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SCIENTIFIC FREEDOM AND SOCIAL RESPONSIBILITY: CONFLICTS IN THE ETHICAL REGULATION OF SCIENCE

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I. Introduction

Talking about scientific progress always implies talking about the outcomes of scientific research. Most notably since researchers who took part in the development of nuclear weapons called for the abolition of their products, the question of scientific responsibility has arisen in society and science itself. According to the title of the conference which is held here, I'm thus focusing on two conflicts in science, which appear to be best handled by norms, but on the other hand, are rather not amenable to this solution in every aspect.

The first conflict affects society as a whole and concerns the limits of scientific research and the freedom of science, which is guaranteed as a fundamental right in most European constitutions and in the European Charter of Fundamental Rights. The question concerns the dimension of protection to be enjoyed by researchers, both in consideration of the scientific progress as a benefit for individuals and mankind and the perils simultaneously resulting out of it. A current and controversial example for this conflict is the science of nano-particles, which shows great promise in the areas of medicine and engineering. In contrast, their development is accompanied by the creeping feelings of society that these materials could infiltrate organisms, causing unknown damage like cancer or other genetic modification. Another issue in this field is the dual-use problem of research, i.e. the abuse of neutral or beneficent intended research results for terrorist or militant purposes.

A second conflict which is intimately connected with the first one governs the scientific system itself, raising the question whether researchers should be bound to ethical values, and if so, which ones. The question of professional ethics is prominent in many areas of modern society, most recently in the financial branch. The same is true for science, but opinions in regard to the specific field of scientific responsibility are twofold. Two scientists involved in the development of nuclear bombs gave two different answers in this issue: Carl Friedrich von Weizsäcker explained that his experience in research forced him to accept the hindsight that science must be responsible for its outcomes. Edward Teller on the other hand, one of the developers of the hydrogen bomb, denied this by stating that

scientists only produce knowledge, responsibility results from the application of that knowledge and must therefore be handled by its users or by society and politics.

II. Freedom of Science

My further presentation will not focus on specific conflicts between science and society concerning issues like genetic enhancement or robotics as the other speakers do. In a more abstract manner I will scrutinize the general responsibility of researchers in the early stages of their work and how this issue can be governed or influenced by norms. By the “early stages of research”, I mean the cognitive process of questioning scientific issues and planning projects. This sphere shall be absolutely free from state interference, according to the fundamental right to freedom of science. The German Federal Constitutional Court has made clear that this fundamental right (contained in Art. 5 (3) BL) protects all the processes, modes of behaviour and decisions based on scientific laws which relate to the search of knowledge, its interpretation and distribution. In the same way the *Praesidium of the European Convention*, which drafted the Charter of Fundamental Rights of the European Union, declared in its explanations that the freedom of science in Art. 13 was deduced primarily from the right to freedom of thought and expression. Freedom of science is thus not only a right to express one’s scientific opinion in public. It is a freedom of scientific thought and decision-making, to protect the individual inner sphere of the researcher and to keep science open-minded about different ideas.

In Germany the freedom of science is granted without written limitations; it is not subject to a statutory reservation. Its limitations must hence be deduced from the basic law itself, i.e. from competing constitutional interests. In a case concerning scientific responsibility the Federal Constitutional Court stated therefore, that a legal obligation to consider *every* outcome of research could only be justified if such a norm would be interpreted restrictively: The relevant outcomes must be reduced to the imperiled competing constitutional interests of others. The court stated that a norm which obligated researchers to do so wouldn’t only concern a process of cognition in the sole *forum internum* of researchers like a moral appeal. The scientific profession would be subject to publicity, to communication and publication of results and scientific opinions. It is therefore observable and verifiable as a matter of fact, whether researchers do keep the outcomes of their research in mind or not. As a real legal obligation its interference with the individual sphere of researchers must be justified, and this would only be possible if the relevant

outcomes were limited to legal goods like human dignity, the right to life and physical integrity and the protection of the environment.

III. Ethical Codes as an answer to the conflict?

Let's keep that result in mind and look at some recent examples of norms concerning scientific responsibility and the outcomes of science. It is arguable if it is possible to refer to them as norms in the legal context because they disclaim legal validity by calling for voluntary compliance. They are rather titled "rules and recommendations", "ethical codes" or "codes of conduct" and should thus be classified as extra-legal or non-binding norms at first glance.

The Max-Planck-Society, a leading promoter of fundamental research in Germany, presented one example this spring with its "Rules and Recommendations for Responsible Practices of Freedom and Risks of Science". A little earlier the "*Deutsche Forschungsgemeinschaft"*, the central, self-governing research funding organization in Germany, published a code of conduct concerning the dual-use of pathogenic micro-organisms and toxins for its evaluation procedure and its promoted researchers. Last but not least, in 2008 the European Commission adopted a code of conduct for responsible nano-sciences and nano-technologies research, attached to a recommendation which doesn't claim legal validity according to Art. 288 (5) of the Treaty on the Functioning of the European Union (TFEU). There are more examples for such ethical codes, especially by American research societies, but I'll put my focus on the mentioned ones and first of all on those by the German research societies.

By publishing these ethical codes the societies demonstrated their will to adopt an ethos of scientific responsibility for themselves as part of their professional ethics. But what does this legally mean? It means that every researcher within these societies is bound by the ethical opinion of his or her employer, bound by a decision to do or not to do research in their area of expertise. To determine though which research should be undertaken is an original scientific decision in light of the FCC's interpretation of Art. 5 (3) BL, and such a determination must hence be constitutionally justified.

IV. The legal and practical effects of ethical codes

You may ask if this conclusion is valid considering the aforementioned non-binding character of these ethical codes. At this point the concept of normativity is put in question and must be scrutinized, although for time reasons, only in an admittedly rough fashion.

The problem is well-known, especially in the field of public international law where “*soft law*” is a controversial notion, at least if you are not a representative of legal positivism denying such a term. As the term *soft law* suggests, a non-binding character doesn’t mean that norms cannot influence their addressee’s behavior. Depending on the quality and functionality of such norms there can be factual pressure to comply with their provisions, resulting from the social conditions or the relative strength of an individual.

According to these criteria a prominent scholar gave the following definition for soft law:

> “Rules of conduct that are laid down in instruments which have not been attributed legally binding force as such, but nevertheless may have certain (indirect) legal effects, and that are aimed at and may produce practical effects.”

The certain legal effects in our context may result from the legal guarantee of freedom of science, which has to be taken in regard by such norms. An interference with that freedom results from the intended practical effects. This particularly applies to the mechanisms of science which I will try to demonstrate on the basis of three factors.

Firstly, the most important value in the scientific system is reputation, as Niklas Luhmann pointed out in his studies. It is a decisive factor for the granting of scientific promotion or possibilities of publication. Next to scientific excellence, this value is highly dependent on social factors inside the scientific community and one might imagine what influence a verdict of unethical research could have on a researcher’s reputation. The loss of reputation is admittedly a rather indirect effect. A more direct effect in contrast is the denial of scientific promotion as a second factor. The increasing need for public or private sponsorship, particularly in natural sciences, is pivotal for the evaluation of such norms which indicate unethical behavior. A third factor lastly derives from the mere existence of ethical discussion in science and society, since scientific publications themselves feel pressure to require proof of ethical compliance from researchers requesting publication. The denial of scientific publication is hence a form of sanction for unethical science. The ability to sanction non-compliant behavior tallies with a criterion of legal validity in a positivistic discussion. Consequentially, the effect of the disputed norms and their relevance for freedom of science are enhanced when they are publicly acknowledged as touchstones of ethical science.

Considering these factors it must be noted that, especially in the scientific area (but not only there), legal validity should thus not be the sole criterion for evaluating normative measures, considering their relevance for the guaranteed freedoms of fundamental rights. When factual pressure prevents the exercise of a freedom, state organs must intervene since they are obligated to protect a freedom from erosion, be it in public or private law.

The German labor courts as well detected this necessity and are thus scrutinizing private codes of conduct with a voluntary character for their relevance for fundamental rights.

Based on these remarks, I would state as a first finding that the notion of normativity is not solely determined by the question of official legal validity. It is furthermore a question of factual effect. The guarantee of the various free spheres of life, where citizens enjoy a special status which shall be protected by the state, makes it impossible for judicial organs to refer to the lack of legal validity to deny judicial review and protection. The final resolution of ethical conflicts is thus not to be found in voluntary ethical codes or recommendations when these norms factually influence their addressees' behavior and are contrary to constitutional guarantees. Society's consensus on ethical values until now has been written down in constitutional norms, which are certainly in need of interpretation, but these legal norms must be considered first and foremost when ethical conflicts shall be resolved that might affect those constitutionally guaranteed freedoms.

V. Justification of "ethical" provisions

Let me once again define the ethical conflict in question here to position it in a legal context. It is not a problem of the direct causation of harm to others by researchers. It is rather the question whether researchers could be held generally accountable for the outcome of their work, even if damages are caused by a third party based on the knowledge acquired from science. One may assume this would be a problem of causality as German scholars know it from criminal law: "*Conditio-sine-qua-non*" as students learn it in their first semesters. However, the production of knowledge can not be perceived as causal in the criminal meaning because there are too many acts between the production of knowledge by fundamental research and its harmful utilization. The special areas of science in which legislators have already detected a direct and identifiable link to endangered goods are already regulated in binding norms, such as cloning, atomic research and human experimentation. The ethical field scrutinized here is the grey area beyond these direct perils and is part of a rather philosophical discussion.

So which provisions concerning this grey area could still be established by norms and how could the existing ones be justified? Two possible options are left to support researchers in their ethical considerations and to serve society's need for protection: Normative provisions interpreting the constitutional framework to the full extent and procedural provisions for collective responsibility.

The missing or hardly detectable link of causality between the production of knowledge and the detriment suffered by its consequences can’t restrain legislators from exercising their discretion to steer researchers’ behavior in the preferred direction, as long as this decision can be constitutionally justified. The justification depends on a weighting of the competing constitutional interests, and this weighting must include the criteria of intensity of interference and the importance of competing interests. The inclusion of these criteria is pivotal for the justification in this issue. The absence of direct causality can only be bridged by a decrease of the intensity of the interferences. This is also a reference to a dogmatic construction, whose value I would like to see increased, although the FCC didn’t considered it in its case law concerning the freedom of science: the essence of fundamental rights (*“Wesensgehalt”)*, as written down in Art. 19 (2) BL and Art. 52 (1) of the European Charter. For time reasons I will make a long story short and simply summarize: The essence of scientific freedom has to be seen, in my view, as part of the inner sphere of scientific thought and the ability to put scientific results in question. The necessary decrease of intensity and the respect for the essential content can thus only be reached by the voluntariness and the soft character of the ethical codes. In my opinion, in the judicial context this should be the outer limit for normative provisions tending to any perception of an abstract scientific responsibility. The weighting of the competing constitutional interests against the weak interference with freedom of science, would hence result in a constitutional justification of the provisions in the codes as long as they are narrowly interpreted and accurately executed. The important lesson to be learned here is the inclusion of the constitutional framework into ethical discourse if the outcomes of such a discourse may affect a specific fundamental right like the freedom of science.

In the European context this was rather ignored by the European Commission, when it adopted its code of conduct concerning nano-sciences in 2008. The commission simply stated a necessary consideration of ethical values in science without a definition of these values. It furthermore asserted a general accountability of researchers for every outcome of their projects, linked with monitoring measures and obligations to report on the implementation of the code by the member states. Although the protection of the freedom of science in European Law is weaker than the German guarantee and although these provisions were solely stated as a recommendation, my finding would be that the Commission acted contrary to the fundamental right to the freedom of science by handling an ethical discussion without respect to the relationship between the fundamental rights. This would be rather unproblematic as the code of conduct was adopted before the Charter

of Fundamental Rights became effective in 2009 as primary law. Yet the revision of the code in this year should be bound by Art. 13 of the Charter. We will see whether the Commission will then meet the normative requirements of the Charter. In this respect it could be a minor touchstone for the effective implementation of fundamental rights in the Union.

VI. The role of procedure in ethical discourse

The second, and in my view more important, role of norms in this context should be the procedural support for researchers and the partial shift of responsibility to collective entities. The rules by the Max-Planck-Society for example provide a procedure for its researchers to make them aware of the ethical implications of their work. Starting from the assistance in cognitive operations of individual researchers, pointing out which factors should be included, they also establish a multidisciplinary ethics committee consisting of various scientists to elaborate recommendations for the execution of a specific project. The latter provision realizes a construction which was called for by various philosophers, e.g. Hans Jonas and Julian Nida-Rümelin, and is named collective responsibility. It is based on the presumption that modern science would be so differentiated and complicated that individual researchers couldn't be held accountable for their contribution to the outcomes. Thus responsibility should be assumed in a collective way or at least individual decisions should be facilitated by collective assistance. Given that two conditions are met, this would be appropriate from the judicial perspective. First the committee should consist of independent scientists from multiple disciplines to avoid influence from outside and to guarantee a full range of possible opinions. Second this procedure must be kept in confidence, especially its results and recommendations. In spite of the notion of collective responsibility, individual persons are still held accountable for their own acts, at least from the perspective of society. Every divergence from the recommendations of an ethics committee by researchers would be considered as unethical behavior. If these recommendations were disclosed, they hence would create factual pressure to comply and would not meet the conditions of sole assistance in ethical decisions. It would cut the researcher's possible options rather than assisting him in ethical consideration. Given that the recommendations would be kept in confidence scientists would still be able to decide freely. The cognitive process wouldn't be determined in advance and the necessary assistance would yet be given.

VII. Conclusions

The lessons to be learned for norms in scientific conflicts hence are twofold: On the one hand from the judicial perspective norms must comply with the freedom of science and therefore binding normative provisions must be restrained in ethical decisions when direct causation of harm to constitutionally guaranteed goods is difficult to determine. If soft instruments refer to ethical decisions they must furthermore pay due regard to the constitutional framework if the ethical discourse therein shall be transformed into effective consequences for researchers. On the other hand the more important role of norms should thus be of procedural assistance to scientists. Given that the aforementioned conditions are met, norms could promote ethical discourse inside the scientific community, provide necessary assistance and alleviate the researcher’s burden of responsibility by passing parts of it to the affected institutions or corporations.

The German tradition of scientific freedom has generated strong protection for researchers considering their margin of appreciation in scientific decisions. The European organs however could erode the fundamental right in Art. 13 of the European Charter of Fundamental Rights from the beginning by maintaining its code of conduct for nano-sciences. However, the protection of the freedom of science should in contrast be augmented if the Union’s aim of creating a free European research area (Art. 179 (1) TFEU) should ever by achieved.