COSMIC ORDER AND PERCEPTUAL ORDER, ACCORDING TO ARISTOTLE

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0. THE GENERAL FRAMEWORK OF THE PROBLEM

A huge section of Aristotle’s main psychological work, the De anima, is devoted to the study of sensation/perception. In the De anima we find a theory about the five senses, each defined by the kind of sensible quality.
that it grasps¹ (colour for sight, sound for hearing, odour for smell, flavour for taste, hot cold dry moist for touch; these are the kinds of sensibile that Aristotle calls “proper” to each sense²), some very debated passages³ about the perception of environmental characters that are not reducible to these five kinds of sensibles, and whose perception is common to all senses⁴, and other passages, about the perception that animals (and human beings, which are animals) exercise about the objects in the world (f.i. other animals, plants, stones, mountains, etc.) of which the proper sensibles are properties (one thing is to see red, a quite different thing is to see that red as the red of a blood spot).

The entities that belong to this last kind act on the animal’s sense organs, according to Aristotle, just because among their properties there are proper sensibles (f.i. red) and common ones (f.i. a shape)⁵. So, how can the perception of a blood-spot happen, if such a perception is something different from the sensation of red? How can it happen that a hound, above smelling that odour, perceives the boar whose odour that odour is odour?

My interpretation of this Aristotlian doctrine will use the notion of ‘order’ at two levels: (IA) the world is something ordered (kòsmos); (IB) each single animal, with its own sensory faculties, is something ordered (it has a form, èidos, which is its soul, psyché⁶; soul that is a power to exercise some activities, enèrgeiai, that, as expressions of that kind of order which is the psyché, will be ordered); (IC) the interactions between the world, in itself ordered, and the sentient body of the animal, in itself ordered, are the sensations (aisthéseis), that, as interactions between two ordered beings, will follow some statistically regular patterns (to a sentient body of a given nature will usually happen to be in some given situations in which it’s normal to exercise sense-powers about some given kinds of items); (ID) the results of sensory acts are the sensory states (aisthémata) that, when the acts of sensation end, will remain (and in this case they are called “phantásmata“) and will be stored, and will be re-activated (when they will

¹ Cf. Cat. 7, 7b36; An. II 11, 422b23-24.
² Cf. An. II 6, 418a11-12.
³ An. II 6, 418a17-20; III 1, 425a14-b11.
⁴ The so called “common sensibles” (An. II 6, 418a19).
⁵ An. II 6, 418a20-24.
be re-activated) according to an order that mirrors the order of the originary sensations, making the animal able to re-cognize the objects; (2) the sentient body (the animal) is so structured as to be able to co-ordinate aisthēmata and phantāsmata in a way that makes it able to build a consistent image of the environment in which it happens to it to be; this happens because (3) animal nature, just like everything in the world, shares that being ordered which is shared by everything in the physical world on account of the dependence of the physical world itself from the perfection of the unmoved mover.

The perceptual order of each animal, and so the sum of its actions that results from the cooperation of these two kinds of order (1+2), is therefore the effect of a superior order.

1A

De generatione et corruptione II 10, 336a34-b4

ἀνάγκη γὰρ, εἰ γε ἂν εἶσαι συνεχῆς γένεσις καὶ φθορά, ἂν μὴ τι κινεῖσθαι, ἢν μὴ ἐπιλείπωσιν αὐτὰ αἱ μεταβολαὶ, δόσι δ`, ὅπως μὴ θατερον συμβαίνῃ μονον. τῆς μὲν οὖν συνεχείας ἢ τοῦ ἄλοχον φορὰ αἰτία, τοῦ δὲ προσέρχεται καὶ ἀνείπη ή ἔγκλισις.

Infact, it’s necessary, if there will always be a continuous generation and corruption, that always something is moved, in order that these changes never stop; and [it’s necessary] that [this thing] is moved according to two movements, so that there isn’t just one of these two [changes]⁷. Of the movement’s being continuous the cause is universe’s local movement; of the coming close and going away [from Athens⁸] the cause is the bending⁹.

Aristotle thinks that the Earth with its atmosphere, its seas, and all the living beings that live in these environments, is continuously changed

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⁷ I follow here Joachim’s interpretation (1926, 1999, ad 36b2).
⁸ Or from any given point of Earth’s surface. Cf. Joachim, ad 36b3-6. The Sun’s coming close to and going away from a given point of the Earth’s surface is, according to Aristotle, the cause of the prevailing of coming-to-be in Spring and of the prevailing of passing-away in Autumn, in that given point of the Earth.
⁹ Int. the ecliptic’s inclination in respect of the equator. This inclination is the cause of the Sun’s coming towards North in Winter and Spring and going away from North in Summer and Autumn, and therefore of the four seasons.

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according to cycles of change, cycles whose number is infinite in the past
and in the future: where there was a mountain there is now a plain, because
the mountain has been brushed by rains; but there is now an other mountain,
where the rivers have brought the relics of the first mountain; two dogs, or
two human beings, die, but they have begotten kittens, or children, which,
on their turn, will beget other specimens of their species, before they die,
etcetera.

There are, therefore, two things that one should explain: why the single
parts of the universe come to be and pass away (and don’t endure for ever);
and why, regardless this continuous change, the sum of all things (the
universe) preserves the order that is it’s own identity. Aristotle’s idea is that
the cause of the first fact is the climatic change that occurs in the
atmosphere of each part of the Earth’s surface on account of the seasonal
coming-close and going-away of the Sun; and that the cause of the second
fact is the fact that there is a movement (the movement of the last heaven)
which is the same every day. These two movements produce some effects
here on Earth: the movement of the Sun (coming-close and going-away),
produces alternate effects of generation and corruption; the movement of the
last heaven, that never changes its speed or direction, and that brings with
itself the planets (among which is the Sun) is the cause of the permanent
order of the universe.

Aristotle thinks that the main changes that occur every day here on the
Earth can be explained on account of the cyclical and ordered whirling of
the whole cosmos.

1B

De anima II 2, 414a12-14

ἡ ψυχή [...] λόγος τις ἐν εἰν καὶ εἴδος
the soul [...] will be a λόγος and a form

The soul is, according to Aristotle, the form of the living body: not its
sensible shape; rather, the ordering principle of the sum of its functions and
activities. The soul is the organization by virtue of which the living body
can perform some activities and not some others, and that identifies that


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living body as a living body (and not as a not-living one) and as a living body of a given kind (animal and not plant, dog and not cat). My soul doesn’t set from the beginning of my life what I will do; but sets from the beginning of my life what I will be able to do as a human being: my soul is therefore a set of powers (dynâmeis); and each one of these powers is the power to perform some given activity (enêgeia). Every action performed by the living being is an expression of its soul, and is therefore an expression of the order that the soul dictates to the body. In the case of an animal, that is different from plants because it’s able to perceive, and that is defined as animal in the genus living-being by its own sensory power. The main expression of its soul is the act of sensation. The act of sensation is therefore the main expression of the order (coordination among physical parts, ordered succession of steps of growth and decay, of waking and sleep, etc.) that is typical of some bodies on account of their souls.

1C

a Historia animalium IX 1, 608a11
ta δ’ ἡθη τῶν ζῴων ἑστι καλ.
The beasts’ characters etc.

b Ethica Nicomachea II 1, 1103a17-18
η δ’ ἡθηκα [scil. ἀρετή] έξ έθους περιγίνεται, δόθεν καὶ τοῦνομα δεχομεν μικρόν παραικλίνον ἀπὸ τοῦ έθους.
the [virtue] of the character [éthos] is a result of habitude, from which has taken the name too, on account of a little change from “habitute” [éthos].

Animals (not only human beings) have characters, and characters are produced by habits. It’s clear, therefore, that Aristotle admits that some non-human animals have habits. In the book IX of the Historia animalium we read that these habits concern both kinds of actions that some given kind of animal uses to perform and kinds of places in which this or that kind of animal uses to live; we can say that these habits relate to the situations in which to the animal happens for the most part to be. To admit that animals of a given kind use to be in situations of a given kind (and not in situations of some other kind) is quite obvious for Aristotle, because the situations in

10 Cf. PA. II 1, 647a21; III 4, 666a34; GA. I 23, 731b4-5.
which to the animal happens to be stem from the causal interactions between two never changing entities: the universe and the soul of that animal.

If an animal of a given kind will be for the most part in situations of a given kind, it will exercise its sensory powers for the most part about that kind of situations.

Therefore, the animal will store perceptual states (*aisthēmata* that, after the end of the sensations/perceptions, are *phantāsmata*) that concern mainly that kind of situations.

### 1DA

*De divinatione* 1, 464a32-b1, b4-5

οἱ δὲ μελαγχολικοὶ […] διὰ τὸ μεταβλητικὸν ταχύ τὸ ἐχόμενον φαντάζεται αὐτοῖς; melancholic people […] on account of [their] disposition to change, rapidly what follows [in the series of *phantasiai*] appears to them; ἐπὶ δὲ διὰ τὴν σφοδρότητα οὐκ ἐκκρούεται αὐτῶν ἡ κίνησις ὑφ’ ἑτέρας κινήσεως. And, on account of [its] strenght, the [phantastic] movement is not repelled by any other movement.

It seems, from this text, and from the whole of *De insomniis*, that Aristotle believed that the *phantāsmata* come to be re-activated not randomly, but according to an order. Why do the *phantāsmata* stored during the various acts of sensation produce an organized *habitus*? Situations that happen in a given succession produce, in the animal, *phantāsmata* whose mutual relation is a succession analogous to the succession holding between the situations by which the *phantāsmata* were produced. The happening of new and new situations produces a phantastic *habitus* that reproduce the unchanging features of the environment with increasing articulation and faithfullness.

The moist complexion of melancholic people perturbs the flux of their blood; *phantāsmata* are in the blood; the turbulence in the blood mixes the

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11 Cf. “what follows”.
phantàsmata in a lot of new combinations: each phàntasma rapidly brings with itself the subsequent one\textsuperscript{13}, that shows itself with its own intentional object\textsuperscript{14}. It’s typical of melancholic people the swiftness and strenght of their phantastic associations: such a difference among melancholic people and not-melancholic ones is just a difference in degree; so it’s presumable that, according to Aristotle, the principles that rule the association of phantàsmata described in the case of melancholic people hold in every sentient being. It seems, therefore, that Aristotle held that sentient beings have individual attitudes to composition of phantàsmata, differing on account of the individual physical complexion, of past experiences, of the kind of sense-organs of that given kind of animal. I call this attitude to create chains of phantàsmata\textsuperscript{15} “phantastic habitus” of the species or of the individual.

By storing elementary phantàsmata produced by sensations of elementary qualia, the phantastic habitus comes to exhibit varieties and regularities that mirror the environmental ones, on account of statistical necessity. The repetition of sensations produces phantastic habits\textsuperscript{16} and perceptual habits\textsuperscript{17} that, on account of being stemmed by interactions with the environment, can mirror the regularities of the environment itself\textsuperscript{18}.

1Db

\begin{center}
De anima III 1, 425b6-9
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\textsuperscript{15} τὸ ἐξομμένον: cf. the succession of the phantastic movements described in Ins. 461b13-
\textsuperscript{16} \textsuperscript{16} φαντάζομαι can mean both “show her/him/itself” and “to appear in figura”: cf. Plat. Rp. 380d2ss., 382e10.
\textsuperscript{17} The fact that, in a given situation, the ἀισθήμα X will be followed by the phàntasma Y and not by the phàntasma Z. J.-L. Labarrièrè (1990) describe this fact as a “proto-réminiscence” (p. 420).
\textsuperscript{18} Habitudes to perceive the world in this or that way, that are conditioned by the phantàsmata stored as material.
\textsuperscript{19} Cf. J.I. Beare, 1906, 1992, p. 315: the successions of the phantastic movements imitate, as statistical regularity, the regularity of the successions of the acts of sensation from which they were originated.


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Let’s look at an example of how the articulation of the power to recognize things in the world depends on the order of the originary sensory experiences: Aristotle states here the hypothesis that, if we had sight just of white (and not of other colours, nor senses different from sight), the identity of a shape, that remains the same through the change of colours and tangible properties, couldn’t be grasped: there weren’t any change in our sensations of colours and tangible properties, from which such an identity could emerge. For this identity to emerge, we need a more complex order, a succession (“akolouthèin”) among sensations which is more articulated than the very simple one ‘white iff shape’.

1Dc

ε De insomniis 2, 460b23-25
οὐ μόνον τοῦ αἰσθητοῦ κινοῦντος φαίνεται ἀδύνατον, ἀλλὰ καὶ τῆς αἰσθήσεως κινουμένης αὐτῆς, ἕνωσασθαι καὶ ἐναλλάξασθαι καὶ ἐδοκεῖ ὁ τοῦ αἰσθητοῦ.

some things appear not only if the sensible moves [the sense], but also if the sense moves itself, if it moves itself in the same way in which [is moved] by a sensible.

What moves itself, here, cannot be meant as the connate sensory power: if the sense could move itself before it could grasp any external sensible, there would be a violation of the basic principle of the anteriority of sensible to sense. What here moves itself, is the sensory power considered at a later stage: at the stage in which it can produce phantasias as a result of past sensations. Sense-power can move itself because sense-power, considered not as an animal’s connate power but, rather, as an habit, is the result of the storing of phantâsmata; this storage sets which experiences I can recall at work in order that I can recognize the situations I meet. An actual sensation recalls a phântasma or some phantâsmata: a part of my sense-power moves

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an other part, and therefore we can say that the sense moves per accidens itself.

2

a De somno et vigilia 2, 455a12-22
ἔπει δ' ὑπάρχει καθ' ἐκάστην αἰσθήσιν τὸ μὲν τι ἱδον, τὸ δὲ τι κοινών, ἱδον μὲν οὖν τῇ ὈΠΕΙ τὸ ὀρέη, τῇ δ' ἀκοῇ τὸ ἀκούειν, [...] ἔστι δὲ τις καὶ κοινὴ δύναμις ἀκολουθούσα πάσσαις, ἤ καὶ δι' ὑπάρχει καθεύδουσι (οὐ γὰρ δὴ τῇ γε δειν ὀρεῖ ὑπάρχει καθ' ὑπάρχει δη καὶ δύναται κρίνειν ἔτερα τὰ γλυκεία τῶν λευκῶν οὔτε γενοῦσαι οὔτε ὑπάρχει οὔτε ἁμόφον, ἀλλὰ τινὶ κοινῷ μορφῇ τῶν αἰσθητήριων ἀπάντων. ἐστι μὲν γὰρ μία αἰσθήσις, καὶ τὸ κύριον αἰσθητήριον ἐν, τὸ δ' εἶναι αἰσθησθεῖ τὸν γένους ἐκάστου ἐτερον, οὖν ψόφου καὶ χρώματος κτλ.

Since to each sense belongs something that is proper [to it] and something that is common [to the other senses] (the proper one is f.is. for sight seeing, for hearing the act of hearing [and the analogous for the other senses]), there is a common faculty, too, which follows all [the senses], by which one perceives also that he is seeing or hearing (it isn’t by sight, in fact, that one sees that he’s seeing and distinguishing; and one can distinguish that the sweet things are different from the white ones not by taste nor by sight nor by using the two, but by some other part [of the soul] which is common to all the sense-organs: one, in fact, is the sensation; and one is the main sense-organ, but the being, for each sense that is relative to each genus [of sensible things] is different: f.i. [for the sense of sound and [for the sense of] colour), etc.

b De insomniis 3, 461b3-6
όλος γὰρ τὸ ὅρος ἐκάστης αἰσθήσεως φησιν ἢ ἄρχη, ἐὰν μὴ ἑτέρα κυριωτέρα ἀντιφῇ, φαίνεται μὲν οὖν πάντως, δοκεῖ δὲ οὐ πάντως τὸ φαινόμενον

Generally speaking, in fact, the [perceptive] principle affirms what [comes] from each sense/sensation, if an other, more authoritative one, doesn’t contradict [the first one]. So [the sensible datum] always appears, but not always what appears results [as true]

c De generatione animalium V 1, 779a13-16
συμβαίνουσι γὰρ καθεδούσιν αἰσθήσεις τοῖς ζώοις, οὐ μόνον τὰ καλούμενα ἐννοια, ἀλλὰ καὶ παρὰ τὸ ἐννοιαν, καθάπερ τοῖς ἀνισταμένοις καθεδούσι καὶ πολλὰ πράττειν ἄνευ τοῦ ἐννοιατέου

In fact sensations happen to sleeping animals too: not only the so called “dreams”, but also other [sensations] besides the dream; as [happens] to people that stand up during sleep; and [it happens] that one does a lot of things [during sleep] without dreemng.


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All the activities that I have described would, anyway, be impossible if the environmental regularities registered by storing aisthēmata and phantàsmata couldn’t be considered by some single power. According to Aristotle, such a single power (a) performs every sensory and perceptual activity that cannot be reduced to the sensations of the five kinds of proper sensibles: being aware of seeing, hearing, etc., and distinguishing between sensibles that pertain to different senses. Such a single power (b) doesn’t produce any new datum: it just checks the coherence or incoherence of sense-data with other sense-data and with phantàsmata of past experiences. If two data (or groups of data) do conflict, the single faculty accepts the more consistent one (this is the one that “results” as true) and denies the data that conflict with that; the denied data continue to appear as sensory data, but they are not accepted as true data about the external world.

This single power is impeded during sleep; Aristotle (e) admits that in sleep is at work a particular kind of sensory activity (the phantasia) that produces dreams, and that we can receive data about the external world through sensation; let’s consider f.i people who walk during sleep: they can perform actions, very complex actions too, f.i. to open doors, and it’s therefore quite clear that they are able to grasp the environmental data; what, according to Aristotle, they can’t do, is to establish a general order to which all the sense-data that they grasp would be submitted.

The sleeper is therefore conceived by Aristotle as actually sentient, but temporarily deprived of that ordering principle that makes waking people able to re-construct in the order of their sensations and perceptions an image of the environmental order of things in the world.

3

a Metaphysica XII 7, 1072b3-4
κινεῖ δὴ ὃς ἐρόμενον, κινούμενα δὲ τὰλλα κινεῖ
and [the unmoved mover] moves as object of love, while every other thing moves [on its turn] because it’s moved.

b Metaphysica XII 10, 1075a16-19
πάντα δὲ συντέτακται πως, ἄλλ’ οὐχ ὁμοίως, καὶ πλούτῳ καὶ πτηνῷ καὶ φυτῷ· καὶ
οὐχ ὀστὸς ἔχει ὡστε μὴ εἶναι ὀκτέρῳ πρὸς θάτερον μηδέν, ἄλλ’ ἐστι τι. πρὸς μὲν
gambar ἀπάντα συντέτακται

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all the things are in some way coordinated, but not in the same way: the things that
swim and the ones that fly, and the things that grow from the Earth; and [all these
things] are not such as not to have any relation the ones with the others; rather,
there is [a relationship]. All things, in fact, are coordinated to one thing.

This text from the *Metaphysics* shows the ultimate ground of this theory:
all things are in some way in some mutual relationship, because they are all
in some relation with a first cause. This cause produces order in the world
because the heavens do imitate its perfection in their whirling, and by
whirling they produce the cycle of coming-to-be and passing-away (cf. 1A).
The level that belongs in the cosmos to each natural thing (and among them
to sentient beings), therefore the nature of each thing, will be a product of its
own relation of greater or smaller distance from the unmoved mover, and
therefore of its own greater or smaller participation of the cosmic order. The
sentient soul of the animal is, according to Aristotle, a particular degree and
way of *being ordered*.

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