

A 'white coat syndrome': is it objective or subjective?<sup>1</sup>

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## **Abstract**

The paper explores epistemological consequences of objectivists ontology as applied to scientific instruments.

I take a blood pressure measurement as an example of objectivist methodological strategy, when an apparatus is expected to show if a patient is ill or well 'in actual fact' in spite of his/her subjective feeling. In this framework the so called 'white coat syndrome' becomes a problem: if a patient feels anxiety seeing a doctor armed with an apparatus and his/her blood pressure is high due to nervous tension, then what about the measurement result a doctor gets – is it objective or subjective?

I examine a portion of medical publications on a white coat syndrome 'in order to show that doctors are usually puzzled concerning situations like this. Here a 'subjectivity' of 'object' resists an elimination and affects/distort the result and such cases hardly blend with an objectivist methodology. Thus, most of medical discussions revolve around the following question: can a 'white coat syndrome' be considered as a disease?

## **Introduction** (*slide 1*)

I investigate what I call a holistic approach to science and technology the examples of which I find also in STS. What I mean by a holistic approach is a theoretical attempt to consider conceptual, instrumental, natural and cultural components of science as tightly interconnected with each other. Thus, I am convinced that any epistemological problem is basically metaphysical one and so, uncovering 'metaphysical undercoat' of some of epistemological puzzles (such as, for instance, the 'subjectivity-objectivity' controversy) we, probably, come closer to their understanding and solving. (*slide 2*) However, as we know from the history of European thought such a connection between ontology and epistemology often remains implicit and passes unnoticed that results in either an objectivist distortion (when a subjectivity' is eliminated from the world and the

world is therefore objectively cognizable) or in a subjectivist distortion (when, again, a subjectivity does not belong to the world and ‘the world as it is’ therefore remains fully ‘out’ and incognizable). Then I am asking (*slide 3*): is it possible to add a subjectivity to the world and at the same time to save an objectivity (as, for example, John Searle suggests)? I think, that is exactly what relational (or holistic) ontologies tries to do, and today these approaches are rapidly increasing.

At the same time so called ‘modern outlook’ with its hard division between the physical and mental is still very firm and this is especially in medicine that really achieved much success when armed with objectivist ontology and methodology. However, the wholeness was a price to be paid for it and I have choose one of the great number of examples to show some of troubles the objectivist strategy can lead to.

### **A blood pressure measurement: what does an instrument add?**

(*slide 4*) I take a blood pressure measurement. There are three participants – a patient, a doctor and an apparatus. A patient plays a role of ‘material object’, a doctor represents a cognizing ‘subject’, and an apparatus is a transparent mediator that gives an access to the very ‘objectivity’ of ‘object’. Mechanistic objectivism considers a computability to be a substantial quality of the matter. Therefore, a measuring apparatus is called to fulfill a reduction, a transition from appearances to reality, from a patient’s look and a doctor’s impressions to a real state of organism. The latter can be expressed by only numerical relations. (*slide 5*) ‘BP should be about numbers not about words’, say the doctors (T. Pickering, the cardiologist; in Pickering 2005, 703). The matter is meaningless, the apparatus is impartial and the picture of health or disease is objective. The patient can think that his blood pressure is higher than normal but the apparatus shows one hundred twenty and eighty and the doctor concludes that the patient is ‘in actual fact’ OK. Or vice versa – the patient feels good but the apparatus shows one hundred seventy and one hundred ten that means that the patient is ill and ought to receive medical treatment.

(*slide 6*) Unfortunately this idyllic picture is often disturbed. The patient is *aware* of measurement and this awareness often cannot be neglected. He or she can feel anxiety seeing the doctor or just the apparatus and her blood pressure increases due to nervous tension. Each time when we take such patient’s blood pressure we get an anomalous

result while the ‘real’ blood pressure level remains unobservable. This case is widespread enough and called the ‘white coat syndrome’.

*(slide 7)* In other words we have a situation bearing a close analogy with the uncertainty principle in particle physics that can be formulated as follows (I use K. Popper’s formulation). ‘Each physical measurement includes an interchange of energy between a measurable object and a measuring device, and... any such exchange will alter a state of object which after a measurement will be in other state than before’ (Popper 2004, 202-203). That is, a measurement gives a knowledge about a state that has been destroyed by the very process of measurement. Therefore, a measurement cannot serve as a basis of prediction.

*(slide 8)* According to Popper there are two interpretations of the uncertainty principle – objectivist and subjectivist ones (Popper 2004, 204-205). Subjectivists are inclined to believe that quantum objects as they are in actual fact are beyond our observation and measurement. Our knowledge is, therefore, limited. We always have to do with instrumental illusions. Nature hides some of physical quantities from our eyes. Objectivists, on the contrary, consider measurable objects to be in actual fact such as we observe and measure them (that is objectivists hold that the particle’s trajectory is really blurred). Popper puts both positions as unsatisfactory that is testified by the permanent fluctuations of those who defend the uncertainty principle between objectivist and subjectivist interpretations (Popper 2004, 205).

### **To treat or not to treat?**

*(slide 9)* Unlike philosophers doctors tries to answer not so much epistemological as practical question – should they treat a patient or not? And so, a fluctuation between the ‘objective’ and the ‘subjective’ turns into a choice between disease and health. The choice is not the easiest one as we will see now.

Let’s consider what doctors themselves say about WCS (I use English-language medical publications).

*(slide 10)* The so called official medicine consider a disease as a sum of abnormal physical processes that can be objectively observed. Consequently, a measurement instrument can only detect a disease but not create it. Starting from this doctors long time dissembled the white coat hypertension (WCH) although *(slide 11)* as early as in 1940

physicians Ayman and Goldshine recognized that BP was much higher when recorded by the doctor than by the patient himself (Ayman & Goldshine 1940, 465-474). At that time no one knew how to interpret these differences. The term 'white coat syndrome' was coined in 1983 when on the basis of continuous intra-arterial blood pressure recording Italian doctors reported that systolic and diastolic BP rose on average 27 and 15 mm when a doctor entered the patient's hospital room (Spence 1999, 275; Mancia et al. 1983). Since then the quantification of 'white coat effect' was tied to the difference between the clinic BP and home or ambulatory BP measured by the patient or her family members. (*slide 12*) Belief in an objectivity of instruments fed expectations for that the WCE could be finally measured, and, then, with a correction for WCE one could calculate the patient's true BP and decide a question concerning her treatment (Pickering, Gerin & Schwartz 2002, 293-300).

'Should Doctors Still Measure Blood Pressure?' is the title of recently published article by American cardiologist Thomas Pickering in which the author argues that in spite of all the difficulties patients' own BP reading presents physicians should prefer it when calculating WCE (Pickering 2006, 395-396).

However, numerous examinations of the last twenty years show that the WCE (and the 'true' BP respectively) could unlikely be calculated by any means. For example, the group of Italian cardiologists argues that the 'difference between clinic and daytime BP cannot be a measure of the WCE' because of various supplementary factors that can provoke the blood pressure response of the patient (Parati et al. 1998, 1188). Thus, not all of the WCE is due to the presence of the doctor or to medical settings (Pickering 2006, 394; Gerin et al. 2006). The 24-hours ambulatory BP monitoring does also not fully reflect the 'true' BP because it can, too, cause the blood pressure response. (*slide 13*) By now the result of dozens and dozens of medical studies on this subject that arrived over the past two decades is, rather, that there is no reliable measure of WCE. So, the 'white coat hypertension' remains the phenomenon 'while having no idea what we should do about it' (as doctors themselves confess; I quote Dr J.David Spence, the Stroke Prevention and Atherosclerosis Research Centre, London; in Spence 1999, 275).

This is not surprising because after all the investigations undertaken by physicians it becomes more and more evident that one can eliminate or vary any settings without removal of WCE. The clinic can be replaced by home, the nurse can be replaced by the

patient herself or her family member, the doctor can hide behind a screen but the blood pressure response still exists. (*slide 14*) The only thing that always plays a part is a measuring instrument (any kind of it) that translates the BP into numbers. This is a sad result because it looks like the term ‘white coat hypertension’ should be replaced by the term ‘the measurement instrument hypertension’.

But if so, then so called ‘true BP’ can not be observed at all. The BP response to the instrument puts physicians in a strange situation: if an apparatus constructs an object then we have to do with an artificial object but not with a natural one. Should we treat an artificial disease? Let’s look at these titles: ‘White coat hypertension: to treat or not to treat?’ (Pickering 1995), ‘White coat hypertension: should it be treated or not?’ (Pickering 2002), ‘White coat hypertension: not guilty when correctly defined’ (Verdecchia et al. 1998) and so on – the titles of these articles show that doctors move between an illusion and reality, between ‘health’ and ‘disease’.

### **An ontological mixture**

(*slide 15*) Now let’s return to the uncertainty principle and look at Werner Heisenberg’s recommendation. Heisenberg makes his famous ontological mixture: ‘we have to remember, – he says, that what we observe is not nature as it is but nature as it becomes due to our manner of observation and questioning’ (Heisenberg 1989, 27). In other words, the intersection of the observation and observable is the point where a new object emerges and this object can be considered as a natural-cultural hybrid. According to Heisenberg, our knowledge changes the world and this change makes a difference, it is not ‘mere subjective’ (Heisenberg 1989, 19-27).

Can it help with the WCH definition? Probably, it muddles the situation even more. (*slide 16*) If a disease emerges due to our method of questioning then what about a treatment? Should the treatment consist in an elimination of the provocative situation that is the very BP measurement? Then the question ‘Should Doctors Still Measure Blood Pressure?’ has to transform to the question like ‘Should people still measure blood pressure?’ Recently some attempts are made to avoid the definition of hypertension that is based on the BP values. Now these attempts are being debated as this title shows: ‘Do we really need a new definition of hypertension?’ (Pickering 2005). (*slide 17*)

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