

Anticipation and Medicine: considerations for a balanced dialogue

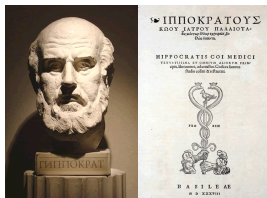
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Outline



- 1 To comment on Piaget epistemological observation regarding "asymmetries between affirmations and negations that compromise cognitive equilibria".
- 2 To present a polemic view on the role of anticipation in medicine.
- 3 To present keynotes of Hippocratic medicine and restate the arguments raised by the Hippocratic text "On Ancient Medicine" against the introduction of newfangled postulates into medicine.
- 4 To outline on the role of Hippocratic medicine as a possible model to understand complexity (health) and inform ethical aspects in anticipation studies.

Epistemological Considerations

- The Swiss epistemologist Jean Piaget noticed that, during the initial stages of historical or individual development of knowledge, in sciences as in human cognition, significant amount of conflicts, contradictions and confusions arise due to asymmetries between affirmations and negations that compromise the cognitive *"equilibria between subject and object, between subsystems, and between total system and their parts"*¹.

¹Piaget: 1985, *The Equilibration of Cognitive Structures*, University of Chicago Press, Chicago.

Epistemological Considerations (continued)

- In plain English this means that, at the initial stages of the construction of knowledge, the subject and the scientist tend to give attention and report only positive outcomes instead of negative ones, this asymmetry produces very unstable knowledge constructions.
- Strikingly similar with these former observations made by Piaget, a parallel situation has been described in translational research about the reporting and assimilation of failures, and unexpected, negative or NULL results.

Epistemological Considerations (continued)

- From this awareness, vigorous calls have been issued to integrate these failures and negative results into the cycle of knowledge production in clinical/translational research.
- Knowing when, why and how an idea fails is essential to understand the mechanisms of scientific discovery and creativity to improve the outcomes of science².

²Fortunato, S., Bergstrom, C. T., Borner, K., Evans, J. A., Helbing, D., Milojevic, S., Petersen, A. M., Radicchi, F., Sinatra, R. and Uzzi, B.: 2018, Science of science, Science 359(6379), eaao0185.

Newfangled Postulates

- Recent strong calls have been made for redefining medicine from an anticipatory perspective^{3,4,14}.
- In their enthusiasm to promote the anticipatory perspective in medicine, the supporters of this view commit the fallacy of the straw man argument, depicting medicine as having a "deterministic-reductionist perspective that reduces the living being to a machine"⁵.

³Nadin, M. Medicine: The Decisive Test of Anticipation. in Anticipation and Medicine (ed. Nadin, M.) (Springer, 2017).

⁴Anticipation and Medicine.(ed. Nadin, M.) (Springer, 2017).

⁵Nadin, M. Redefining medicine from an anticipatory perspective. Progress in biophysics and molecular biology 140, 21-40 (2018).

Newfangled Postulates (continued)

- Notably, these calls blatantly overlook the Hippocratic heritage of medicine^{6,7,8}, and its epistemological, methodological and ethical advancements, picturing medicine as a reductionist endeavour.

⁶Eisenberg, L. The limits to prediction: The future ain't what it used to be! *The American journal of psychiatry* 156, 501 (1999).

⁷Moons, K. G., Royston, P., Vergouwe, Y., Grobbee, D. E. Altman, D. G. Prognosis and prognostic research: what, why, and how? *Bmj* 338, b375 (2009).

⁸Thomas, J. M., Cooney, L. M. Fried, T. R. Prognosis Reconsidered in Light of Ancient Insights -From Hippocrates to Modern Medicine. *JAMA internal medicine* E1-E4 (2019).

Greek Colonies. circa 5th century BCE



Hippocratic Medicine: Keynotes⁹

- 1 Medicine is a self-conscious *tékhnē iatrikē* (art, craft and technical skill'), i.e., the art of healing.
- 2 The reference to *phýsis* (nature) to understand the “what and why” of the illness and the “how” of treatment. *Phýsis* is the constitutive reality endowed with internal “reason” or *logos* (Heraclitus).
- 3 The idea that illness must be understood from *pysiología*. Illnesses are caused by the lost of equilibrium in the *phýsis* (Alcmeon).

⁹Entralgo, P. L. La medicina hipocratica/ The Hippocratic Medicine. (Alianza Editorial Sa, 2007).

Hippocratic Medicine: Keynotes

- ④ The determination of *aísthēsis tou sōmatos* (the feeling of the body) as the *metrón* (criterion) to validate medical knowledge.
- ⑤ The recognition that the art of healing is limited and prone to error.
- ⑥ The principle aimed to favour the natural healing process, i.e., "to do good or to do no harm"..
- ⑦ Awareness of the professional dignity of the physician.

The Hippocratic Method

- What is the principle and method of medicine for making discoveries that even Plato praises as a model for scientific enquiry?
- *'Hippocrates the Asclepiad says that the nature even of the body can only be understood as a whole.'*¹⁰
- *'Then consider what truth as well as Hippocrates says about this or about any other nature. Ought we not to consider first whether that which we wish to learn and to teach is a simple or multiform thing, and if simple, then to enquire what power it has of acting or being acted upon in relation to other things, and if multiform, then to number the forms; and see first in the case of one of them, and then in the case of all of them, what is that power of acting or being acted upon which makes each and all of them to be what they are?'*¹⁴

¹⁰Plato. Phaedrus. (CreateSpace Independent Publishing Platform, 2017).

The Hippocratic Method (continued)

- These texts make apparent the mutual interdependence of the principle of "wholeness", and the relational thinking that underpins the methodological position of Hippocratic medicine.

The Hippocratic Method (continued)

- Health/illness status emerges from complex interactions (complex causality) that can only be understood in a twofold complementary way:
 - ① Analytically, by determining the elements and relations between those elements and,
 - ② Synthetically, by detecting meaningful patterns (by analogical reasoning) in the wholeness of those elements and relations (katástasis), to further list and classify them to make diagnoses, predictions and prognoses.

The Corpus Hippocraticum

- The "Corpus Hippocraticum" is a collection of approximately seventy texts written by different authors, on a variety of medical topics, and in a variety of styles, grouped under the name of Hippocrates¹¹.
- "On Ancient Medicine" *De Vetere Medicina* is one of the most representative and key texts of the Corpus Hippocraticum¹². It was composed by several authors dating from about 450-400 BCE.

¹¹Craik, E. Hippocrates and Early Greek Medicine. in Oxford Handbook of Science and Medicine in the Classical World (eds. Keyser, P. Scarborough, J.) (2018).

¹²Schiefsky, P. M. Hippocrates on Ancient Medicine. (Brill Academic Pub, 2005).

On Ancient Medicine: Main Arguments

- Medicine is a genuine *tékhnē*¹³ (thus as a goal-directed activity entails prediction and anticipation as constitutive determinants of its procedures).
- *“Medicine consists in knowledge of causal connections, which enables it to predict the future”*¹⁴.
- *“... medicine evidently has and always will have being, both in virtue of things that come to be “because of something” and in virtue of things known in advance.”*¹⁵

¹³Jouanna, J. Hippocrates. (Johns Hopkins University Press, 2001).

¹⁴Schiefsky, P. M. Hippocrates on Ancient Medicine. pp. 8. (Brill Academic Pub, 2005).

¹⁵Mann, J. Hippocrates, on the Art of Medicine. (Brill, 2012).

On Ancient Medicine: Main Arguments (continued)

- "[...] medicine has no need of a newfangled hypothesis"⁸.
- Medicine is already a solid established *tékhnē*, and "[...] has long since had everything it needs, both a principle and a discovered method, by which many admirable discoveries have been made over a long period of time and those that remain will be discovered, if one who is adequate to the task and knows what has been discovered sets out from these things in his investigation."¹⁶

¹⁶Schiefsky, P. M. Hippocrates on Ancient Medicine.(Brill Academic Pub, 2005).

Re-enacting the Hippocratic *tékhnē*

- Following the ethos of "On ancient medicine" and other writings from the same source, I would like to make the case for re-enacting the method of Hippocratic medicine to inform and supplement the practise and theory of Anticipation Studies.

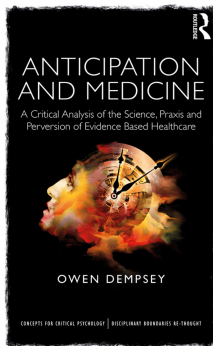
Final remarks

- To recall that medicine is the anticipatory art par excellence (*tékhnē iatrikē*)
- To recall that Hippocratic practitioners were the first to promote the report of failures and negative outcomes as an epistemological and ethical duty.

Final remarks (continuation)

- To call for a more simmetrical relationship/dialogue between anticipation studies and medicine.
- To suggest an Hippocratic deontology as a starting point to inform ethical issues in anticipation.
- To suggest the Hippocratic principle of "Be useful, or do not harm" as a heuristic principle and as a starting point to inform ethical issues in anticipation.
- To suggest the need to report the actual negative outcomes or predicted (risk) as an integral part of anticipation procedures.

An example from medicine



- In this book Dr. Owen Dempsey reports how the capitalist interest in diagnosis and treatment impacts upon the patient and, by extension, the system of healthcare itself. Dempsey critiques the praxis of scientific Evidence Based Medicine (EBM) applied to anticipatory and preventive healthcare under capitalism and ultimately, what constitutes good care.

Other examples

- Vaclav Havel speech "On evasive thinking"¹⁷.
- Xavier Zubiri concept of "fruicion" as oposed to anticipation and futurism¹⁸.

¹⁷Havel, V. Open Letters. (London: Faber Faber, 1991)

¹⁸Zubiri, X. Sobre el sentimiento y la volicion/ On the Feeling and Volition.(Anaya, 2005)

- THANKS!