

TOWARDS A NEW UNDERSTANDING OF SCIENCE

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There are many misunderstandings surrounding the activity we refer to as science, and one of them has to do with the twin ideas of objectivity and value-free science. So, let us try to clear the ground a little.

I find no difficulty accepting that the following, although not so easily avoided, does not belong in good science:

- conscious subjectivity, letting one's own values and wishes interfere with data, analysis and presentation so that the final result is biased in the direction wanted for other reasons than the research should indicate
- unconscious subjectivity, letting the thought habits of one's own gender, age group, ethnic group, class etc. interfere with data, analysis and presentations so that the final result is biased.

The first case is more easily detected than the latter. It is known as "cheating" and is universally condemned, particularly if the researcher tampers with the data. But, if this is a crime, it is a crime committed by an individual, for instance an overambitious careerist who feels the data are not sufficiently cooperative. What about the collective case, the value-biases of groups, of all males for instance when they ascribe the changes women undergo in their forties two "hormonal imbalances" (and not - also or mainly - to social factors), of older people when they do the same for adolescents in puberty, of most occidentals when they refer to occidental expansionism and competitiveness not as such but as efforts to obtain balance of power, even peace, of economists when they calculate productivity ratios for workers but not for, for instance, themselves? Clearly the answer to such problems are unlikely to come from the group itself since a collectively shared bias usually is referred to as "objectivity" (if it is only intersubjectively enough shared inside the group, with nobody rocking the boat). The challenge will have to come from inter-gender, inter-age-, inter-civilization, inter-class dialogue.

The 1970s were remarkable for the richness of such challenges - much more important than the so-called Positivismus-Streit. Depending on where one is located in the social net spun by gender and age, nation and class people were challengers in some contexts and challenged in others. Thus, women researchers would, rightly, challenge men, but be very surprised when their own age and nation/civilization biases were pointed out for them - and so on, and so forth. I myself was particularly thrilled, and still am, by challenges from women. In the other three cases it has been easier for me to cross the border, at least mentally, and discover how interests and unconscious paradigms show up as values that are clung to desperately, introducing gross biases that pass unnoticed because they are shared.

So, this is one aspect of the value-in-science debate. I think the therapy that follows the diagnosis is relatively clear: to get the biases up to the surface, the hidden, implicit values, like "men should prevail". Explicitness - put the cards on the table, and then let others judge the totality that is presented as science. This is why it is so important to try to be as explicit as possible, always ready to question assumptions, always chasing the hidden assumptions. Intra-group dialogue can correct for individual biases, only inter-group dialogue for group biases that are x times more important. Thus, just as there is male economics, as a "science", there is also a WF economics and, certainly a male WF economics. If you point that out in a meeting, that "this was an interesting hypothesis in male, WF economics" they are likely to react somewhat aggressively since most people would like to parade their biases as universal truths.

Let us then look at values more positively. Of course, noone will deny their tremendous importance in directing our behavior, those consciously held as goals as well as those less consciously held as interests. We would readily accept them as objects of study, for instance to understand how their distribution affects scientific acti-

vity. But there is more to it, as clearly seen when we look at a science that certainly (and fortunately!) is not value-free and yet passes as objective: medical science. Imagine that science to be entirely value free. In that case it would have remained content to produce statements like "a person close to someone with small-pox is likely to contract small-pox"; "small-pox is lethal"; "a person close to someone with small-pox is likely to die soon". The first two statements are empirical, the third is derived/inferred from the first two and may then be confirmed/disconfirmed empirically.

The basic point is that science or scientific activity does not have to stop here. Most people want to live or at least not to die before a reasonable life-span has been reasonably well covered. The sum total of functioning well over a reasonable span of time is called "health". Narrowly conceived of it is a negation of morbidity and premature mortality; more broadly conceived of (positive health) it leads to a closer look at "functioning well". and from this point on it is considered perfectly "scientific" for medical man to go two steps farther, a simple one: "if you want to stay alive, stay away from someone with small-pox", and a more complex one: "if you want to stay alive, and to stay close to someone with small-pox (eg., to take care of the person), then you have to acquire immunity (eg., through inoculation)".

This second approach is interesting. What has happened has a structure that is very general and very important: the introduction of a third variable, in this case not-inoculated - inoculated. What then transpires is that the "invariance" between proximity to somebody suffering from that disease and impending death no longer holds. The correlation breaks down, if not down to zero at least a long way in that direction. The relation is superseded (aufgehoben is the more precise German term), and a new, more complex trivariate relation is emerging where the incompatible (proximity and survival/health) sudden-

ly becomes compatible, provided a certain condition (being inoculated) is satisfied. Actually, this particular type of inoculation was discovered by Buddhist monks several centuries ago, long before Pasteur and Koch developed similar ideas (the buddhists even thought of disease as being transmitted through the air, and that protection could be obtained by taking some puss from the wounds of the patient, put it on the skin, letting it penetrate through some small, self-inflicted wound. The idea was rejected as totally absurd and superstitious by Western missionaries when they arrived - probably because of their bias, "the West should prevail".

The general structure is as follows. Science is the search for invariances, and the search for invariance-breaking; it is invariance-seeking and invariance-breaking activity<sup>x)</sup>. We find a "law", meaning that something, some combination of conditions, is excluded, cannot be realized empirically. No problem if that combination is not something we want, for some reason. But if "we" want that combination, then there is a problem. In that case science informs us that "you cannot have what you covet". Of course, we may have to accept that, at least until further notice from "science". But we should always retain a healthy scepticism. Could it be that the "law" only holds because some third variable does not vary but is, in fact, constant - as a so-called parameter? Could it be that the variation of that third variable would change the context of the "law" even to the point of invalidating the "law"? Moreover, could it be that under that new condition "we" are permitted to get into the forbidden corner, that combination that was ruled out? And, if that is the case, could it also be that there are some "they" in whose interest it is that this should not happen - more than obvious if the value is "peace" rather than "health"? In whose interest it is that a value is not permitted to guide our search for a higher level invariance that makes possible what was formerly held to be impossible? And for that reason proclaim

that science should be objective, value-free?

x) See my Methodology and Ideology, Ejlers, Copenhagen, 1977, ch. 3, "Science as Invariance-seeking and Invariance-breaking Activity".

I think the answers to all these questions are obvious and will have to be in the affirmative. Moreover, they explain relatively well why science is struggle, and particularly science in the neighborhood of deeply entrenched values/goals/interests.

Let us now draw some conclusions.

First, never be afraid of values, get out of that value-virginity. The point is to make them explicit, to put them on the table.

Second, distinguish between the values that are worth fighting for and those that are not. The latter should not be permitted to color the research activity, and to avoid that the help of people without one's own biases should be solicited. The former should be permitted to direct the activity - as they certainly do in such established fields of "applied" science as medical science and engineering - but only in an explicit manner.

Third, the approach taken can be described as follows. Look at a "finding" that excludes a combination that from the point of view of important values should be included as empirically possible. Ask the question: what could be the third variable the variation of which would change this relationship. Then, test the new relationship to see whether the impossible has become possible. Example: division of labor is often held to be incompatible with equality, because some type of labor will be high and some will be low and the high have to be better rewarded. Third variable: persons having same labor, vs. persons rotating from one type of labor (job) to the other so that they are sometimes high and sometimes low, but on the average and over time come out the same. This is what was tried in Chinese People's Communes, then leading to other problems.

Fourth, to identify a third variable social imagination is needed, not only the motivation stemming from the value attachment. And to test the new hypothesis what is needed is just regular, empirical science. Nothing more mysterious - that is about all.