

Three anima – from Aristotle to modern neuropsychology

Personal reading of „De Anima” by XXth century experimental physicist

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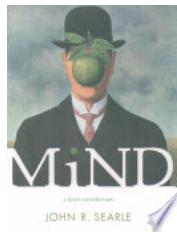
Outline

- Motivation (J.R. Searle)
- What is anima?
- Three kinds of anima
- Anima and body
- Is the *soul* immortal?

→ „De Anima” [R.D. Hicks, Cambridge, 1907;
G. Movia, Bompiani 2001]

→ Modern Science (Biology, Neurology, Physics)

→ Contemporary Philosophy (T. Nagel, D. Zahavi,
S.Jaki, M. Gazzaniga)



Motivation

- Mind is central to our life. The operation of the mind – conscious and unconscious, free and unfree, in perception, in action, and thought, in feeling, emotions, reflection, and memory, and in all its other features – is not so much an aspect of our lives, but in a sense, **it is our life**.
- There is an enormous difference between what people believe and what **professional experts believe**. I suppose most people and the Western world today accept some form of dualism. They believe they have **both a mind, or a soul, and a body**. I have even heard some people tell me they have **three parts** – a body, a mind and a soul. But this is definitely not the view of *professionals* in philosophy, psychology, cognitive science, neurobiology, or artificial intelligence. Almost without exception, the professional experts in the field accept some version of **materialism**.

J.R. Searle, *Mind: A Brief Introduction*, Oxford, 2004

Why Aristotle?

- Modern science uses significant amount of „factology”
- Aristotle operated without this „factology” searching explanations in „pure reasoning” (*filo-sofia*)
- For this aim he constructed *categories* and their dynamics „all this *jargon* about substance and essence, by the way, comes from Aristotle” (J. Searle, 2004).
- These categories used extraordinary methodology but hardly form a clear system
- The research question is: *which* of Aristotle intuitions are *not in contradiction* with modern factology
- use these intuitions, to *enlarge our understanding* of the factology
- use this enlarged understanding to draw practical consequences: in *gnoseology, ethics, education*

From „Fisica” to „De Anima”

From Empedokles:

- Four material elements (water, earth, air, fire)

From „Physics”:

- „self-moving essence”
 - „the soul sets the body in motion, it may reasonably be supposed to impart to it the motions which it has itself”, etc. (406a 6)
 - „for everything moves in one of two ways: either by another, or of itself.”
- Not needed any more from times of Newton (and his Dynamics)

„Since there are four kinds of movement (local, by alternation, by increase, by decrease)...”

- Not needed any more from times of Galileo’s (and Descartes) and their system of reference

„The anima is...”

- It must follow, then, that soul is **substance** in the sense that it is the form of a natural body having in it the **capacity of life**.
- Such substance is actuality. The soul, therefore, is the **actuality of the body** above described. Hence soul is the first actuality of a natural body having in it the capacity of life.
- It is now been stated in general terms what soul is, namely **substance as notion and form** [an **essence** of a given body] (412a 15 – 412b 21)
- Now the soul is cause and origin of the living body. But cause and origin are terms used in various senses: accordingly soul is cause in the three senses. For the souls is the cause of animate bodies as being in itself the **origin of motion, as final cause and as substance**.
- Clearly it is so as substance, substance being the cause of all existence. And for the living things existence means life, and **the soul which is the cause and origin of life**.
- Furthermore, actuality is the notion or form of that which has potential existence. Manifestly, too, the soul is **the final cause**. For nature, like **intelligence**, acts for a purpose, and this purpose is for it an end [*fine=goal*] (415b3-6)

Three types of anima

- Of the powers of soul above mentioned, namely, those of **nutrition**, appetency, **sensation**, locomotion and **understanding**, some living things, as we remarked, possess all, others again only one. **Plants** possess the nutritive faculty only: other things along with this have sensation; and if sensation, then also appetency: where under appetency we include desire, anger and wish. (414a, 30)
- There are two different characteristics by which the soul is principally defined: firstly, **motion** from place to place and, secondly, **thinking and judging and perceiving**. Both thought and intelligence are commonly regarded as a kind of perception, since the soul in both of these judges and recognizes something existing. (427a, 3)
- Others – that is to say, man and any other species like man or, possibly, **superior to him** – have also the **thinking faculty and intellect**. (414b, 20)

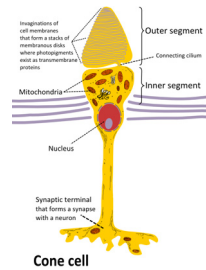
Anima and body

- Hence those are right who regard the soul as **not independent of body** and yet at the same time as not itself a species of body. It is not a body, but something belonging to body [**a feature of body**], and therefore resides in body and, what is more, in such and such a body.
- [...] wrong in endeavouring to fit the soul into a body without further determination of the nature and qualities of that body: although we do not even find that of any two things **taken at random** the one will admit [allow] the other.
- For the actuality of each thing come naturally to be developed in the potentiality of each thing: in other words, in the appropriate matter. From these considerations, then, it is manifest that soul is a certain actuality, a notion or form [**an essence**], of that [body] which has the capacity to be **endowed** [assigned] with soul. (414a, 14-15)

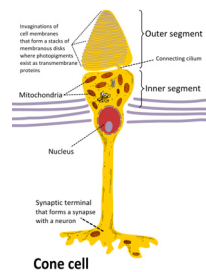
Anima and intellect

- Concerning the intellect and the potentiality for contemplation the situation is not so far clear, but it seems to be a **different kind of soul**, and this can exist separately, as the **everlasting** can from the perishable (413b, 26)
- For being able to perceive and being **able to believe** are different, since perceiving too is different from believing. (413b, 31)
- „better to say, not that the soul is compassionate, or learns, or understands but **a man** by his soul” (408b, 15)
- Now it is clear that **perception and intelligence** are not the same thing. For all animals share in the one, but only a few in the other. And when we come to **thinking**, which includes right thinking and wrong thinking, right thinking being **intelligence, knowledge and true opinion** [...] **neither is in this** identical with perception. (427b, 8)

Book II, Senses: Vision



- The visible, then, is colour. Now colour is that with which what is visible in itself **is overlaid**. (418b 7)
- Black-white vision, with very low light intensity is due to *rods* and colour vision is **overlaid on it**, thanks to cones, but these require a higher illumination
- But colour is universally capable of exciting change in the actually transparent, that is light. Hence colour is not visible without light.
- When light propagates in vacuum (or air) it is invisible; become visible only if it is absorbed (and re-emitted) or scattered. The colours that we see depend on illumination.
- Light is neither fire nor body generally nor an affluence from any body, but the presence of fire or something fiery in the transparent (418b 15)
- Light is an electromagnetic wave propagating in a (transparent) vacuum. Photons carry energy but have zero mass at rest.



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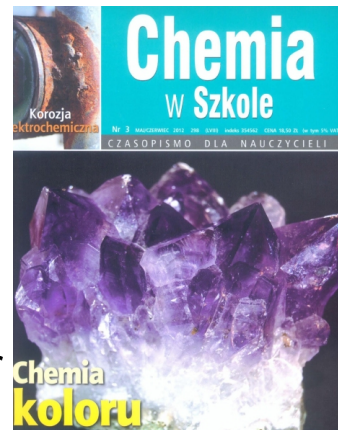
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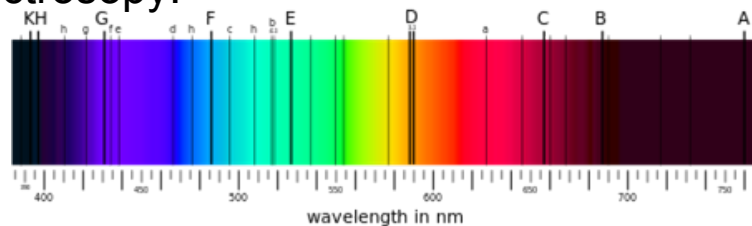
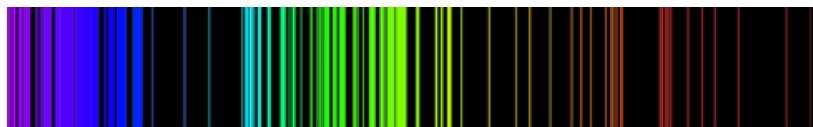
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Senses: Colours



- It is not everything visible which is visible in light, but only the proper colour of each thing.
- Colour properties would be intrinsic of objects, due to their physical and chemical structure. But they can appear differently, if the illuminating light is not perfectly „white”.
- Some things, indeed, are not seen in daylight, though they produce sensation in the dark: as, for example, the things of fiery and glittering appearance, like fungus, horn, scales and eyes of fishes.
- Some objects, like metals (silver, gold) or fish scales, are „glittering” because they reflect almost all white spectrum; in horn (and pearls) this is the nano-structure of the material that makes the glittering effect
- Fire is visible both in light and in darkness.
- We call it emission and absorption spectroscopy.



Senses: hearing, smell

- The medium of **sound is air**, that for odour has no name.
→ Sound is a longitudinal wave propagating in air.
- For animals that live in water also appear to have the sense of smell. But man and other land-animals which breathe are unable to smell without inhaling breath. **The reason for this, too, must be reserved for future explanation.** (419a 35)
- They can produce actual sound between the sonorous body and the organ of hearing. [...] for it is blow that produces it.
→ Source of sound is a physical perturbation (a „blow”).
- The thing struck must be of **even surface**, so that the air may rebound and vibrate in one mass. (420a 25)
→ The „resonant” box of violin has an even surface: it serves to make air rebound – the string does not have sufficient surface to do it.

Thinking soul is a place of ideas

- As to the part of the soul with which it knows and understands, whether such part be **separable spatially**, but only in thought, we have to consider what is its distinctive character and how thinking comes about. (429a, 10)
- Thus, then, the part of the soul which we call intellect (and by intellect I mean that whereby the soul thinks and conceives) **is nothing at all actually before it thinks**. Hence, too, we cannot reasonably conceive it to be **mixed** with the body. (429a, 25)
- Therefore it has been well said that the soul is a place of forms or ideas: except that this is not true for the whole soul, but **only of the soul which can think**, and again that the forms are there not in actuality, but potentiality (429a, 30)

Anima is smth more godlike

- „But intellect [mind] would seem to be a **substituting essence implanted in the soul, and not to corrupt**. [...] Understanding and thinking, then, decay with the decay of something else within. Understanding itself can not be affected. [...] (408b, 20)
 - But perhaps intellect is something more **godlike** (θειότερόν) and unalterable. ” (408b, 30, p.124)
- = Se si legge il testo senza pregiudizi, e si tengono presenti i cc. 4 e 5 del III libro, non si può negare, che esso concordi sostanzialmente con la dottrina professata da Aristotele nelle opere pubblicate, **dell'immortalità dell'anima umana**. [G. Movia]

Gli soffiò nelle narici un alito vitale e l'uomo diventò una creatura vivente

Anima is smth more

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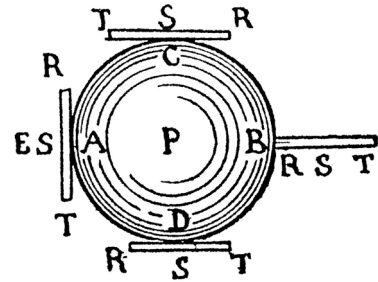
**Gli soffiò nelle narici un alito vitale
una creatura vivente**



Descartes: physics, mathematics, epistemology

- First formulations of three laws of mechanics (before Newton)
- Light refraction and rainbow
- Magnetic interactions
- Analytical geometry

OECD: AHELO (2012)
Generic skills common
to all students, such as:
Critical thinking
Analytical reasoning
Problem-solving
Written Communication



Le premier était de ne recevoir jamais aucune chose pour vraie que je ne la connusse évidemment être telle, c'est-à-dire d'éviter soigneusement la précipitation et la prévention, et de ne comprendre rien de plus en mes jugements que ce qui se présenterait si clairement et si distinctement à mon esprit que je n'eusse aucune occasion de le mettre en doute.

Le second, de diviser chacune des difficultés que j'examinerais en autant de parcelles qu'il se pourrait et qu'il serait requis pour les mieux résoudre.

Le troisième, de conduire par ordre mes pensées, en commençant par les objets les plus simples et les plus aisés à connaître, pour monter peu à peu comme par degrés jusqu'à la connaissance des plus composés, et supposant même de l'ordre entre ceux qui ne se précèdent point naturellement les uns les autres.

Et, le dernier, de faire partout des dénombrements si entiers et des revues si générales que je fusse assuré de ne rien omettre.

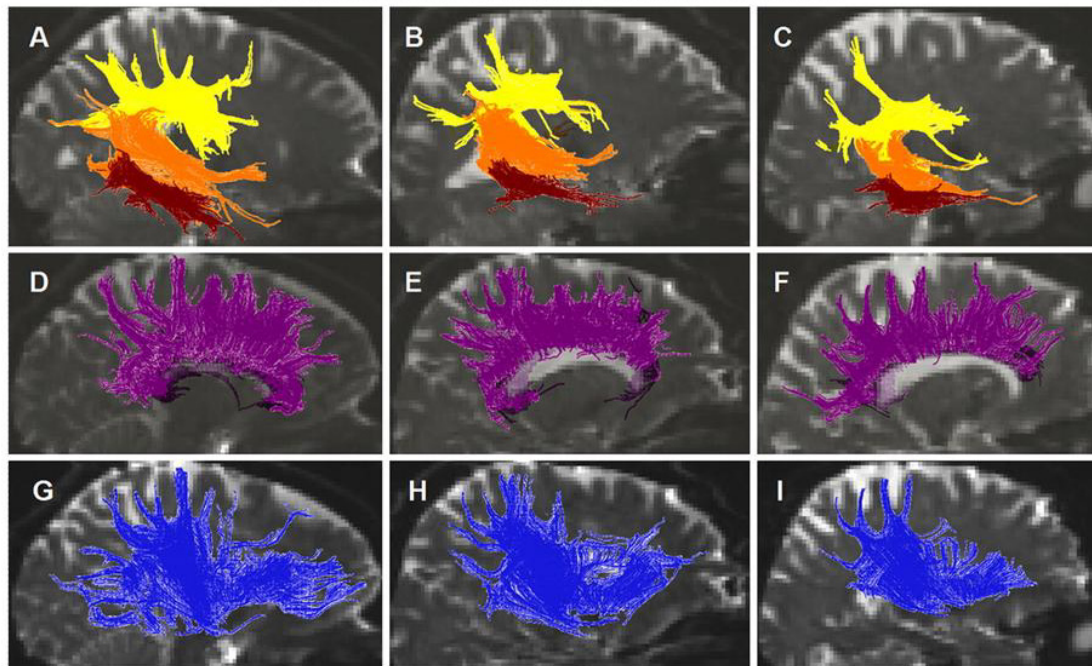
Cartesian dualism

- Cartesius *wanted* to write smth on theology. And it was a disaster, not for him, but for those who read him later.
- „Cartesian dualism readily invited plain materialism.” (Stanley Jaki, *The brain-Mind Unity: The Strangest Difference* p. 2)
 - „That the mind was a mere function of physiological processes in the brain was **a staple claim** of XVIIIth century materialists as Helvetius and De la Maitre” (SJ)
 - „Dualism, as was the case with Descartes, discredits itself when it looks at the soul as something **merely attached** to the brain but not wholly diffused within it in the sense of being integrated with it.” (SJ)
 - Descartes thought that a substance has to have essence or an essential trait that makes it the kind of substance it is (**all this jargon about substance and essence, by the way, comes from Aristotle**). [J.R. Searle, *Mind: A Brief Introduction*, p. 13]
 - „Dualism has at least the advantage over monism in that it takes the difference most seriously” (SJ, pp.20-21)



Cartesian disaster/ stimulus: if not in „*sensus communis*”, so where?

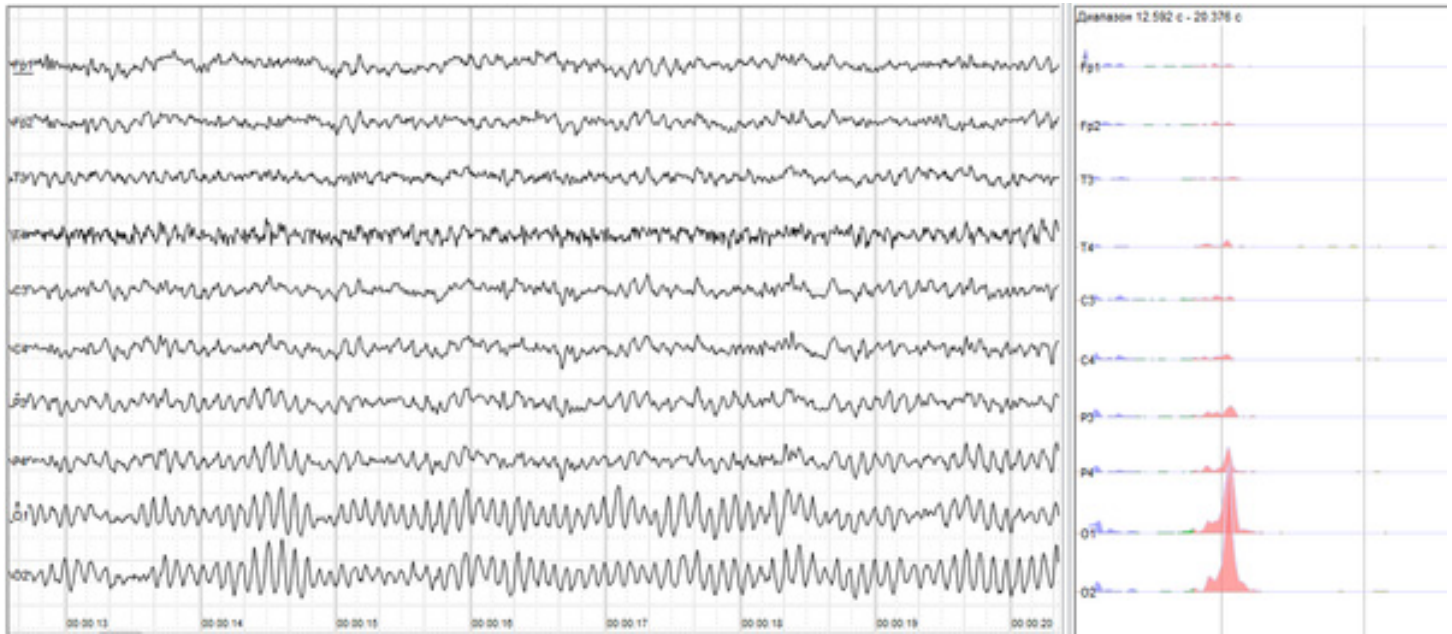
Representative sets of fiber-tracking results obtained in, A, D, G, a 25-year-old man; B, E, H, a 55-year-old man; and, C, F, I, an 81-year-old woman and depicted on sagittal sections of the DT data set measured with a b value of 0 sec/mm².



Stadlbauer A et al. Radiology 2008;247:179-188

Age-induced reduced mental capacities

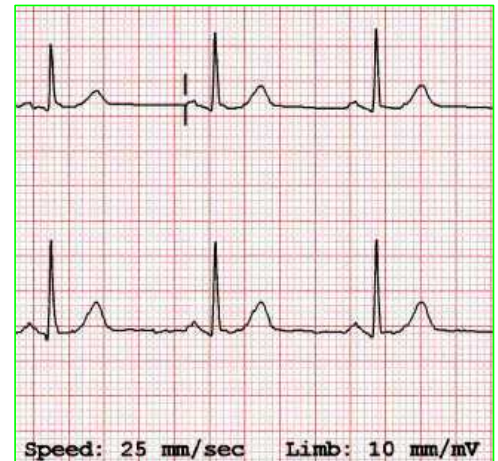
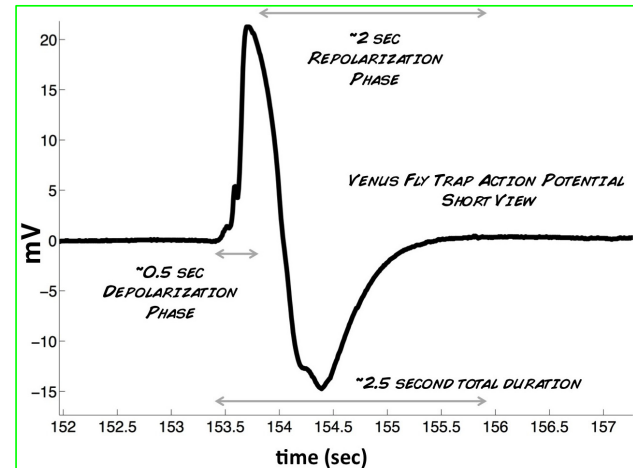
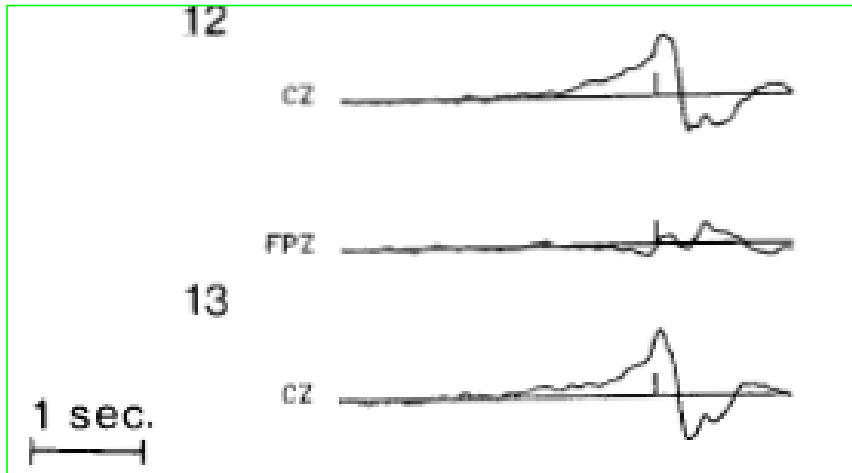
Three anima in modern bio-physics: Human brain



But we still understand little out of it: the waves are still called α , β , γ , like Marie Curie called radiation from uranium ore

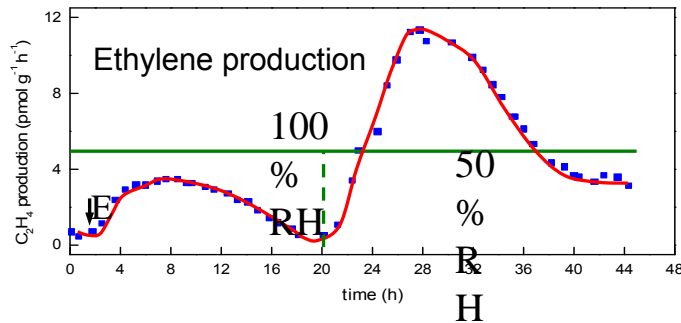
Humans/ Animals/ Plants

Movement-related brain macropotentials



Plants: sensing and „reasoning”

- Orchid, asking for water



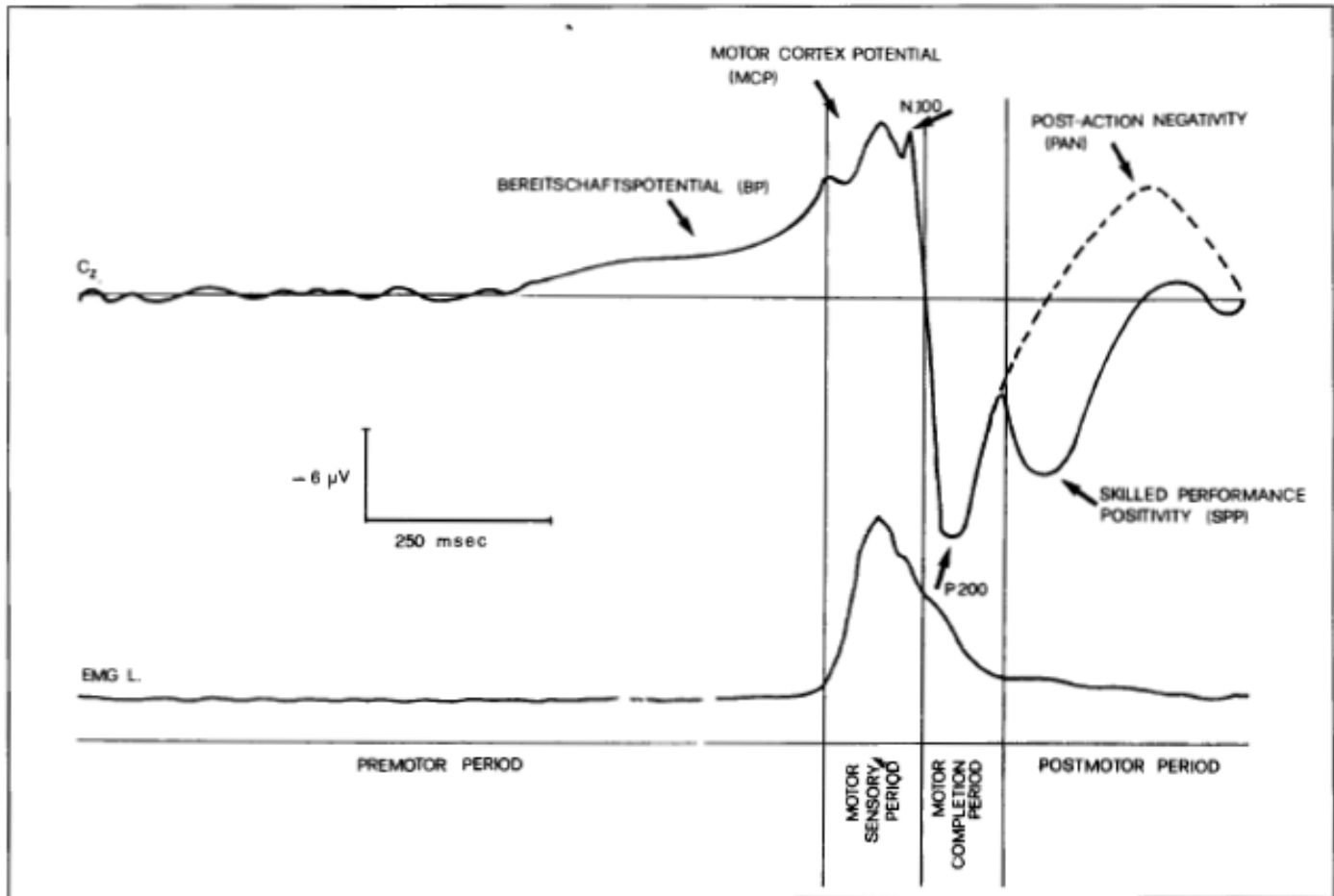
Venus flytrap (*Dionaea muscipula*)



Closes only if stimulated twice in less than 20s time distance

- Physics Today (2016): scientists discovered, why sunflowers (ital. *girasole*) turn towards sun ...

Humans: a thought shapes electricity



J. R. Searle: non-reductive materialism

- It should seem no more mysterious, in principle, that this **hunk of matter, this grey and white oatmeal-textured substance of the brain**, should be conscious than it seems mysterious that this other hunk of matter, this collection of **nucleo-protein molecules stuck onto a calcium frame**, should be alive. The way, in short, to dispel the mystery is to understand the process. We do not yet fully understand the process, but we understand their general *character*. (J.R. Searle 1984, p. 24) **(??)**
- Consciousness is a system-level, biological feature in **much the same way that digestion (!!)**, or growth, or the secretion of bile are system level, biological features. As such, consciousness is a feature of the brain and thus a part of the physical world” (Searle 2004, 80).

Ontological/ etical consequences

- If pig have a similar anima to my, so...
- Also roses, if cut, suffer...
- „If you see, how many things can do my dog...” (M. Gazzaniga)
- „How funny is that Meggy [i.e. chimp] eating at table”
- There is no bigger offense to a dog than saying that it can do things like humans. Dogs can do so many things that no human can do...” (M. Gazzaniga)
- And in spite of 8 million years of their own history, no gorilla is able to write a single word” (Polish journalist)
- And no shimp is able to construct Maserati” (M. Gazzaniga)
- “! Note, that with Aristotle, the distinction between three (or two) anima was not cut-like, but smooth, i.e. continuous.
- What makes the difference is Aristotle’s „intelligence”

Thought, soul and body

- **Thought**, if anything, would seem to be peculiar to the soul.
- Yet, if thought is a sort of imagination, or not independent of imagination, it will follow that even thought cannot be independent of the body.
- If, then, there be any of the functions or affections of the soul peculiar to it, it will be possible for the soul to be separated from the body:
- if, on the other hand, there is nothing of the sort peculiar to it, the **soul will not be capable of separate existence**

(De Anima, 403a, 10)

Brain in the vat (Searle)

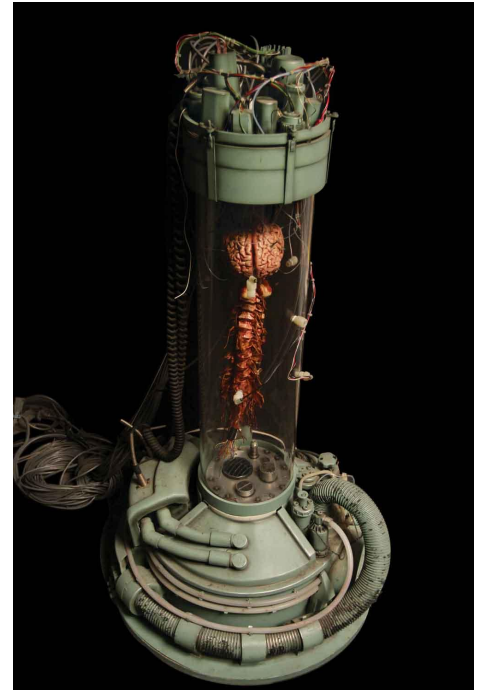
- Searle: **Even if I am a brain in a vat [...]** do have the intentional content that I have, and thus I necessarily have exactly the same background that I would have if I were not a brain in a vat.
- S. Gallagher, D. Zahavi: This kind of denial of the cognitive significance of the body has a long tradition. Compare the following statement in Plato's dialogue, *Phaedo*:

It seems that so long as we are alive, we shall continue closest to knowledge if we avoid as much as we can all contact and association with the body, except when they are absolute necessary, and instead of allowing ourselves to become infected with its nature, purify ourselves from it until God himself gives us deliverance. (*Phaedo* 67a)

Brain in the vat (Phenomenology)

- It just is an empirical fact that we are indeed embodied, that our perceptions and actions depend on the fact that we have bodies, and that **cognition is shaped by our bodily existence**.
- The brain-in-the-vat thought experiment actually shows that perception and action do **require some kind of embodiment**. Even the pure brain-in-the-vat requires absolutely everything that the body normally provides – for example, sensory input and life support.

S. Gallagher & D. Zahavi,
The Phenomenological Mind.
An Introduction to Philosophy of Mind and Cognitive Science, 2008, p. 131



Brain in the vat („Robocop 2”)

Artist's imagination is not less valid
than philosopher's imagination



„Embodiment”

- On the contrary, the **body** is considered a constitutive or transcendental principle, precisely because it is involved in the very possibility of experience. It is deeply implicated in our relation to the world, in our relation to others, and in our self-relation, and its analysis consequently proves crucial for our understanding of the mind–world relation, for our understanding of the relation between self and other, and for our understanding of the mind–body relation.
- Rather, the **notion of embodiment**, the notion of an embodied mind or a minded body, is meant to replace the ordinary notions of mind and body, both of which are derivations and abstractions.
- The **lived body is neither spirit nor nature**, neither soul nor body, neither inner nor outer, neither subject nor object. All of these contraposed categories are derivations of something more basic.

(Gallagher & Zahavi, p.135)

= in-dividual (o-soba, in Polish, i.e. entity for itself)

Where, in mind, is number „1”

„Nothing should seem simpler than the number 1. But it poses a **huge problem** in a most recent advance in brain research or the **localization of brain cells** whose activity underlies the most elementary arithmetic operations.

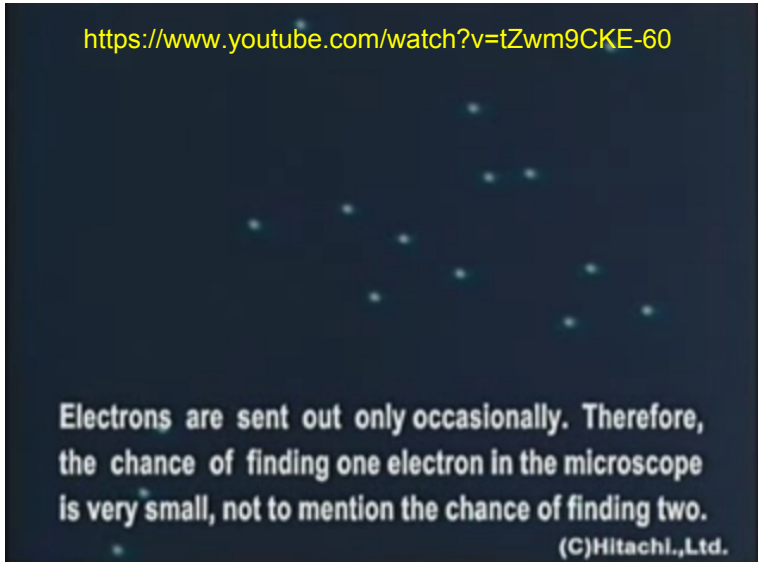
Even when that localization becomes fairly convincing, the **number of cell and the synapses connecting** them remain very numerous and, of course, their electrical interactions (firings) remain very complex as well.

Those **firings involve many electrons**, that jump from one orbit into another, to take the simplest case. When is then, one would ask, that makes the concept of 1, emerge in the mind from multiplicity of such complex operations.”
(S.Jaki, p.13)

An electron: particle or wave?

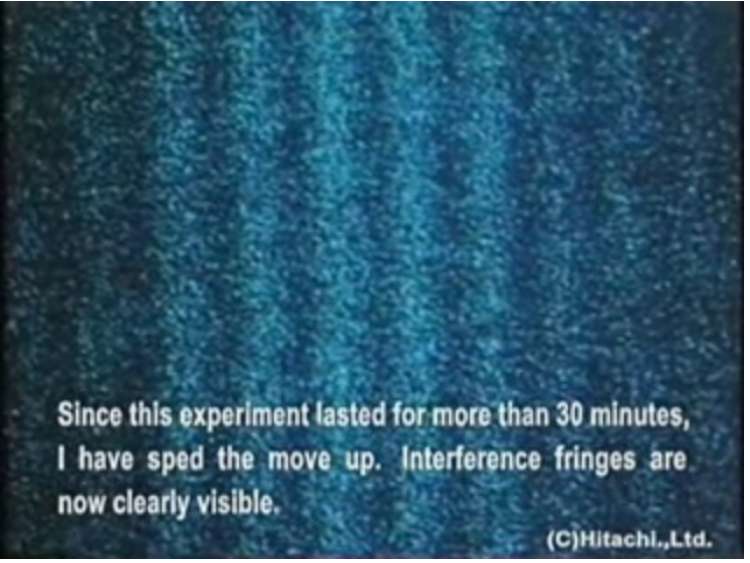
- Movement of a single electron (the smallest particle that can be imagined) is non-local – we can not know its trajectory, unless we destroy it

<https://www.youtube.com/watch?v=tZwm9CKE-60>



Electrons are sent out only occasionally. Therefore, the chance of finding one electron in the microscope is very small, not to mention the chance of finding two.

(C)Hitachi.,Ltd.



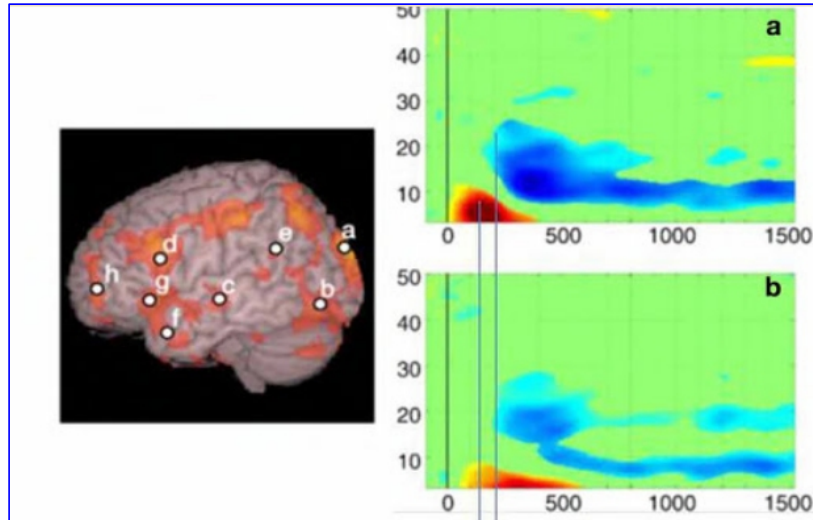
Since this experiment lasted for more than 30 minutes, I have sped the movie up. Interference fringes are now clearly visible.

(C)Hitachi.,Ltd.

If a single electron (and the whole Quantum Mechanics) is experimentally proved to be non-local, why a *thought* should be local?

Diffused mind: neuropsychology

Temporal (in ms) and spatial sequence of signals during reading a word



In addition, the time course of these signals was interesting, in that the first signal at approximately 150 ms was a gamma (35-40 Hz) signal, the second, at approximately 200 ms, an alpha signal, and the next signal at about 300 ms, again a gamma signal. The cortical networks involved in reading are **highly complex**, requiring a **sophisticated interplay of temporally and spatially dynamic interactions**.

K. Pammer, *Temporal sampling in vision and the implications for dyslexia* in: Oscillatory “Temporal Sampling” and Developmental Dyslexia: Towards an Overarching Theoretical Framework a cura di Usha Goswami, Alan Power, Marie Lallier, Andrea Facoetti, Frontiers in Human Neuroscience, 2014, p. 148, 15

So, where is the mind/ soul?

- „That our being should consist of *two* fundamental entities offers, I suppose, no greater inherent improbability than that it should rest on one only”

(Charles Scott Sherrington 1857-1952, foremost neurophysiological investigator of the brain in modern times, S.Jaki, p.19)

- But dualism, as was the case with Descartes, discredits itself when it looks at the soul as something merely attached to the brain but not **wholly diffused** within it in a sense of being integrated with it. It would, of course, be futile to say something quantitatively specific about that kind of diffusion. It is **neither chemical nor spatial**.
- The **soul or the mind is everywhere in the brain yet it is nowhere within it**. (S. Jaki, p.21)

Physics: XXth Century

- Space-and-time are part of the material world (are shaped by presence of matter)
- Energy can be created from mass and *vice versa*
- Homogeneity of space-time requires conservation of energy, momentum, angular momentum – from the Beginning, till for ever
- Velocity of the transmission of information is *explicitly* limited
- Space-time universe had Beginning (13,78 bln years ago)
- Space-time universe has a limit of observability
- Time arrow is (feebly) forward-pointed
- Observations in the micro-world are mutually excluding (Heisenberg's principle)
- Mathematics can not be done complete XOR self-consistens - Gödel

Physics: XXlth Century

- We continue discovering of „invisible” matter: electromagnetic waves, X-rays, gravitational waves
- Still 96% of mass-energy evades our observability (and even theoretical speculations)
- Extremely high amount of unknown energy shapes the expansion of Universe
- 9994 terms of General Theory of Relativity are still to be discovered (Michał Heller)
- Quantum phenomena are non-local („spooky actions”) – Einstein, Rosen, Podolsky – experimentally pinned down without almost any doubt
- Quantum transmission of information (intrinsically secure) works perfectly – but we do not know why (Paweł Horodecki)
- Reasons for strange masses of quarks are unknown („They are people who say, that if this distribution were different, we would never exist” – prof. Lev Pitaevski)
- Antropogenic-like tuning of universal constants – 10^{-51}

Universe ends at distance 13.8 bln light yrs



Flammarion,
~ 1880

Copernicus: Earth, even if being a huge sphere, is nothing as compared to the size of the Universe, that dimensions we do not know, or probably, even **can not** know.

Thomas Nagel: Mind and Cosmos

- The great advances in the physical and biological sciences were made possible by **excluding the mind from the physical world**. This has permitted a quantitative understanding of that world, expressed in timeless, mathematically formulated physical laws. But at some point it will be necessary to make a new start on **a more comprehensive understanding that includes the mind**.
- The question is whether we can integrate this perspective with that of the physical sciences as they have been developed for a mindless universe. The understanding of mind cannot be contained within the personal point of view, since **mind is the product of a partly physical processes**; but by the same token, the separateness of physics science, and its claim to completeness, has to end in the long run.

Thomas Nagel: Physics is not theory of everything

- The starting point for the argument is the failure of psychophysical reductionism, a position in the philosophy of mind that is largely motivated by the hope of showing how **physical sciences could in principle provide a theory of everything**.
- The aim of this book is to argue that the mind-body problem is not just a local problem, having to do with the relations between mind, brain, and behavior in living organisms, but that it **invades our understanding of the entire cosmos and its history**.
- Humans are addicted to the hope for the final reckoning, but intellectual humility requires that we resist the temptation to assume that tools of the kind we now have are in principle **sufficient to understand the universe as a whole**.

Nagel: Mind as a part of cosmos

- The implausibility of the reductive program that is needed to defend the completeness of this kind of naturalism provides a reason for trying to think of alternatives – alternatives that **make the mind, meaning, and the value as fundamental as the matter and the space-time** in an account of what there is. Something more is needed to explain how there can be conscious, thinking creature whose bodies and brains are composed of those elements.
- **Ontological proof of mind outside matter?**
- Our brains evolved so that could survive out there in the jungle. Why in the world **should our brain develop for the purpose of being at all good at grasping the true underlying nature of reality?** (Brian Green, mathematician)

Our understanding is not much further than that of Aristotle

- Nagel: a „blind” evolution can not explain existence of

1) Mind

2) Consciousness

3) Ethic values

The world is a surprising place, and the idea that we possess instruments fundamental for its understanding, is **not more credible than it was in times of Aristotle**. The fact that the world produced me, you and the rest of is the surprising

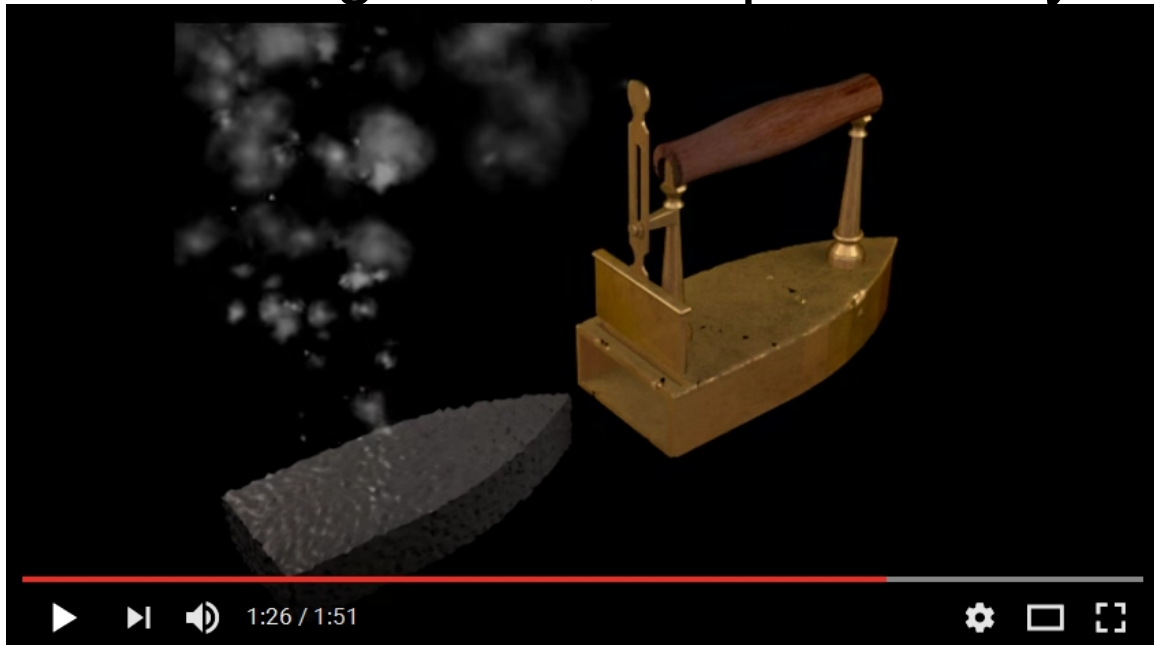
The human world, or any single human individual life, is in **potentiality**, and frequently **in actuality**, the place of incredible richness: the beauty, the love, the pleasure, the knowledge and a pure and simple joy of existing and living in the world. (Nagel, p. 9, p.124)

M. Gazzaniga „Humans. What makes us unique?”

- **We humans are special.**
- The point is that most human activity can be related to antecedents in other animals. But to be swept away by such a fact is to **miss the point of human experience.**
- ... comb through data about our brains, our minds, our social world, our feelings, our artistic endeavors, our capacity to confer agency, our consciousness, and our growing knowledge that our brain parts can be replaced with silicon..
- From this jaunt, one clear fact emerges. Although we are made up of the same chemicals, with the same physiological reactions, we are **very different from other animals.**
- Just as gases can become liquids, which can become solids, phase shifts occur in evolution, **shifts so large** in their implications that it becomes almost **impossible to think of them as having the same components.**

Another meaning of „anima” (=dusza) in Polish

- A hot insert, making things be [an iron]
- Human being as act, not potentiality



<https://www.youtube.com/watch?v=HV47V6FVLsS>

and what if,

- and what if, *Anima* is not only:
 - a brain, i.e. a set of electrical wires?
 - a *spirit*, i.e. the engine for muscles?
- Neuroscience: non-physical „conscious mental field” (B. Libet, 1994 – distributed neuronic activity)
- Maxwell: Electromagnetic wave is a variation propagating in a *physically* empty space
- Einstein (1915/2015): gravitational wave is a stretching of an empty space-time
- Nuclear physics (1945): **critical mass for self-reaction**
- ...? An ontological status for together of thoughts?

Any progress from Aristotle?

- C.S. Sherrington, though celebrated as „the supreme philosopher of the nervous system“, he was not enough a philosopher when he stated that **our understanding of the brain-mind relationship „remains where Aristotle left it two thousand years ago“**.
- Sherrington failed to recall a crucial aspect of Aristotle's notion of the soul as an entity which after body's death returns to the universal soul where it loses its identity. Sherrington should have recalled that the **Christian version of the Aristotelian relation of body and the mind** would never let the individuality of soul disappear into the universal soul, precisely because it wanted to safeguard the strongest manifestation of what it takes to have a mind: personal *in-dividuality*.
- **„For me now the only reality is the human soul“**
(Sherrington to J. C. Eccles, S. Yaki, p. 22).

„For as much the soul is immortal”

- If...
- But forasmuch **as the soul is immortal**, the only way to avoid those evils and obtain salvation, **is to become good and wise**: for it carries nothing along with it, but its good or bad actions, and the virtues and vices, which are the cause of its internal happiness or misery, commencing from the first minute of its arrival in the other world. And thus said, that after the death of every individual person, the Demon or Genius, that was partner with it and conducted it during life, leads to a certain place, where all the dead are obliged to appear, in order to be judged, and from thence are conducted by a guide to the world below. (Platon, *Phaedon*)
- T. Nagel/ M. Gazzaniga: the evolution does not explain **appearance of ethics** (higher moral functions, not needed for individuals)

→Aristotle, today

- His general philosophical categories are enough vague, that they remain non **in contradiction** with modern natural sciences
- At the same time, these general categories allow to attain to new insight on the modern discoveries: mind as a form and not a place
- But searching too detailed *fixing* of interpretations leads to serious aberrations, both in natural sciences (brain-in-vat) as well in humanities (see Descartes)

Persona e pedagogia

- Nella prospettiva della pedagogia della persona l'educazione è autentica quando mira all'attivazione integrale dell'essere umano, ad orientarlo verso il senso globale di se stesso e della realtà, a coltivarsi integralmente come soggetto in relazione evitando il rischio della separazione tra le sue dimensioni costitutive cioè tra la corporeità, la razionalità, l'affettività, la spiritualità e favorendo l'armonia e la loro reciproca fecondazione.

Person and pedagogy

- In the pedagogical perspective of a person the education is authentic when it aims towards an integral activation of the human being, for orienting it towards the global sense of himself and the reality, to be considered integrally as a subject, to avoid in this way the risk of separation between his dimensions constituting the bodiness, the rationality, the affectivity, the spirituality, in order to favour the harmony and their reciprocal fecundation.

Teacher is a sculptor, working in the most noble and delicate matter: souls of young people...

Conclusions

- What is *anima*? It is the essence of a live being
→ Any attempt of a more precise definition becomes culturally dangerous
- Where is *anima*? In live beings - in the body (brain, senses, flesh)
Later ??
- Three anima? Nominally yes, but significantly different in their functions/ meaning (see Gazzaniga).
- The third anima, intelligent and self-conscious, we will call **soul**.
→ **and I am convinced that it is immortal.**
- Banished from public discourse are references to the souls' **immortality** which **alone assures to man a status** very different from all other species. (S. Jaki, p. 30)

Thank you for your attention