Chapter 13
Science and Values

Where I benefit, that is where I place my faith.

Proverb

13.1 Values and Their Role in Science

According to a common norm, science should be free of values. This view is based on the idea that values are subjective, whereas science strives for objectivity. Today, the view that all valuation is subjective is quite common, but such has not always been the case. The default view has been that moral and aesthetic judgements are true or false; their content are propositions about moral or aesthetic facts. If one accepts this traditional view, then the motive for claiming that science ought to be value-free disappears. For why, then, would one dismiss certain kinds of descriptive propositions as not allowed in science? However, if one assumes that value statements are not descriptions of objective conditions but rather expressions of the speaker's feelings and subjective attitudes, then the requirement that science is value-free is extremely well motivated. The view that value statements are not really statements but rather expressions for our feelings is called emotivism.

The norm that science should be value-free can be interpreted in various ways. A strong interpretation would be that science should not contain any expression of values. This is not reasonable since one would perhaps want to investigate which values there are and what effects they have on the actions of various groups. Such research cannot be said to break with the norm above. A more reasonable interpretation is that the individual researcher should not express any of his/her own values. However, one can argue that there could be a researcher who unconditionally gives a complete and accurate description of the consequences of various measures (where, for example, a politically relevant issue is being discussed) and concludes by explicitly recommending a particular measure, based partly on the researcher's analysis of the aforementioned consequences, and partly on a clear expression of the value premises. For the outside reader, it is easy to discern what in this text are scientific results and what constitutes valuations. I can find no reason to object to such an exposition.

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Upon reflection on this imagined case one is lead to formulate a third interpretation of the norm that science should be value-free: *one ought not to deduce value statements from premises that only contain descriptive statements.*

This is often shorted to the slogan 'one cannot deduce an ought from an is' was first claimed by Hume, and therefore often called 'Hume's law', has much to say for it; for example, that it is a consequence of our concept of valid inference. Nevertheless, we often find argumentation that breaks this rule. Consider the following example, which mirrors the sentiments now (2015) among lots of Swedes:

> The number of immigrants to Sweden has risen significantly the last years. Therefore we should impose stronger conditions for immigrants to Sweden.

That one often makes this jump from the descriptive to the normative in arguing about political issues is the result of leaving out the intermediate premise (in this case the premise is 'the increase in immigration is undesirable').

Political argumentation, like all use of language, always occurs in a certain context. The contextual factors help to supplement the message, allowing the author of that message to treat various things as implicit. The author does not need to say that which can be presumed to be well known or obvious for their audience. In fact, it does not even have to be that obvious for their audience, as presuming certain things to be obvious can be a rhetorical trick employed to increase the weight of ones arguments.

The difference between common and more scientific argumentation is, among other things, that a scientific argument places greater requirements on the rigor and clarity of ones premises. This general norm leads to the more precise norm that one should not leave implicit value premises in scientific argumentation. Leaving out such a normative premise in an argument results, just as in the example above, to an argument breaks with the rule of not inferring an ought-statement from only descriptive premises.

However, the application of this requirement is complicated by the fact that there are many words and expressions that are neither purely descriptive nor purely evaluative. Some examples are words that describe human character traits: 'uncompromising', 'inflexible', 'light-hearted', 'thoughtful', 'indecisive', etc. For every human character trait, it is possible to find two (or more) words, one positive and one negative, such that no matter which we choose we get some measure of valuation. Another group of examples can be found in political language: 'freedom', 'democracy', 'prosperity', 'society', etc. It is hardly possible in practice to avoid such descriptive and yet normatively charged words in scientific accounts within, for example, political science, economics and psychology. Therefore, the norm that one should not deduce normative conclusions from descriptive statements is not so easy to follow. One way to be as clear as possible is by being extremely explicit in what one packs into these concepts and, for example, by distancing oneself from eventual evaluative components where appropriate.

Most, but not all, philosophers basically agree with Hume in distinguishing between facts and values. Hilary Putnam is one who disagrees, see his (2002).

13.2 Value-Free and Value-Laden

It is sometimes claimed that research is not value-free if it is funded and governed by economic, political or religious groups. The argument is invalid since it builds upon a confusion of 'not value-laden' and 'value-free', an important distinction once introduced by Weber.[1] That research is value-laden means that the governance of research, the choice of which questions that is be the subject of scientific investigation, is driven by goals that are chosen with certain values in mind. That research is value-laden is thus something completely different from not being valuation-free. Research aimed at finding better treatment for diseases are certainly value-laden; we would give very high value to positive results in this area. But, of course, reports of such results, if they are found, should be value-free; we want objective knowledge about what to do for curing and/or preventing severe diseases. That is to say, scientific activity can be value-laden and value-free at the same time.

In principle, one cannot dismiss a scientific result with the argument that the researcher has been paid by someone with suspicious interests. If one does so, then what you have is an example of an *ad hominem* argument: the objection to the view is based on the person who presents the view and this person's hidden agenda, and not on the merits of the argument.

However, in practice it is often the case that we are suspicious of results presented by a researcher who produces results that are favourable to the researcher's employers. Such is especially the case as regards politically charged questions about economic politics, environmental politics, social politics, and so on. A clear example of this is the discussion regarding the economic development in Sweden during the period 1970–1995. Many economists, critical of the generally social democratic politics of this period, concluded that Sweden's place among the world's richest countries has fallen from number 3 at the beginning of the 1970s, to number 18 during the mid 1990s. Furthermore, many held it confirmed that this drop is the result of the economic politics during that period, explaining this development as the result of a sort of sclerosis, a structural rigidity, in Swedish society that has resulted from too much social politics, wage equalization and high taxes. But certain social democratic economists, especially Walter Korpi objected to this analysis; in particular, he objected to the factual claim that Sweden lagged behind in the development of prosperity. He has objected to the period chosen for measurement, the choice of countries used in the comparison and the analysis of the causes cited in the argument. For an outsider, it is naturally difficult to have a grounded view of this matter, but it is pretty clear that there are numerous judgments intertwined within these economic reports; judgments concerning the relevant measures, selection criteria, objects for comparisons, etc. It is naturally

[1] See Weber (2011). For a thorough discussion of Weber's position on this matter, see Bruun (2007).

extremely difficult not to be influenced by political valuations with respect to such judgments. However, just as one may be sceptical about statements made by, for example, corporate economists, since the corporation in question could have its own interests in changing Swedish politics, one can equally be sceptical of Walter Korpi's statements, since he has a strong ideological interest in showing that the social democratic politics of the day did not have long term negative effects on economic development. For if such were that case, then one would have to admit that the crucial parts of the political system were a failure and that the bourgeois critique was correct (When this translation is finished, 2015, the politics has been changed in some of these respects, both by social-democrat and conservative-liberal governments, and the Swedish economy has regained productivity to a considerable degree. This indicates that the 'sclerosis diagnosis' at least to some extent was correct.).

In summary, one can say that the fact that a certain research effort is funded by a proprietor who has a strong interest in certain conclusions, or that the results in some way stand in relation to the researcher's non-scientific interests, provide some reason for suspicion. Conversely, if a researcher comes to a conclusion that undermines the researcher's, or his proprietor's, economic or ideological interests, then there is even more reason to believe that the researcher has been very careful in her attempts at validating her results. However, such considerations certainly cannot be viewed as relevant arguments for, or against, a concrete proposition within a scientific debate. One must, under all circumstances, make the effort to take a stance regarding the matter itself. Regarding the concrete issue discussed above, concerning economic policy in Sweden, I have no competence to judge the matter.

13.3 Is Science Valuable?

There is almost universal consensus concerning the value of science and that it is a good thing to spend some of the taxpayers' money on research. Many researchers think that one should spend still more money on research, but one could suspect self-interest to bias them on this issue, but virtually no one opposes spending *some* money on research. But there is substantial disagreement concerning what kind of research should be supported and what fields of research should be pursued.

But let us proceed to a general perspective; how should we quite generally motivate spending taxpayers' money on research? The answer seems obvious; in the long run taxpayers will benefit from the results, for example by new, more effective medical treatments and more energy-effective engines being developed. Of course, it is not just a case of issuing an order to the scientific community; there are no guarantees that a particular research project will succeed. Nevertheless, it seems rational to spend money on a spread of research projects in the hope that some will be successful. A politician responsible for funding research could argue

just like a venture capitalist risking his money in quite a number of companies and projects. The venture capitalist is well aware of the high risks and is prepared for failure of most of the projects they support. But he hopes that some will succeed, and that the return on those successes will be more than sufficient to compensate him for the failures. In the same way a research policy maker should be prepared for quite a number of projects failing, but hoping that some will succeed in making a discovery that is so important that it more than fully compensates for all the failures.

Everything so far said presupposes that the point of doing research is that some results will prove useful. But what is useful? How do we determine that?

When it concerns medical science and technology, broadly conceived, one could say that useful results are expressed as propositions that have the form of law-like generalizations, i.e. propositions that can be used for predictions and goal-directed actions; in other words, knowledge about general causal connections, and the general aim is mostly to find such law-like generalisations. Part of social science and the humanities also have this aim, but great parts of social science and humanities cannot conceivably be useful in this sense. Most research in sociology, history, archaeology or philosophy does not aim at producing law-like and applicable generalizations. Also mathematics and foundational research in theoretical physics may not be useful in any obvious sense or to any timescale that would warrant the investment they require. How can such research be motivated?

Quite often defenders of research in humanities say that they are useful in a broader sense; the result may improve our quality of life. I don't think it is a good strategy using the word 'useful' for defending research in humanities. The reason is that this defence glosses over the distinction between things that are useful means to an end and things that are valuable in themselves, and the default meaning of 'useful' is as a means to an end. If an historian argues that research in history is useful, a sceptic taxpayer could say: 'Useful for what?' (Some might defend research in history with the argument that we can learn from history and avoid earlier mistakes; but it is doubtful whether different events in history are sufficiently similar to enable useful generalisations.)

Another answer, once formulated by Max Weber, is that the aim of research in humanities and social sciences (German 'Kulturwissenschaften') is to provide *understanding*, i.e., understanding of man, culture and history. Understanding of these phenomena means understanding the meaning of phenomena, i.e., understanding which beliefs, emotions and motives that are connected with these phenomena. Hence the goal of research in social sciences and humanities is not instrumental; these activities are not directed toward aiding us in achieving some end/goal. Rather, these activities, and the understanding they engender, are goals in themselves, it is simply things that interest many people.

Philosophy, at least some part of philosophy, mathematics and perhaps some other disciplines may be said to form a third category of research. Inquiries in these areas are not useful in any direct sense, nor do they provide understanding of man and culture in the sense indicated above. These disciplines are best described as critical scrutiny of our thinking and of development of concepts. Concepts are our

vehicles for thinking and philosophy and mathematics are concerned with some very fundamental concepts that can be used in virtually all other disciplines (think of concepts like *knowledge, evidence, proof, function, relation*). And this may be defended as being useful in the very long and very broad perspective.

If we say that some activity is valuable because it is useful in the sense of being a means to an end, we are only postponing the question of why it is valuable, for why do we value the end result? Why is it good to cure diseases, diminish famine, increase productivity or improve our thinking? Obviously, we come very quickly to things where we will say 'This is good in itself.' So the conclusion is that on this matter all scientists are on an equal footing when asking for money from the taxpayers. The basic issue is what people want, what they think is valuable in itself.

People value different things and limited resources must somehow be distributed. The usual procedure of research funding is a two-step process. In the first step representatives for the public determine the general policy (more money on new forms of energy production, or more money on better crops?) and in the second step representatives for the researchers determine which projects to support in a specific field. The idea is that the first decision is not a scientific decision; it is a value-driven choice, whereas the second decision is expected to be better if made by experts in the field, for they know which projects are more likely to succeed on delivering the policy goal. But some are suspicious that the selection procedures are not better than a purely random procedure.

13.4 Feminist Critique: Hidden Values in Science

In later years, feminists have criticised certain research because it is 'sexist'; that is, it contains more or less hidden assumptions that imply a devaluation of women. A clear example is the research surrounding myocardial infarction, which is mainly done on men. We now understand that myocardial infarction is common even among women, but the symptoms may be different in women than in men. This has resulted in an under diagnosis of infarction in women and also in faulty knowledge of how it should be treated, since the medicines that exists are not tested on women. It has been claimed that this practically implies a devaluation, or neglect, of women's problems.

Another, slightly deeper, form of male narrow-mindedness in science is when concepts, which are based on cultural phenomena in today's society, are used as naturally determined, universal categories. A clear example is when the current division of labour between the sexes (that men generally engage in outgoing activities, achievements, careers, competition in the workplace, etc., while women focus on children, homes and caretaking) is taken as a starting point for describing social patterns in prehistory. A common account of prehistoric human development is the following: Our ancestors developed four features simultaneously and in intimate interaction: one began to use tools, one began to walk

upright, one began to hunt, and the size of the brain (and hence energy consumption) increased significantly. A natural conclusion from this is that the use of tools made more efficient hunting possible, which was required to support the larger brain. Findings of primitive tools, which are assumed to have been used for killing larger animals, support these assumptions. Thus one is presented with a picture of typical male behaviour that has driven human development forward. Contrary to this, firstly, it has been claimed that the primitive tools that have been found–differently shaped stones–cannot be unequivocally connected to hunting; they could just as well have been used to work with plants and roots, or something else 'typically female'. Secondly, one can argue that the tools needed to gather vegetables for eating were generally made of less durable materials such as wooden sticks, and therefore there is no evidence left that shows how important the collection of vegetables was for our ancestors. This claim is supported by studies of present-day people that live as hunter-gatherers, surviving mainly by collecting fruit, nuts, roots and other parts of plants (which is regarded as typically female activities). Thirdly, how do we know that the gathering of plants was mainly a female activity? In short, there is a strong tendency to project the current state of society on completely different cultures by using categories for sorting data that are heavily influenced by the society we live in.

The main point of this critique seems not to be that the scientific results are false, pure and simple, but that focusing on certain circumstances and neglecting others is driven more or less by unconscious norms about what is 'normal' male and female behaviour. One should notice that the word 'normal' is ambiguous. It can mean 'common' without any valuation, but also 'natural and right', which clearly has evaluative content. Often one shifts between these two meanings without noticing it.

When we describe our empirical data, we must use general concepts that we as humans have constructed. But we humans are rarely, or perhaps never, neutral observers of the external world. That is to say, we are first and foremost agents who often want to understand the world in order to intervene and influence it. So we form our concepts, often unconsciously, as a part of our desire to shape the world or defend a certain way of life. This normative component of the conceptual framework comes to be known as a valuation of what is important, relevant or essential to a complex phenomenon. The general conclusion one can draw is that the categorization of phenomena is interest-related. This connection to interests is not something one can get rid of, but one can request that researchers be aware of what purpose a certain categorization has.

One possible objection to the above is that science should make *correct* categorizations of phenomena; scientists should describe things 'as they actually are'. Even if there is a purpose, it is secondary. For if one has categorized a phenomenon in a way that does not agree with reality, then it is quite simply false, regardless of its purpose. This objection is based on a kind of essentialism; things have essential properties, and it is the task of science to discover them. However, I am quite sceptical of this view; I share Quine's hostility towards the distinction between essential and contingent properties of things, objects, events or states of affairs, for

the same reasons as he gave.[2] Unfortunately, further discussion of this complicated, but rewarding, topic lies far beyond the scope of this book.

13.5 Research Ethics

Doing research quite often means taking a moral stance, balancing the value of the possible results against the interest, dignity and integrity of humans involved. Such balancing has not always been made. An infamous example of research, which triggered heavy moral critique, was the Tuskagee clinical study conducted between 1932 and 1972 by the US Public Health Service to study the natural progression of untreated syphilis in African-American men in Alabama. These men were told that they were receiving free health care from the U.S. government and those who in the study group who had syphilis, 400 out of 600, were not told about their malady. In 1940 it was established that penicillin was an effective treatment of syphilis. One would then have expected that the researchers should have ended the study and given all persons in the study group with syphilis the new effective treatment, but they did not, neither did they inform them about their disease and its proper treatment. The study was finally terminated in 1972, as a result of a whistleblower reported to the press what was going on and 25 years later, in 1997, President Clinton formally apologized and held a ceremony at the White House for surviving Tuskegee study participants. He said:

> What was done cannot be undone. But we can end the silence. We can stop turning our heads away. We can look at you in the eye and finally say on behalf of the American people, what the United States government did was shameful, and I am sorry … To our African American citizens, I am sorry that your federal government orchestrated a study so clearly racist.

This and other cases of morally bad research have resulted in ethical questions related to research have come increasingly to the fore.

Another example of research, not so malevolent as the Tuskagee study but still morally doubtful, was Milgram's well-known experiment for studying obedience. A number of volunteers were asked to help in carrying out a learning experiment. These people would give other volunteers certain tasks, and if the latter failed the task, the former were told to give the latter electric shocks. For each task the volunteers failed, they would receive more powerful shocks. The underlying hypothesis was said to be that punishment could be used to improve learning. In reality, this was a bluff. When the test subjects flipped the switch, no electric shock was administered, and the person who was supposed to be undergoing the 'learning experiment' was instructed to pretend to feel a shock. Many of the participants went

[2] Quine's hostiliy to the distinction between essential and contingent properties is that it depends on how we describe things and most things can be described in many ways. So the distinction is not objective, it varies depending on which the description the speaker thinks most appropriate.

quite far and, as they believed, 'increased the intensity of the shock' more and more, even though the 'test subjects' on the other end signalled that they were in heavy pain. The point of the experiment was to see how far these volunteers were prepared to go in causing other people pain if they were instructed to do so by a person in a position of authority, i.e. the researcher (The sad result of this experiment is that most participants obeyed even though they believed that they were hurting another person quite severely.).

One generally accepted norm is that all research where humans are involved should only be carried out with the participants' informed consent. This means that one must inform the participants of the purpose of the research and acquire their consent to participate. Obviously, Milgram's experiment strode against this norm. However, Milgram could defend his actions with the following argument: firstly, it would have been impossible to perform the experiment if the test subjects had known the true purpose of the experiment, and it is important to study people's propensity to obey orders even when the people in question believe that doing so will cause others pain. Secondly, the test subjects were informed after the experiment that these other people had not been harmed. In response to Milgram's defence one could argue that it is doubtful if one can draw any general conclusions from this laboratory experiment, and that it is degrading to be tricked as the volunteer test subjects had been. This second concern is especially pertinent for those who were inclined to give their 'victims' powerful shocks since they appeared to the researchers to be quite unsympathetic people.

Another ethical problem in research sometimes arises in the testing of a new medical treatment. It is often the case that one performs a preliminary control test after some time has passed to see if there is any difference in the tendencies of the tested treatment and the treatment that the patients in the control group received. One example is the testing of AZT to AIDS patients. In a follow-up, it was found that the patients that had received AZT were in much better condition than the control group, and so it was decided to end the experiment early and give all participants AZT, even those who had been given an ineffective drug. This may seem to have been an unproblematic move, but the researchers were faced with an important decision. Every general conclusion regarding long term effects of a certain treatment drawn from a sample test is more or less uncertain, and the uncertainty is naturally increased the shorter the test lasts. One is faced, therefore, with the choice between giving all patients the treatment and sacrificing reliability, or to continue the experiment and risk denying certain patients a treatment that could have helped them. It may seem to be a rather easy choice, but one ought to consider that the preliminary conclusion, that the treatment has a positive effect, could be wrong. In such a case, were one to shut down the experiment and give the control group the treatment, one would not have helped anyone and would have lost the possibility of acquiring the more secure knowledge of a complete experiment.

In many countries research founding bodies now require approval from an ethical committee of a proposed research project involving humans as objects of study. In addition, researchers in medicine, psychology and some other fields have in many countries established ethical codes for researchers and practitioners in their

respective fields. As an example of an ethical code in psychology one may consult American Psychological Association's 'Ethical Principles of psychologists and Code of Conduct', see http://www.apa.org/ethics/code/principles.pdf (In the literature list referred to as 'APA ethical code'). This document states five general principles:

Principle A: Beneficence and Nonmaleficence.
Principle B: Fidelity and Responsibility.
Principle C: Integrity.
Principle D: Justice.
Principle E: Respect for People's Rights and Dignity.

For a thorough explanation of what these principles means in practice see the document.

Further Reading

APA-code: http://www.apa.org/ethics/code/principles.pdf
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