PRAGMATISM AND THE DEFINITION OF THE IDEA OF DISEASE

By **Maurilio Lovatti** (Brescia, Italy)

The purpose of this paper is to support the idea that pragmatism is still a productive resource for the study of health and disease.
During his Italian lectures at the University of Roma in March 1992, Hilary Putnam stated that at least two ideas typical Dewey pragmatism were still fertile: the pre-eminence of practical reason and the holistic interdependence between fact and theory and fact and value.
For Putnam as well as for Dewey pure data do not exist: nothing is given if not in relation to an idea or an operational level that can be formally expressed; from a formal point of view, both in natural languages and in formalized ones, a fact is expressed in singular statements, while a scientific law is a statement with a universal quantifier, but this difference is not based on absolute irreducibility.
In other words: facts are operational in the sense that they are the consequences of organization and choice; concepts are operational because they are nothing but the proposals and plans intervention activities on existing conditions. Each procedural choice in a survey is the consequence of practical judgement and, for Dewey, each practical judgement is an evaluation (i.e., in other words, the evaluation is engendered by a criticism to problem-solving procedures). Putnam explicitly states that Anglo-American philosophy has overlooked Dewey's insistence on the intertwinement between facts and values, notwithstanding Morton White's standing in *Reunion in Philosophy*[1].
Besides, pragmatism refuses the distinction between observational and theoretical terms suggested by Carnap.
These theories are largely shared in current philosophical debates, as hardly anybody supports pure neo-positivistic standings (as, for example, Carnap's logical empiricism).
On the other hand, neo-positivistic premises, both explicit and implicit, still play an important role, in medicine, in particular in Evidence-Based Medicine[2] (EBM), that is an approach to practising medicine in which the clinician is aware of the evidence in support of clinical practice, and of the strength of that evidence.
Evidence-Based Medicine is a process of problem-based learning. This process involves:

1. Converting information needs into focused questions.
2. Efficiently tracking down the best evidence with which to answer the question.
3. Critically appraising the evidence for validity and clinical usefulness.
4. Applying the results in clinical practice.
5. Evaluating performance of the evidence in clinical application.

The idea from which EBM stemmed was certainly excellent, as it meant that medical choices (diagnosis, prognosis and treatment) were based on wide experimentation whose results were made public in reliable magazines. As a matter of fact, EBM is a process that can be standardized on well-verified hypothesis, that evaluate the cost-benefit relation both for the patient and the health system.
This implies the definition of diagnostic and therapeutic procedures that can lead or even substitute the doctor both when he diagnoses and when he prescribes a therapy. The founding idea of EBM is that the best scientific proofs and in particular the results of experimentation in clinical research, as in randomized controlled trials, can in principle determine the correct therapy.

---

[1] "…this aspect of pragmatism was neglected in Anglo-American philosophy after Dewey's death, in spite of Morton White's effort to keep it alive in *Reunion in Philosophy"* (H.Putnam *Renewing Philosophy,*Harvard University Press, Cambridge, Mass. 1992, p. 85).
[2] D.L.Sackett, W.S.Richardson, W.Rosemberg, R.B.Haynes, *Evidence-based Medicine: how to Practce and Teach EBM,* Churchill Livingstone, New York 1997; T.Greenhalgh *How to Read a Paper: the Basic of Evidence-based Medicine* BMJ, London 1997; A.Liberati (ed.) *La medicina delle prove di efficacia,* Il pensiero scientifico, Roma 1997.

This is how a positivistic model works: the evidence of the facts, when many and analysed with method, determine the theory, and the theory, if applicable to the individual case, determines rational acts, i.e., in this case, the therapy.
Against Evidence-Based Medicine, a "patient-centred medicine" is gaining ground, maybe more in Europe than in the USA; this approach to medicine refuses neo-positivistic presupposition. The philosophical conception typical of pragmatism can play a key role in exposing the implicit neo-positivistic presupposition so widespread among doctors, while at the same time avoiding the risk that the philosophy of medicine pick up hazy anti-scientific conceptions typical of the so-called "alternative medicines".
There is a solid conceptual basis, both epistemological and pragmatic, to discriminate between patient-centred medicine based on solid biological basis and a simple ornamentation of the classical biomedical lines; this basis is given by the thesis of the variety and uniqueness of the biological systems and thus by the historical and irreversible character of vital processes. The acceptance of this thesis is the most interesting difference from the traditional positivistic formulation so grounded in medicine.
Medicine considered with suspicion individual variety, to the point that many authors prefer to use the word "variability"; the use of this word implies a censorious attitude towards behaviours that are deemed incoherent, whimsical, unstable or somehow not strict enough.
The reason is a simple one: the varied nature of biological phenomena contradicts the primary requirement of any stringent scientific analysis, that is the need to deal with an object of study, observation and experimentation that is stable, unambiguous, clearly defined in its "essential" features, that does not change depending on the case, and that can answer to general scientific laws that are both necessary and fundamentally deterministic. Variety and diversity are an insurmountable obstacle to the possibility of generalizing data, both from observation and from clinical practice.

The prevalent trends of contemporary medicine have acted in different ways to diminish or conceal the role played by variety:

- taking in account the population rather than the individual being; clinical trials, meta-analysis and systematic revisions are the more powerful and consistent with EBM precepts the farther the specimens are from individual dimension;
- accurately selecting the representative population sample of the clinical study according to inclusion and exclusion criteria to enrol the patients;
- working out diagnostic criteria and nosographic classifications that refer to ideal and often abstract outline of "average" patients;
- identifying the significance, the practical importance and the objectivity with the average statistics and with the main trends of the analysed samples;
- leaving out a priori all confusing factors, such as subjectivity, that can interfere with variables that are deemed meaningful and relevant, such as with randomized trials control techniques, etc.;
- isolating knowledge from its context, that is, separating the object of study from its natural environment (the laboratory) and from its relation with the research worker (the emotional detachment of the professional worker).

According to a widespread antinomy, the traditional biomedical model –characterized by a sharp boundary between health and disease, by an objective quantification of the cases, by methodological reductionism, by a division between observation and therapeutic intervention- would be in contrast with the bio-psycho-social model of an holistic-systemic kind, that pays attention to the whole in an often blurred indistinct, esoteric, "metaphysical" and anti-scientific way. This conception is well summarized by the old Hippocratic aphorism, quoted by the varied galaxy of contemporary alternative medicines, in theoretical opposition to the traditional biomedical model: "Diseases are not real, we only have ill patients". In reality, there is a dialectical relationship of complementarity and positive competition between biological level and psycho-social level, between tendency to

illness and patient; this complementarity overcomes the antinomy between holism and reductionism at least as far as therapeutic practice is involved.
Patient-centred medicine on the other hand proposes a different attitude towards clinical process: it is not a case chronicle anymore, but rather an active listening to the story of the patient and to his experiences, asking open questions and gathering different signals and not only the symptoms, paying attention to non-verbal language. Patient-centred medicine pays attention both to the pathology, in its biological sense, and to the way the patient perceives his illness: the illness itself, even if it is the same for all patients, and can thus be recognized, is perceived also in the unique way it strikes each individual, that is, in the way each individual patient reacts.Thus it becomes essential to understand the patient, that is, to know what he knows and what he would like to know, what he is expecting and what he fears, what he is willing to do and what he could not stand doing, what he thinks his doctor can do for him. Only if doctors give their patient's needs the fullest consideration, can they really grasp the problems they have to face and work out a shared strategy. The theoretical models of medicine can be correctly applied only when the individual case is close enough to the required conditions. It can be applied to medicine what Putman said of physics: "The decision that conditions have been approximated well in a given case –that it is even *worthwhile* to apply the idealized model to this case- typically depends on unformalized practical knowledge."[3]
Finally, patient-centered medicine is characterized by its understanding of the point of view of the patient and by the attempt to understand the way the patient reacts. The doctor does not limit his analysis to clinical symptoms, but analyzes and accepts the patient's point of view, taking the patient's experience into full consideration.
It can be worthwhile to notice that some neo-positivistic assumptions EBM has uncritically accepted were already scrutinized by nineteenth century French positivism. For example, even if Emile Durkheim developed his analyses in a positivistic view according to which scientific theories are based and can be deduced only from facts, he tried to investigate the foundation of the distinction between normality and pathology, and dedicated the entire III chapter of his *The Rules of the Sociological Method* (1895) to this question. He wrote that both biological and sociological normality cannot be identified according to average statistical data. If the great majority of the individuals feature a certain characteristic, this at the very most only represents a *de facto* normality, while what is pathological can be defined only in relation to a *de jure* normality, that is, to a model of optimum functionality. After a careful analysis, Durkheim ruled out the possibility of defining illness in relation to the degree of pain, or to a perfect adaptation of the organism to the environment, or to a mere probability of survival. He defined the normality of phenomena and processes – both biological and sociological - according to positive science (what can be considered harmless for the health of the individual or the good functioning of society, that is, a de jure normality), that is, in relation to "the conditions of existence of the species analyzed, both as a mechanically necessary effect of those conditions, and as a means for an organism to adjust to them" "(La normalité du phénomène sera expliquée par cela seul qu'il sera rattaché aux conditions d'existence de l'espèce considérée, soit comme un effet mécaniquement nécessaire de ces conditions, soit comme un moyen qui permet aux organismes de s'y adapter[4])". Thus he was sure that it was possible to determine normality in the area of the positive science (as a non-evaluative one), even if it was not possible to determine it statistically or inductively.
The positivistic dogma of a science based only on facts gained force in the interwar years, when the philosophy of science was dominated by neo-positivism: the philosophers of the Vienna Circle urged by a strong anti-metaphysical drive, set themselves the task to achieve the great ideal of a science totally based on empirical experience, a science whose theories would be ensued only from what can be perceived by the senses through the application of mathematics and formal logic. It is the ideal of a non-evaluative, objective,

[3] H. Putnam *Meaning and the Moral Sciences,* Routledge and Kegan Paul, Boston 1978, p. 72.
[4] E.Durkheim *Les règles de la méthode sociologique* (1895), Presses universitaires de France, Paris 1947, p. 60.

incontrovertible science that is free from metaphysical, cultural and moral assumptions. It is the reassuring but dangerous temptation to consider facts as sacred, forgetting that they are theory-laden or theory-soaked, as Popper says. To deny the antinomic nature of the difference between facts and theories, that is common both to Popper and to pragmatism, is a feature already present in Medieval philosophy, according to which "talia sunt obiecta qualia determinantur a predicatis suis", if we accept that predicate means the conceptual categories we use when we interpret facts.

As everybody knows, the subsequent developments of the philosophy of science, from Popper to Quine, definitely showed the illusoriness of the neo-positivistic dream of a science objectively based on pure facts. They also showed the failure of inductive logic, in the sense that also the most refined systems of inductive logic, as those developed by Jaakko Hintikka[5], were not able to determine a satisfactory confirmation function of scientific hypothesis based on the evidence of observational data.

Nevertheless, in contemporary medicine, as I already noticed, important positivistic influences continue to persist.

The most important prejudice, that often works at unconscious level, is the tendency to interpret illness as a kind of malfunctioning of the biological machine, i.e. of the human body, and this malfunctioning is interpreted as something objectively measurable, in the sense that any competent subject can recognize this situation, notwithstanding his personal beliefs or preferences. The root of this prejudice directly stems from an idea of rationality that is typical of logical positivism: only theories that are verified according to a set of rules or to a method are considered as rational; this set of rules or method, "although one that philosophers of science have admittedly not yet succeeded in fully formalizing"[6] is the only guarantee to rationally accept the theories themselves.

Statements testable by the methods of mathematics, logic and empirical sciences would count as meaningful; all other statements (i.e. the subjective experiences of the patient as they are told to the doctor) are "pseudo-statements" or disguised nonsense, and as such are simply ignored by EBM.

This idea of disease as an objective malfunctioning cannot be accepted for many different reasons:

1. "Malfunctioning" or "failure" have a meaning only if the perfect working condition or normality is univocally determined. When the definition of disease itself is under discussion, normality should be defined starting from the concept of health. C. Boorse[7], one of the main supporters of the reductionist model, defines health as a typical "means-end hierarchy" of interconnected functional systems that support life; but how is it possible to ascertain the typical hierarchy, the normal functioning? It would not be possible to answer this question empirically or statistically, as it certainly cannot be stated that the features to be found in the majority of the population define normality and thus health. If the vast majority of the world population would be afflicted by a certain endemic disease, it still would not be possible not to consider it a disease.
2. In principle, every being is different from any other: if two cars of the same make and model were analyzed and measured with extreme accuracy, they would show some trifling differences in various components. Anyway, the absence of serious flaws in their making makes these differences unimportant, both when performance standards have to be defined and when a failure has to be repaired. On the other hand, the differences between a person and any other person are not unimportant and cannot be ignored neither in diagnosis nor in treatment. These differences can be ascribable to three different sets of reasons:
    a. As every living being, man preserves in his memory the previous phases of his life, unlike inorganic entities. That means that an atom of oxygen

[5] J.Hintikka "A Two-dimensional Continuum of Inductive Methods" in J.Hintikka, P.Suppes (ed.) *Aspect of Inductive Logic* North-Holland Publishig Company, Amsterdam 1966, pp. 113-132.

[6] H.Putnam *Reason,Truth and History* Cambridge University Press, New York 1981, p.105.

[7] C.Boorse, "Health as a theoretical Concept", *Philosophy of Science* n. 44 (1977), pp.542-573.

combines with other atoms to form a molecule independently of its past history: Potentially, two atoms of the same substance are identical. On the other hand, vital processes have a historical, irreversible nature. Thus there are no two identical living beings. Illnesses leave irreversible marks on the organic structure, i.e. they modify the information an organism has at least as far as the neuroendocrine and immune systems are involved.

b. There are individual differences in the immune system.
c. There are individual differences in the functional organization of the brain that are not due only to biological causes. Edelman[8] thinks that the dynamic core of the brain (that is, that subset of neurons in the thalamus-cortical system that are closely interconnected and that form the biological structure of awareness) is different from person to person even as far as how many and which cerebral cells are involved: the individual –psychic- "history" of the brain somehow determines its material organization.

These three sets of individual differences follow an order of decreasing universality: the first (biological differences) is typical of all living beings; the second (differences in the immune system) is typical of animals in relation to how evolved they are; the third is particularly relevant only for man.

3. The subjective perception of the illness itself must be included among the elements that determine the features of an illness. Notwithstanding the presence of the same symptoms and the same tests readings, two people may perceive their illness in a different way, with effects on the course of the illness itself and the effectiveness of the treatment.

4. The idea of disease also depends on the cultural context. This is evident when we compare the social perception of disease in contemporary western society to the idea ancient pre-Columbian or Indian or Chinese civilizations had.

To sum up, what contribution can a philosophy of science based on pragmatism provide nowadays to the definition of the idea of disease? What misunderstandings can it help dissolve?

1.First of all, it might be noticed that it is not totally useless to look for an accurate definition of disease. Usually definitions may play a very conventional role in a theory, and then they need not be discussed. Still, the definition of a concept may as well be considered as a synthesis of acquired cognitions in a certain scientific area, if it is functional to delimit the body of the phenomena it wants to define;

2.Hippocrates is thought to have declared: "Diseases are not real, we only have ill patients". This statement can play an important role in clinical practice, as an invitation not to overlook the individual features of each patient. But the Hippocratic thesis, above all if we consider it in the way it has been treated nowadays by historians of science, even prestigious ones as Mirco Grmeck, may be misleading for medical science and it is unacceptable also from the point of view of pragmatism. The Sorbonne historian stated that illnesses are only models to explain reality and not elements that constitute it, but this thesis may lead to a short-sighted instrumental use: a scientific theory is such just because it discovers laws, i.e. relations, between cause and effect, in this case between agent of infection and disease.

3.Some of the definitions that philosophers of science have suggested are only unsatisfactory shortcuts. Pedersen[9] and other philosophers of science of hermeneutic inclination declare that it is totally useless to look for a definition of disease. They justify their statement by saying that this word has many different meanings that look alike, in the way Wittgenstein pointed in his *Philosophical Investigations*, and that use only can determine these meanings. From the point of view of logics, the word "disease" could be a

[8] G.M.Edelman, G. Tononi A *Universe of Consciousness: How matter becomes imagination*, Basic Books, New York 2000.

[9] H.Wulff, S.Pedersen, R.Rosenberg *Philosophy of Medicine,* Blackwell Scientific Publications, Oxford 1986.

vague, but not an ambiguous one. . In the same direction move those who, like Kraupl-Taylor and Engelhardt[10], try to define illness not on the basis of a biological condition, but in relation to how worried the patient or the doctor are. On the contrary, the definition of disease may be useful only if it gives the foundations of the reality itself.

4.The point of view of pragmatism is useful to disprove the thesis of those who define disease only in relation to the organism isolated from the surrounding environment. As the capability of living beings to change the intensity of their functions opposing the consequences of environmental mutations allowed them to survive and reproduce in the course of evolution, disease would be identified with the fact that an organism is not able to keep its homeostasis in relation to varying environmental conditions[11] (once the organism is not able to further change the intensity of its functions, it is obliged to modify its interior environment).

5.The point of view of pragmatism is useful to disprove the thesis of those who define disease only in relation to a reduced efficiency of the organism. Combining the results of thermodynamic theories with evolutionism, some said that the biological structures selected by evolution are perfect to maximize the conservation of energy; as a consequence, they tend to reduce the entropy in the organism. Thus, a process can be defined as pathological if it increases the entropy, which means a diminished efficiency of the organism[12] (the positive side of this point of view is that it correctly includes also chronic illnesses in the general definition of disease). The attitudes presented at paragraphs 4and 5 both stem from the idea of disease exclusively as "objective malfunctioning".

6.Besides these two conceptions, that define disease as a purely biological fact, the psycho-social paradigm has gained ground. This interpretation looks for remote causes of disease and accepts that the definition of pathology implies criteria based on values. The psycho-social paradigm is strongly criticized both by the philosophers of science and by famous clinicians because for them it mixes up different levels of medicine. For example, Federspill states that the historical and social features and moral values are relevant only for medical art, i.e. clinical practice and therapy , but they are absolutely irrelevant for biological medicine, as science is non-evaluative, it only has an explanatory function. This kind of criticism cannot be accepted from the point of view of pragmatism: in the case of medicine in particular, the theoretical level is not self standing, rather, it is connected with the idiographic level (diagnosis) and the practical level (therapy), also because, as a matter of fact, diagnostics and therapeutic needs often guide pure research, spurring further analysis, revision and clarification of the theoretical view.

---

[10] F. Kraupl-Taylor *The Concept of Illness, Disease and Morbus*, Cambridge University Press, Cambridge 1979, pp.69-71; H.T.Engelhardt "The Concepts of Health and Disease" in Engelhardt-Spicker (ed.) *Evaluation and Explanation in the Biomedical Science,* Reidel, Dordrecht 1975; H.T.Engelhardt "Ideology and Etiology" *Journal of Medicine and Philosophy* n.1 (1976), pp.256-268.

[11] W.B.Cannon *The Wisdom of the Body* Norton, New York 1939; G.Engel "Homeostasis, Behavioral Adjustment and the Concept of Health and Disease" in R.R.Grinker (ed.) *Mid-Century Psychiatry* C.C.Thomas, Springfield 1953; G.Federspil "La malattia come evento biologico" in *Minerva medica* vol.81, n.12 (1990), pp.845-854;

[12] G.F.Azzone, *Biologia e medicina tra molecole informazione storia*, Laterza, Roma-Bari 1991; G.F.Azzone "L'eziopatogenesi delle malattie e il ruolo del caso" in *La medicina internazionale* n.7 (1994), pp.49-80.