulated the intervention of top-down processes (an example of which being von Helmholtz's unconscious inferences) on the material offered by the senses.

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Mach took Darwin's evolutionism very much into account and observed that «an endless system of space-sensations would [...] be purposeless for the organism» (Mach, 1886; Engl. transl., p. 185). And in effect, Mach's investigations aimed to demonstrate that what the senses give us is by no means amorphous contents which need to be integrated from above by those same top-down interventions in order to have a value and a meaning. The world of the senses does not provide atoms of sensations, but – immediately – data interwoven with relationships, complexes, more or less organized structures, forms, objects, localizations and directions; contents that are not such due to the intervention of ordering activities outside the sensorial dimension, whether understood in the sense of the Kantian categories or in terms of the psychological associations set out by the empiricist tradition.

In the famous essay from 1890 *Über Gestaltqualitäten*, Christian von Ehrenfels (pupil of Franz Brentano and Alexius Meinong and then professor at the University of Prague, where one of his students was Max Wertheimer, future representative of the Berlin Gestalt school) fully realized the specificity of Mach's stance. In this piece, he observes that what Mach was claiming was precisely that the sensible world provides us with structured contents (paradigmatic examples being spatial structures and melodies) before the intervention of any intellectual processing, and that these contents are «felt» (*empfunden*) as such as soon as they are given to the consciousness (von Ehrenfels, 1890, p. 285). Mach states for example: «we usually see [...] not colors and forms, but bodies in space. It is not the elements of the complex, but the whole physiologico-optical complex that is of importance» (Mach, 1886; Engl. transl., p. 208). And he goes on: «We do not see optical images in an optical space, but we perceive the bodies round about us with their many and varied sensible qualities. Deliberate analysis is needed to single out the sight-sensations from these complexes» (Mach, 1886; Engl. transl., p. 195). And «deliberate analysis» is precisely what characterizes the physics which concentrates on the mechanical and geometrical properties of bodies, while neglecting all the others. It is a wholly legitimate analytical procedure. Nevertheless, «the fragment of inorganic physics which we have conquered [...] is far from being the whole world» and it is not from this fragment of the world – according to Mach – that the investigation of sensorial experience could reap benefit (Mach, 1886; Engl. transl., p. 306).

As I was saying, it was instead precisely from mechanical physics that von Helmholtz had deduced the criteria and descriptive base for studying experience and the physiological mechanisms beneath it. The great German doctor, physiologist and physicist deemed that «the task of science [...] will have been fulfilled when it has reverted [*zurückleiten*] the phenomena to elementary forces and shown that this reversion is the only one that the facts allow» (von Helmholtz, 1847, pp. 12-75, my translation); he had modelled his acoustic theories on mechanical movements and the behaviour of elastic bodies; he had based his colour vision theories on the physical law of additive colour. And nevertheless, as shown by the debate between von Helmholtz and Ewald Hering on colour perception first of all, there were a lot of phenomenological data that von Helmholtz's theories did not manage to explain (Turner, 1993; Toccafondi, 2013). Mach ironized about the contrast between theories of experience inspired by classical mechanics and the phenomenological data effectively experienced by the subject, observing that nature «did not study at the École Polytechnique» and that «it has other things to do than ask authorization from already acquired theories» (Mach, 1863, p. 290, my translation). In his opinion, different models from those of mechanical physics were needed. And a different model was just what the Gestalt tradition pinpointed in the physical notion of «field».

2. Perception and electrostatic fields.

The new vision of the world of sensibility asserted by the Berlin Gestalt school found one of its most renowned descriptions in the fundamental *Untersuchungen zur Lehre von der Gestalt* by Max Wertheimer. In particular, Wertheimer cast light on a series of principles of «spontaneous» organization of the perceptual field that are still acknowledged as fundamental today and are known as the «Wertheimer laws» in texts concerning perceptual phenomena: for example, the most regular, simple and symmetrical forms impose themselves in the perceptual field (law of good Gestalt and *Prägnanz*), parts closer together in space and time (law of proximity) and elements of similar forms, colours and sizes (law of similarity) both tend to group together, as do elements that are part of the same trajectory (law of continuity) and elements sharing the same movement (law of common fate) (Wertheimer, 1923). In establishing this new vision of the world of sensibility, the exponents of the Gestalt tradition used phenomenological and descriptive tools aimed at *saving the phenomenon* as it appears to the senses, in the conviction that a suitable theory of experience could only be developed by remaining faithful to the phenomenological given. Nevertheless, this did not

mean that the description *more physico* had to be ruled out completely. In their opinion too, it was the type of description adopted by von Helmholtz, copied from classical mechanics, that had proved to be inadequate. Instead, the picture offered – both on the descriptive and the explanatory level – by the concept of «field» introduced by Maxwell and Faraday in the sphere of electrostatics was totally different: in this case, we are very much dealing with a physical concept that does not refer to a space composed of inert matter or a simple group of elements, but a structured system of forces.

That the field of electrostatics offered particularly significant examples of the fact that not all physical phenomena can be traced back to the model of *Und-Verbindungen* or to the mutually independent entities of classical mechanics is one of the central topics of *Die physischen Gestalten in Ruhe und im stationären Zustand* (1920), written by Köhler in Tenerife – in the period when he was director of the Prussian Academy of Science Anthropoid Research Station – after being on the drawing board for almost five years. This text testifies Köhler's great competence in the physical sphere, rooted in his scientific and cultural formation. In this, the influence of Max Planck played a role of unquestionable importance, as Köhler was a regular attendee of his seminars, as well as of the lessons by Stumpf, in Berlin (where he arrived in 1907). It is first worth noting that *Die physischen Gestalten in Ruhe und im stationären Zustand* has never been translated fully into English and that this is at the basis of the often simplified and misleading visions that the text has been subject to (see for example Gregory, 1965, 1981).

The final chapter of the text bears the eloquent title of *Die Richtung auf Prägnanz der Struktur* (*The Structure's Tendency towards Pregnanz*) and it is perhaps among the most significant in this demanding work by Köhler. In it, the author wonders about the final structure spontaneously assumed by the electric charge in electrostatic fields. Why – Köhler wonders – does the charge spontaneously assume that particular structure and not another of those possible? As he has it, the explanation needs to be sought in the second principle of thermodynamics, and more precisely in the principle of entropy. Indeed, to prevent an increase in entropy, when left to themselves, physical systems tend to obtain the maximum level of stability, because the greater the system's stability, the less energy is used. The fact that the final structure of the electric fields is that particular one, and not another, must be traced back to that picture, namely to the fact that «in all processes that end in states independent from time», the form that they assume «tends towards a minimum of structural energy» (Köhler, 1920, pp. 248-250, my translation; Arnheim, 1992, pp. 53 ff., 63 ff.). It is on this very ground that Köhler's perspective finds one of its focal points: namely, the connection between minimum expenditure of energy and symmetry of the system. As just said, maximum structural stability means minimum expenditure of energy for the system. But, as Köhler observes while using some ideas developed by Mach, another fact needs to be added to this one. In other words, the system's maximum stability also corresponds to the most symmetrical form that the system is able to assume in the given conditions. The two following examples will help to clarify the question. The first is the case of a circuit formed by two conducting bodies with different resistances, connected to an electric charge. The state assumed spontaneously by the system is in fact the most symmetrical among those possible and, mathematically speaking, it can be shown that if the quantity of current respectively present in the two conductors were more or less than what is spontaneously assumed by the conductors themselves, more energy would be expended (Köhler, 1920, pp. 248-250). The second example is given by what happens in a non-elastic metal wire placed on a suitably smooth surface crossed by an electric current. No matter what its initial position, the metal wire assumes the form of a circle: «the conductor, the route of the current and the electric field assume a position that is the simplest and most symmetrical possible» and, mathematically speaking, in this case too, it can be demonstrated that this happens because the most symmetrical forms are those that require the least expenditure of energy (Köhler, 1920, p. 256, my translation).

The question of the close bond between symmetry and the least expenditure of energy had been dealt with by Mach in *Die Mechanik in ihrer Entwicklung: historisch-kritisch dargestellt* (1883), in a paragraph dedicated to studies of the relationships between the form and area of surfaces. Mach took his cue from an experiment by the physicist Gustave Van der Mensbrugghe. In substance, Mensbrugghe's experiment concerned the problem of explaining why, for example, a soap bubble or a drop of oil poured into a liquid in which they are not soluble assumes a spherical form and not one of the other possible shapes (Mach, 1888; Engl. transl., p. 386). In the case of the bubble, two processes take place: on one hand, the single particles of soap tend to attract each other and therefore to occupy the smallest possible surface area; on the other, the pressure exercised by the volume of air enclosed by the bubble pushes the soap particles outwards. The spherical form is the most symmetrical of the possible shapes, and, at the same time, it is the one which, of all the solids with the same volume, presents the smallest surface area: as a consequence, with the spherical shape, the membrane constituted by the soap particles obtains the greatest thickness (in other words, it is

contracted to the smallest possible size) compared to what would have been the case with all the other possible forms; the potential energy – at the same time – is reduced to a minimum. The principle that Mach drew from these observations can therefore be summed up as follows: as far as conditions permit, natural phenomena tend to achieve maximum regularity and eliminate asymmetries; this happens because maximum regularity of the system also corresponds to maximum stability, and maximum stability is required in order to maintain the minimum expenditure of energy.

Köhler's idea is that, since it can be deemed that Mach's principle is valid for every macroscopic physical process, the processes to organize the perceptual field do not evolve in just «any» manner, but in the way described by the principle just illustrated, namely in view of maximum simplicity and maximum energy savings (Köhler, 1920, p. 253). In 1914, on occasion of the VI Congress of Experimental Psychology held in Leipzig, Wertheimer had pronounced the important principle according to which perceptual organization tends to be as simple, regular and symmetrical as conditions consent. And yet, for Köhler, Wertheimer's principle is the equivalent in psychology to what Mach had observed in the physical field. Phenomenal forms and structures seem to be guided – like the dynamical systems of macroscopic physics – by the principle of reducing potential energy. Hence, they seem to tend to assume not just any structure, but the most simple, regular, and, to take up the term used by Wertheimer, the most «pregnant» structure possible. And in explaining the organization of the perceptual field, this principle is what enables the idea to be quashed that a top-down type of process – from Kant's categories to the associative mechanisms of empiricism – is needed to give order to a set of independent elements and «produce» the phenomenal organization, structures and *Gestalten*. In the section on «Physik und Produktionstheorie», Köhler thus invites us to consider the sensations making up perceptual experiences from a new perspective, namely, not as independent entities, but as a «complex of conditions», which, as happens in the physical «fields» described above, prompt the «particular structure» among those possible rather than another. To use Köhler's words, they are conditions that «by no means make just any structure arise from themselves, but, owing to their overall configuration, univocally prescribe a particular structure to the situation or perceptual process [...]» (Köhler, 1920, pp. 233, 172, my translation).

Therefore, what are called into question are the very presuppositions at the basis of both empiricism and Kant's theory of experience. By assuming not mechanical physics but the dynamical and physical processes mentioned among its models of reference, what *Gestaltpsychologie* ended up putting forward is a new vision of the world of sensation, which gave primary importance to the concept of perceptual field, its dynamics and, so to speak, its spontaneous organization towards the most simple and stable form among those possible. In a conference held at the Berlin «Kant-Gesellschaft» in 1925, Wertheimer strove to mark his distance both from the Kantian and the empiricist conceptions. As he put it, «For centuries the assumption has prevailed that our world is essentially a summation of elements. For Hume and largely also for Kant the world is like a bundle of fragments, and the dogma of meaningless summations continues to play its part» (Wertheimer, 1925; Engl. transl., p. 9).

3. Vector field and «tertiary qualities».

The physical and dynamical concept of field therefore gave the Gestaltists a precious model, one which, if applied to the world of sensibility, could call into question – as we have just seen – Kant's dualism between the form and contents of sensuous knowledge. The organization of sensorial contents does not derive from ordering principles that intervene from outside the world of sensibility: the material base and ordering principles are one and the same, there is no need for an active intervention to animate, order and give meaning to what the senses give us. But in the Gestalt tradition, the concept of field was also used to assert that the senses capture values and meanings autonomously, that the world is not only constituted by «mere facts», but also by objects and events that in themselves have attractive or repulsive values, positive and negative valences. In this connection, it must be remembered that «valence» is a term introduced by Lewin: more precisely it is one of the English translations of the term *Aufforderungscharakter* (the other English translation is «invitation character»)¹ and it is precisely on Lewin's concept of *Aufforderung* that we need to dwell first of all.

¹ In 1929, Lewin's term *Aufforderungscharakter* was translated into English as «invitation character» by J.F. Brown (see J.F. Brown, 1929) and in 1931 as «valence» by D.K. Adams (see Adams, 1931).

Lewin dealt with this topic for the first time in *Kriegslandschaft*, an essay on the landscape of war written in a period of leave during the First World War, which the author volunteered for, first becoming a lieutenant and then earning a German cross for war merit. It is a short, but overwhelmingly dense and weighty essay: for example, it sets out the concept of «Life Space» and introduces notions (such as *boundary*, *direction*, *barrier*) which would subsequently become an integral part of Lewin's field and topological psychology theories (Lewin, 1935, 1936). Lewin presented this essay as «a chapter of landscape phenomenology» and, in particular, as a treatise aimed at casting light on how the landscape and what makes it up change phenomenologically depending on whether or not they are part of a war zone (Lewin, 1917, p. 253). For example, as soon as a position is abandoned when a war moves on, the paths which until then for the trench had just been a piece of inconvenient and unshifting ground become real paths again, mobility tools linking places to each other (Lewin, 1917, p. 260). Subsequently, this line of investigation was widely developed in the influential *Vorsatz, Wille und Bedürfnis* (Lewin, 1926), which is where the expression «invitation character» (*Aufforderungscharakter*) is introduced, and where Lewin highlighted the close correlation between the valence or invitation character of objects and the specific needs of the subject: in other words, what Lewin meant to highlight is the influence exercised on perception by the individual's contingent motivational factors, needs, and cognitive and affective states.

The Berlin Gestalt tradition maintained the notion of *Aufforderungscharakter* (of which Gibson's term «affordance» is substantially a calque) to indicate the specific cases in which a specific subject's contingent state of needs, motivational and affective factors come into play in the perception of objects. However, in the meantime, it asserted the idea that the sphere of *Aufforderungscharakter* presupposes that objects have intrinsic qualities, a type of quality that «belongs to the object in the same way as its shape and colour» (Koffka, 2014, p. 357)². In *The Place of Value in a World of Facts* (1938), Köhler presented the question concerning this type of quality as the problem of «value-attributes» or «value-qualities» belonging to the «objective side of the phenomenal field» (Köhler, 1938, p. 78). Meanwhile, this perspective was asserted by preferentially using the physical model of vector field. In terms of this model, as we will see, the conclusion which Köhler came to is substantially the following: «quite as often it is not the self from which vectors reach out towards other parts of the field» (Köhler, 1938, p. 87) and, very often, human experience substantially consists of the «experience of demand» (Köhler, 1971, p. 193).

For the new type of quality that the Gestaltists added to the traditional dichotomy between primary and secondary properties, Köhler preferred the term «tertiary qualities» (Köhler, 1938), Rudolf Arnheim «expressive qualities» (Arnheim, 1992, 1966), and Wolfgang Metzger both «expressive qualities» and *Wesenseigenschaften* (Metzger, 2001, pp. 65-73). Koffka instead used the dual definition of «physiognomic» and «functional» qualities to differentiate two different types of tertiary qualities. The expression «physiognomic» qualities (Koffka, 2014, p. 360) had been introduced by Heinz Werner in *Sprache als Ausdruck* (1931) and Koffka preferred it because in his opinion it highlighted well that – for a large part of their extension – expressive qualities «convey emotions or other mental characteristics» (Koffka, 2014, p. 657). On the term «mental», it must be specified straight away that what these qualities transmit is not defined as such because they are considered the result of projecting terms that properly refer to mental states and consequential behaviours onto inanimate things. Qualities such as sadness, calm, threat and so on – this is the analysis that is found for example in Chapter 7 of *Gestalt Psychology* – are properties both of psychological states and of the inanimate beings or natural events that we perceive not because we transfer sentiments that refer to mental states to the *percepta*, but because these properties pertain to the *percepta* because they appear in a certain way from a spatial, structural, temporal or dynamic point of view (Köhler, 1947, pp. 131-144). So, for example, when we say that a landscape is calm, or that the clouds are threatening, we are not anthropomorphizing what we see by attributing characters of human experiences to inanimate objects, but referring to characteristics of the structure and dynamic of what is before us. For this reason, the characteristic of the Gestaltists' treatment of expressivity consists of considering expressivity as a phenomenon that affects objects and events, as well as those dynamic wholes such as environments, spaces, the various weather conditions and atmospheres. As Köhler once again observes, «few people can hear the rumbling *crescendo* of distant thunder as a neutral sensory fact; it sounds to most of us “menacing”» (Köhler, 1947, p. 144). When we speak of «calm», «restless», «morose» or «friendly» days or landscapes, therefore, we are not dealing with metaphors, tropes or convoluted linguistic forms (Köhler, 1947, p. 144). It is not just to a child – Koffka also observes – that a black cloud appears «not only black, but “threatening”, without our having actually to imagine the oncoming thunderstorm» (Koffka, 1921; Engl. transl., p. 243).

² Koffka states: «all demand characters presuppose either physiognomic or functional characters» (Koffka, 2014, p. 392).

Attention also needs to be paid to the fact that we commonly describe sentiments and states, processes and inner characteristics using terms that refer to the properties of things and events in the outside world: for example, we talk of a “*bitter feeling*”, a “*soft mood*”, a “*sweet love*”. This is a phenomenon that according to the Berlin school evidently shows that we do not only grasp the material characteristics of the outside world, but also qualities (emotional, pathic) that depend on these characteristics, but which do not end there: qualities which a phenomenological theory of experience has the duty to explain (Köhler, 1947, pp. 132-134; Koffka, 2014, p. 657). Also within the sphere of tertiary qualities of «value-attributes» belonging to the objective pole of the phenomenological field are what Koffka named the «functional» qualities or characters of things (see Koffka, 2014, p. 392), which concern the use of and what we can do with objects: in substance, qualities very close to Gibson’s affordances. So, if physiognomic characters refer to the emotional, pathic dimension of experience, «functional characters» instead refer to the properties that concern the use, the practical ends, what we can do with objects. So, in short, a tertiary quality is one which exercises an effect on us marked by pathos or invites us to do a certain action.

4. *Field forces outside the Ego.*

Beyond the terminological preferences, what the Gestaltists wanted to attract attention to with the concept of «tertiary» or «expressive» qualities is that not so much and not only those captured by the traditional distinction between primary and secondary qualities, but also those deriving from particular combinations of primary and secondary qualities are part of our experiential relationship with the world. They are qualities which have a marked effect of pathos on us, with a particular emotional tonality (for example, sadness, threat, calm), as well as a functional, pragmatic reference to the use that we can make of the objects. The vision offered by the Gestalt tradition is therefore clearly a radically externalist view of expressivity, which is released from the traditional picture that linked expression to the manifestation of an internal state. Indeed, first of all, this led to expressivity only being attributed to living beings and – second – considering the expressive traits seen in inanimate objects to be the fruit of the projection or transposition onto them of our sentiments or moods, which the characteristics of the objects could make us relive (Lipps, 1909, p. 226). We are getting very close to the way in which the Gestaltists conceived of the expressive qualities, namely as perceptually categorical properties. The underlying idea is that in the same way as experiences of red or blue derive from natural properties of physical bodies (the properties of their molecular structure which absorb or reflect the light in a certain way), so particular sets of structural and dynamic characteristics give rise to properties that, for certain species (such as humans), make an object present particular characteristics (attractiveness, repulsiveness, etc.) and therefore express something without stemming from an “interiority”. In the Gestaltists’ way of thinking, the principle belonging to every genuinely perceptual experience, today known as the transparency principle (see for example Strawson, 1979; Harman, 1990; Tye, 2000; Martin, 2002), is therefore valid for this type of property too. In other words, there is phenomenological evidence that the properties we perceive are not lived as properties of *our* experience or our way of experiencing the world, but as properties of the objects that we experience. So, for example, just as bodies reflecting electromagnetic waves of a length between 620 and 750 nanometres produce a perception (the colour red) that appears to be a property of the bodies and not a property of our way of experiencing them, in the same way particular structural and dynamic characteristics of the percepts result in properties such as being threatening, cheerful, exciting, appealing, horrible or majestic, which appear to belong to the world and not to our way of seeing the world. And this is a conviction shared by all the exponents of the Berlin school. According to Köhler, for example, «all characteristics which things and persons owe to perceptual organization are commonly taken as characteristics of these things and persons as such» (Köhler, 1947, p. 142). In the *Principles of Gestalt Psychology*, Koffka in turn states that «the horrible, the majestic, the enchanting describe objects with reference to ourselves [...] [and they] arise in organizations which include the Ego». Nevertheless, this «does not mean that they belong to the Ego» (Koffka, 2014, p. 361). In the same way, according to Metzger, these properties «are not subjective either in terms of their localization or their cause: they are not experienced as properties or states of the Ego in the same way as sentiments» (Metzger 2001, p. 64, my translation). Rudolf Arnheim equally underlines that they are qualities grasped as localized where we encounter them, that is, perceptual qualities inherent in the *aisthesis*, immanent to the «perceptual patterns»: so, what counts is not so much the bearer – which may or may not be living – but the characteristics of the structural and dynamic properties belonging to it (Arnheim, 1992, p. 452, 1966, p. 201).

The possible disharmony between the pathic contents of expressive properties and the subject's emotional state, as well as their resistance to being modified by subjective attitudes, projections of moods or opposite emotional tonalities, is further proof of their phenomenologically objective character. For example, a landscape can appear sad even if the observer is in a happy or cheerful mental state (Koffka, 2014, p. 326). Similarly, if we are down, this does not mean that projecting our mood onto a serene landscape will change its serene appearance. That perceptual objects present emotional-pathic qualities whose value and meaning are independent from the subject's contingent needs or motivational factors is clearly highlighted by the difference established by Metzger between *expressive qualities* such as happy, sad, serene, aggressive, elusive, solemn, arrogant, friendly and so on, and another type of quality, *Anmutungsweisen*, which correspond to Lewin's notion of valence or *Aufforderungscharakter* as referred to above. Just like *Aufforderungscharakter*, *Anmutungsweisen* depend on the objects' relationship with the particular state of a specific subject, while expressive qualities are instead objectual qualities that are independent from the subject's emotional state and needs. In the emotional sphere, as I was saying, the happiness of an atmosphere, a landscape or a person can be recognized perfectly for example, but this happiness can cause an irritating effect – therefore acquiring an anything but positive valence – on an observer who is in a state of unease, sadness, suffering or melancholy. In short, unlike expressive qualities, *Anmutungsweisen* do not belong to objects, but depend on the relationship between the objects' expressive properties on one hand and a subject's particular state on the other (Metzger, 2001, pp. 64-65).

If the specific notion of «field» introduced by Maxwell and Faraday was used by the Gestalt tradition to call into question the Kantian dualism between the form and matter of sensuous knowledge, the more general notion of «vector field» offered an equally as ideal descriptive picture to account for the qualities I have just described. And it was this descriptive structure which the Gestaltists preferred to the model offered by the intentional acts and constructs of the Brentanian and Husserlian tradition. On this notion of physical field, Köhler observes that, while in the framework of mechanical physics it appears nonsense that objects can exercise «demands» over us (Köhler, 1938, p. 90), things are different if we consider the perceptual field as something of which the perceiving subject and the objects surrounding that person are part, and in which vectorial forces, that is, forces that not only have a specific intensity but also a direction and a way round, are at play. In particular, the concept of field proved to be particularly suited to schematizing the main points of the externalist vision of expressivity that I summed up above: the distinction between the place and the «reference» of the experiences (Köhler, 1947, p. 192; Koffka, 2014, pp. 325 ff.); the differentiation between the forces of the field and the Ego; the idea that all experiences, insofar as they are experiences, belong to the subject, but that only a fraction of them refer to the subject; the argument that «quite as often it is not the self from which vectors reach out towards other parts of the field» (Köhler, 1938, p. 87). Therefore, it can come as no surprise that it is on the physical model of field that Köhler drew up the notion of «requiredness» in *The Place of Value in a World of Facts* which he describes as the experience of a vectorial force that, in addition to an intensity, also has a direction and a way round. It needs to be clarified that by «requiredness» Köhler meant that which is situated at a «primary level», in the domain of our ordinary perceptual experience, and not values that «have places of honor in books on ethics, aesthetics and logic» (Köhler, 1938, pp. 339). In his opinion, it is precisely at this «primary» level that a phenomenological investigation can highlight the greater wealth of our perceptual experience than what emerges from a physicalist or physico-geometric description of the world: more specifically, it is able to highlight that experience is not only constituted by «mere» or «indifferent» facts (Köhler, 1938, pp. 103, 102), but also by facts «in which beyond mere existence and occurrence» there is also an intrinsic and objective requiredness that concerns objects' attractive, repulsive, functional and expressive values (p. 339).

The experience of *demanding vectors* «on the objective side of the phenomenal world», which originate from objects themselves (Köhler, 1938, pp. 103, 93), is the characteristic trait of tertiary qualities, whether meant as physiognomic or functional. To take two of the examples that I used previously, the sadness of a landscape or threat of the growing rumble of thunder are something that we experience – and they are therefore an experience that definitely belongs to the subject – yet it is not from the subject that their vector originates, but from the landscape, from field forces outside the Ego. A large part of human experience – observes Köhler in the *The Place of Value in a World of Facts* – is «experience of demand» (Köhler, 1971, p. 193) and to the Gestaltists the model offered by the physical concept of «field» appeared as a descriptive tool that accounted for this even better than intentional analyses of the consciousness.

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