

Rules of Good Scientific Practice

Convention - Legal Basis - Enforcement

By Wolfgang Löwer

As far as his or her engagement for the purposes of his or her parent scientific community is concerned, the biography of a scientist has to expect difficult, unavoidable assignments. In this sense, the Vice Chancellor's Office in Bonn entrusted my friend Hans-Ullrich Paeffgen¹ with the difficult mission of working as an institutional investigator in one of the faculties to clear up irregularities which significantly exceeded the normal extent of the irregularities to be expected in a university department controlled by colleagues. His particular aptitude for confronting such problems results not only from the fact that the teacher of criminal law automatically deals *ex professione* with behaviour which deviates from the norm, but also from his or her unusually trenchant interest in public law.² This may justify my taking up in this Roll of Honour, the core of which is committed to criminal law, an issue under public law, which after all also deals with deviations from the norm – which in turn presupposes the pre-existence of norms – and also displays a bias grounded in disciplinary law³: namely the existence, origin and enforcement of the standards of good scientific practice.

I.

To a certain extent, interest in scientific integrity has grown sporadically in the recent past (2).⁴ Even so, the phenomenon that scientists are neglecting the requirements to take care when performing scientific work is certainly not new (1).

1. With respect to science in the modern world (starting with Galileo Galilei and Isaac Newton), William Broad and Nicholas Wade reported 61 cases of scientific manipulation as long ago as 1984.⁵ In conjunction with the struggle for Darwin's Theory of Evolution in the late 19th century, they discovered an important letter from Thomas Henry Huxley⁶.⁷ This states:

"You have no notion of the intrigues that go on in this blessed world of science. Science is, I fear, no purer than any other region of human activity; though it should be. Merit alone is of very little

¹ see my "Personal remarks on Hans-Ullrich Paeffgen, (HUP) 65", Bonn Law Journal, Special Issue 1/2010, pp. 1-4.

² see above *Paeffgen*, Danger, Apparent Danger, Suspected Danger in Police Law, GA 2014 638 ff.

³ As students we jointly attended a seminar with Jürgen Salzwedel (in the 1960s) on disciplinary law when *ne bis in idem* was still discussed in the relationship between criminal law and disciplinary law and divorce records of German army officers were still submitted to the disciplinary superior!

⁴ From the legal perspective, see for the discussion on the rules of good scientific practice

Goeckenjan, JZ 2013, 723; *Hartmann*, Principles of good scientific practice from the perspective of quality assurance and legal consequences – at the same time a consideration from the perspective of scientific theory and constitutional law, 2005; *ibid./Fuchs*, WissR 36 (2003), 204; *Lippert*, WissR 33 (2000), 210; *Löwer*, WissR 33 (2000), 219 ff.; *ibid.*, in: Dreier/Ohly (ed.), Plagiarism. Science Ethics and Law, 2013, p. 51; *Muckel*, Memorial Publication for Hartmut Krüger, 2001, p. 275; *Ottmann*, Scientific Fraud and Criminal Law. On the possibilities of imposing sanctions on misconduct in science, 2006; *Schiffers*, Ombudsman and Commission for the Investigation of Misconduct at State Universities, 2012; *Schmidt-Aßmann*, NVwZ 1998, 1225; *Schulze-Fielitz*, WissR 37 (2004), 100 ff.; *ibid.*, in: Löwer/Gärditz (ed.), Science and Ethics, 2012, p. 1; *Stegemann-Boehl*, Misconduct by Researchers. A study using the example of Brandenburg research in the legal comparison between the USA and Germany, 1994; *ibid.*, WissR 29 (2000), 139.

⁵ *Broad/Wade*, Fraud and Deception in Science, 1984, Casebook p. 266–272 and the Case Narratives p. 22 ff.

⁶ As a British biologist and agnostic, Thomas Henry Huxley (1825–1895) had a major influence on the natural sciences of his time. In addition to his own scientific work, he was in particular well-known for the fact that he supported the Darwinian theory of "The Origin of Species". A characteristic aspect of his defence of the theory of evolution is his much-noticed war of words with the then Bishop of Oxford (Samuel Wilberforce), which even among his contemporaries earned him the nickname of "Darwin's bulldog"; cf. *Willmann*, Darwin, Huxley and the Women, 2009, p. 115–120, 181–208.

⁷ Quotation according to *Broad/Wade* (footnote 5) from *Huxley*, Life and Letters of Thomas Henry Huxley, 1900, p. 97.

use; it must be backed by tact and knowledge of the world to accomplish anything."⁸

Indeed: the scientific world cannot rely on its fundamental ethical convictions any more than other professions which rely for their effectiveness on a special relationship of trust with the society which employs them, such as the clergy, doctors, notaries. In Germany the problem was first illustrated in literature in the second half of the 19th century in one of the few novels which (inter alia) are set in the academic milieu, namely in Gustav Freytag's broadly-based panorama (German scattered regionalism, stratified society and any potential emotional dramas) "The Lost Manuscript" (1864)⁹. Even then the topic was one of forgery, the unjustified exploitation of the young generation of scientists who depended on working in the field of science, excessive ambition *in scientibus* etc.

2. There was probably no institutional reaction to the phenomenon of scientific fraud in earlier times because the contemporaries may have only come across it sporadically as a phenomenon.

In times in which there are reportedly as many scientists working as in the entire history of mankind, it is self-evident that it is no longer possible to speak of isolated cases. The German science system has also been confronted with quite spectacular – initially medical science – scandals¹⁰ and then with a long series of plagiarism cases¹¹. The list of life and natural sciences ranges from Herrmann/Brach to Hendrik Schön¹² – the list of celebrities from zu Guttenberg, through Koch-Mehrin to Schavan.¹³ Plagiarism also exists of course even in the non-prominent academic world up to the level of established scientists.

In contrast to previous eras, the science system – beginning with the case of Herrmann/Brach – reacted not only with dismay and the shaking of heads with references to the relevant "black sheep", but also with its own regulations.¹⁴ The scandals promoted the insight that science must ensure that what is produced in the science system is also deserving of this name, i.e. that the results presented to the public do indeed satisfy the fundamental requirements of scientific work. Criteria were created for the rules of good scientific practice, the authors of which were scientists.¹⁵

Incidentally, the motivation of scandal as the starting point shares this more recent development with the compliance movement in the private sector, which has also been driven to carry out the corresponding codification work through the loss of credibility which has been suffered by large companies as a result of ethical – but not necessarily legal – misconduct.

⁸ Quotation according to *Broad/Wade* (footnote 5), p. 33.

⁹ *Gustav Freytag*, Die verlorene Handschrift ("The Lost Manuscript") 1864, see *Kluge*, Gustav Freytag, The Lost Manuscript, in: Kindler's Lexicon of Literature, Volume 5, 3. 2009 edition, p. 732 with further references.

¹⁰ *Finetti/Himmelrath*, The Sündenfall ("The Fall of Man"). Fraud and Forgery in German Science, 1999, p. 33, refer to the cases dealt with at the time.

¹¹ see the most prominent platform for uncovering plagiarism, the "collaborative plagiarism documentation" VroniPlag Wiki. This site presents one of the most extensive documentations of cases of plagiarism in Germany since 2011 (de.vroniplag.wikia.com). According to the information provided by the site itself, seven doctoral theses, 125 dissertations and two further papers have been examined there under the public eye since March 2011.

¹² For Hendrik Schön see Federal Administrative Court ruling on July 31, 2013 – 6 C 9.12 concerning the withdrawal of the doctoral degree due to unworthiness.

¹³ For Karl-Theodor zu Guttenberg see the Bayreuth Investigative Report of May 5, 2011, available on the Internet at: http://www.uni-bayreuth.de/presse/Aktuelle-Infos/2011/Bericht_der_Kommission_m_Anlagen_10_5_2011_.pdf, for Koch-Mehrin: Higher Administrative Court BW decision on February 3, 2014 – 9 S 885/13; for Chatzimarkakis: Cologne Higher Administrative Court decision on March 22, 2012 – 6 K 6097/11; for Schavan: Düsseldorf Administrative Court ruling of March 20, 2014 – 15 K 2271/13.

¹⁴ In the underlying White Paper of the German Research Community "Ensuring Good Scientific Practice" (1998), which begins by pointing out that the work has induced "A broadly discussed case of scientific misconduct among the public at home and abroad" (see page 3 – Foreword).

¹⁵ This applies at least to the decentralised German solution which leaves the rules and regulations to the autonomy of the sciences. In addition to the German Research Foundation White Paper referred to in footnote 14 (revised in the meantime in 2013 http://www.dfg.de/foerderung/grundlagen_rahmenbedingungen/gwp/), see also the paper of the OECD, OECD Global Science Forum (ed.), Investigating Research Misconduct. Allegation in International Collaborative Research Projects. A Practical Guide (April 2009), is the fruit of an international collaboration of scientists.

The advocates of rules who were fighting against the loss of the credibility of science were fully aware that beyond the formation of rules, procedural instructions were also essential and that there was more at stake than merely defining the basic rules of scientific integrity, i.e. the definition, for example, of the ban on forgery and plagiarism and the rules of honest authorship, and that problems arising from the division of labour in modern research can also be overcome creatively.

II.

These remarks themselves provide some indications of the convention (1) and the legal rationale (2) of the rules of good scientific practice.

1. The *basic rules* of good scientific practice are not actually positings that flow from the pen of some authorised issuer of standards or other and which might be furnished with the closing formula: "... car tel est notre plaisir"¹⁶. Instead they are prime example of a derivation "from the nature of the matter"; their sources are the true functional conditions of science.

This is evident for the *prohibition on forgery*: The forgery, i.e. the conscious incorrect submission, of non-existent facts thereby claims that there is a non-existent "truth"; however, in the words of the Federal Constitutional Court, "science is only involved if the work is guided by a serious planned attempt in terms of contents and form to determine the truth".¹⁷ The Court certainly concedes that the concept of truth is to some extent relatively undemanding because scientific truth in the received Humboldt quote is "something which has not quite been found and will never quite be found"¹⁸. Erroneous facts, the intellectual inability to draw the right conclusions, is bad science (which is even a legally protected freedom), whereas the deceptive ignores the autonomy of science to a self-evident extent.

For this reason, *plagiarism* – even if other cultures and times assess it differently – is discredited in the field of normative science because the "serious attempt to determine ... the scientific truth" required according to Rudolf Smend¹⁹ is missing. The attribution of third-party knowledge to oneself is not a "serious attempt" to further new scientific findings. Moreover, by virtue of its autonomy, science is a communicative process²⁰ because results are dependent on recognition in order to be considered the current state of knowledge or to be able to provide a stimulus for further work "towards the truth". This is why Volker Rieble rightly states that plagiarism prevents scientific communication between the author and the public.²¹

Wrongful attempts to claim authorship violate the principle of competition underlying the pursuit of science, whereby this principle drives forward the pursuit of science as the engine of innovation.

Any claimed new truth has to be presented for scientific discourse, which decides on the attribution of truth, in such a way that third parties are able to verify it in order to take into account the obligatory requirement of science in respect of rationality.

In addition to such basic statements, the number of which could certainly be further extended, there are also those rules which cannot simply be derived from the autonomy of science, but which require positing, for example because the solution which is appropriate to science does not necessarily impose itself.

If, for example, the question arises as to whether and under what conditions third parties should be given access to databases, the response of an exclusion on principle of non-involved

¹⁶ Promulgation formula of the French kings before 1789.

¹⁷ Federal Constitutional Court Decisions (BVerfGE) 35, 79, 112 f.; 90, 1, 11 f.; 111, 333, 353 ff.

¹⁸ Federal Constitutional Court Decisions (BVerfGE) 35, 79, 113; cf. also 90, 1, 11 ff.; re *Frühwald*, The Authority of Doubt. Responsibility, Indices and Quality Assessments in Science, Göttingen University Speeches 7 (2007), 2008, p. 12 f.; Crit. on Constitutional Court Rulings: *Trute*, Research between Fundamental Freedom Rights and State Institutionalisation, 1994, p. 113 ff.; *Gärditz*, University Organisation and Administrative Law System Formation, 2009, S. 300 ff.; see. also references under *Löwer*, in: Merten/Papier, Handbook of Fundamental Rights IV, 2011, Section 98, marginal number 12 f.

¹⁹ *Smend*, VVDStRL 4 (1928), 44, 67; BVerfGE 35, 79, 113 is therefore almost an example of Smend plagiarism!

²⁰ For the freedom of research as freedom of communication, see *Löwer* (footnote 18), Section 99, marginal number 11 with further references

²¹ *Rieble*, in: Dreier/Ohly (footnote 4), p. 31, 37.

third parties from the data collection is just as non-self-evident as the opposite response of unrestricted *open access* for third parties. Does all of the data in a publication have to be presented to third parties in such a way that it is possible for them to continue working with it even though the author of the data wishes to derive his or her right from the authorship to him/herself climb from the lower level of basic research into the bel étage of transnational scientific progress with his or her data? *Property rights v. open access* corresponds to the position on the front which the opposing parties move into even before the establishment of the industrial property rights.²² Here, the nature of the matter as the regulatory base has been exhausted.

2. For the *legal basis of the validity* of the rules of good scientific practice, it will be necessary to distinguish between the authors. Insofar as *private rules and regulations* are involved, i.e. those of the DFG²³ or professional fraternities organised in the form of associations,²⁴ in other words rules and regulations of organisations with a membership structure, the basis of validity lies solely in the law of associations. Consequently, the sanctions can also only be of a type applicable under the law of associations ("association penalty"²⁵). For the DFG, matters in this respect are somewhat more complicated because it is not the scientists themselves who are members, but scientific institutions. Through the lever of the eligibility requirements of the scientific organisation, which only applies if it has set up mechanisms for the enforcement of the rules of good scientific practice, the scientists are also directly tied in. However, here too, the potential for sanctions cannot go any further than provided for by the law of associations: Ultimately, the ban on applications is the most thorough form of sanctions.

At scientific institutions under private law, the basis of validity lies in the contract of employment under private law between the employee and the institution. The obligation to comply with the rules is based on the contract of employment which regulates this. For the non-university science facilities financed by it, the Freedom of Research Act²⁶ of the German government refrains – and this is not a matter of course – from referring in the form of a general clause to the validity and relevance of the rules of good scientific practice. At government-owned departmental research institutions, such validity is derived from the authoritative powers of the employer or – insofar as contracts of employment under private law are concerned – from the employment law structures. With all research funding measures financed with taxpayers' money, the German federal government and the federal states can also require compliance with the rules of good scientific practice in subsidiary provisions of the Authorisation Administrative Act.

For corporate bodies under public law, i.e. the universities, the means of statute law is available because this is a science-related topic which – subject to the role of the legislator (detailed below under III) – falls within the field of university regulatory activities as part of their self-governing powers.

III.

For the role of the legislator, these correlations are certainly significant. In the *first step* it has to be determined that it is the task of science to spell out its own laws. For higher education law in particular, the legal system keeps this matter open to the autonomous regulatory powers of the university because the formulation of rules falls within the self-government guarantee of the university which is held open to it either constitutionally²⁷ or at least on the basis of individual

²² See *Gieseke*, From Privilege to Copyright, the Development of Copyright in Germany up to 1845, 1995.

²³ See the White Paper of the DFG (footnote 14) cited above.

²⁴ See for example the 50 principles of good scientific practice of the Association of German Constitutional Law Teachers, 2013.

²⁵ For the association penalty, see Reichert/Dannecker (ed.), Handbook of the Law Governing Clubs and Associations, 12. 2010 edition, marginal number 2884 ff.

²⁶ Law on the flexibilisation of the legal budgetary framework conditions of non-university scientific institutes (Freedom of Research Act) dated December 5, 2012, Federal Law Gazette I, 2457.

²⁷ See Federal Constitutional Court decisions 35, 79, 116 ff., 131 ff. – Lower Saxony interim law: Art. 5 paragraph 3 of the Basic Law does not guarantee "the traditional structural model of the German university; it does not stipulate any specific organisational form whatsoever. Part of the literature also derives from Art. 5 paragraph 3 of the Basic Law a self-government promise, see *pars pro toto Geis*, in: Merten/Papier, Handbook of Fundamental Rights IV, Section 100, marginal number 25 ff., which has so far not met with the explicit approval of the Federal Constitutional Court. The higher education laws of the individual states consider all institutes of higher education to be self-governing bodies – in the standard

laws. In the decision-making process of medical consultants, the Federal Constitutional Court²⁸ has described the guiding principle for the field of function-related self-government²⁹ to the effect that it should be "the forces living in the social groups (which should be used) on their own responsibility for putting into order the matters which particularly affect them and their expertise for determining the 'correct' law." This idea is underpinned here by Art. 5 paragraph 3 of the Basic Law: What the rules of such "good scientific practice" are is a scientific question on which science decides as part of a discourse and which it makes binding upon each specialist discipline addressed.

However, in a *second step* the boundaries drawn with respect to autonomy always have to be observed. Fundamental rights can always only be restricted by law or pursuant to law. As soon as the rules have to balance competing claims to fundamental rights against one another – as in the above example of *property rights v. open access* – or sanctions are to be imposed with respect to non-compliance with the rules, parliamentary law is required for this, as has been fundamentally clarified since the decision concerning medical consultants.³⁰ However, parliamentary law may be designed as an enabling norm, so that any restriction of fundamental rights is legitimised "on the basis of" a law because the enabling norm reveals the regulatory programme for the body stipulating the statutes. Moreover, this view has a parallel in doctoral and post-doctoral law; the higher education laws stipulate the academic degrees, but leave the individual formulations to the doctoral regulations³¹ (whereby the density of regulations of the enabling norm has increased) because the supervised doctorate belongs - due to its close connection with research and teaching - to the core area of academic self-governance,³² which therefore also regulates the associated rules itself.

This results in a *third step*: The parliamentary legislator will be able to draw up the substantive rules of good scientific practice in principle only as reference rules, i.e. giving them normative content through the reference because as a result they become a constituent element of a norm. This is nothing other than in the cases in which the legislator binds an action required in conjunction with a fundamental right to its "ethical acceptability", as is the case in the Stem Cell Act³³. Indeed, with respect to good scientific practice, the legislators³⁴ do also react within the meaning of the reference, whereby they also associate it in some cases with excursions into more "lyrical" contents with the reception.

One example of a sparse reception is provided by the new so-called Higher Education Future Act of the State of North Rhine-Westphalia, which is "baptised" with many new ideas in this respect.³⁵ The task norm (Section 3 paragraph 1 clause 3) states: The universities guarantee good scientific practice," – this applies accordingly to the Universities of Applied Science for their research and development tasks (Section 3 paragraph 2 clause 3). As task norms, which are well known from police law, are not authorisation norms, Section 4 paragraph 4 continues: "Everyone who works in the field of science at the University, as well as the students, is under an obligation to maintain scientific honesty. For this, the generally recognised principles of good scientific practice are to be complied with".³⁶ Knowledge of "what is generally recognised" may not always

case in the dual form of a self-governing corporation and state institution.

²⁸ German Constitutional Court decision 33, 125, 159.

²⁹ Furthermore, the higher education sector is also bound by the rules of functional self-government, see *Löwer, Wendt* commemorative publication (in print).

³⁰ Federal Constitutional Court decisions (BVerfGE) 33, 125, 158 – Medical Consultant; BVerfGE 90, 171, 184; for municipal self-government BVerwGE 90, 359, 362 f.; see in the specific context with further references *Schiffers* (footnote 4), p. 122.

³¹ Comparative law overview under *Herrmann*, in: Knopp/Peine (ed.), Brandenburg Higher Education Act, 2. 2012 edition, Section 29, marginal number 3 ff.

³² Berlin Constitutional Court WissR 38 (2005), 67, 71.

³³ Law for ensuring the protection of embryos in conjunction with the importation and use of human embryonic stem cells (Stem Cell Act) dated June 28, 2002, Federal Law Gazette I, 2277, as amended by Article 2, paragraph 29 and Article 4 paragraph 16 of the Act dated August 7, 2013, Federal Law Gazette I, 3154.

³⁴ See the evaluation of the state laws under *Schiffers* (footnote 4), p. 127 footnote 676.

³⁵ Law on the Universities in the State of NRW dated September 16, 2014, Law and Ordinance Gazettes of NRW, p. 547.

³⁶ It is more difficult to classify the legal obligation imposed by Art. 58 paragraph 2 HG NRW (footnote 35) on university teachers. They are obliged to maintain "the principles of good scientific teaching". Since academic freedom is explicitly guaranteed at the same time (in spite of all of the

be trivial. However, help is provided in this respect by the large number of codices which standardise such principles. At any rate, that which is explicitly regulated by more than one set of regulations should be generally recognised if the contents are the same. However, the North Rhine-Westphalian reception norm does not contain any enabling norm for the creator of the statute. Bavarian University law is more specific in this respect: After the obligation to maintain "scientific honesty", this says with respect to those working in research: "... the universities can regulate the finer details by statute." Baden-Württemberg supplements the honesty obligation and the obligation to comply with the rules of good scientific practice by examples of rules (intentional or negligent incorrect details, violation of intellectual property, impairment of the research activities of third parties) and empowers the universities to "set up rules" for "adherence to the generally recognised principles of good scientific practice and the manner of dealing with scientific misconduct" (Section 3 paragraph 2 LHG BW).

Aspects which at first sight appear to be satisfactory in terms of the constitution are the standardisations in the states which provide for authorisation to issue procedural norms by means of a "reservation subject to greater details". However, the general reference to the applicability of the rules of good scientific practice are also likely to contain authorisation to regulate procedural rules as part of their interpretation. The core of the procedural rules is the analytical ability to determine whether the substantive rules have been infringed. The fact that the investigation of a scientific result is an encroachment of the fundamental rights of the scientific author was confirmed by the Federal Administrative Court in the Giessen skin cancer case³⁷. This encroachment of fundamental rights is, however, specifically covered by the reception norms – with or without explicit authorisation for procedural rules. Also the legal obligation of the parties concerned to participate in procedures for which there is an initial suspicion of the violation of the rules of good scientific practice is justified as an encroachment of fundamental rights from the reception (enabling) norm in conjunction with a university statute. However, without such a statute, such procedures are inadmissible.³⁸

In a *fourth step* it must be clear that the requirements of the reservation of statutory powers do not permit all of the rules of self-regulation to be left to self-administration. If the research measures affect the rights of third parties to particular items because the research is not otherwise possible, the legislator must itself regulate the preconditions for the permitted encroachment of such third-party rights. Pharmaceutical legislation and the law governing medicines overall must provide statutory rules for stipulating under which preconditions trials are carried out with the involvement of volunteers.³⁹ Furthermore, the question of the inclusion of animals in trials⁴⁰ has to be regulated by law; access to stem cells as a subject of research⁴¹ also requires certain formal legal regulation.

IV.

As far as the enforcement of the rules of good scientific practice is concerned, several distinctions are required in turn. These are tied to the process objectives; this involves prevention (2) or sanctions, i.e. repression (3). For both of the above, the question can be asked about the organisation of the enforcement mechanisms (1).

1. As far as the organisation is concerned, two possible concepts vie with one another, a decentralised and a centralised concept. Foreign systems – for example Denmark, the USA, Austria – tend to follow a more centralised version which at least leaves the determination of facts pertaining to scientific misconduct to a central organisation. However, for the authority to

necessary limitations required for the community) (see *Löwer* (footnote 18), marginal number 47 ff.), reaching agreement on more than just a few basic sentences will probably be very difficult because not only the autonomy of science is guaranteed by the constitution, but also the development of individuality in communication. That there are considerable obstacles to such development among the Bologna bonds is a matter which is devoted to reality.

³⁷ Federal Administrative Court decision 102, 304.

³⁸ Berlin Higher Administrative Court decision on April 26, 2012 – Higher Administrative Court 5 S 27.11 – Charité.

³⁹ See for example *Löwer* (footnote 18), marginal number 29 with further references

⁴⁰ *Lindner*, NordÖR 2009, 329; Bremen Higher Administrative Court dated December 11, 2012 – 1 A 180/10; Federal Administrative Court on January 20, 2014 – 3 B 29.13.

⁴¹ *Löwer* (footnote 18), marginal number 28 m with further references

impose sanctions, e.g. in Austria, responsibilities under administrative law take over again which transfer the problem back to the institution to which the "culprit" belongs.

A factor which speaks in favour of centrality is that the investigating central body has no self-interest whatsoever in the problem which is presented, while the clarification of the matter at the institute which is affected by the infringement of the rules of good scientific practice is susceptible to the institute wanting to sweep it under the carpet in order not to jeopardise its own reputation. However, this objection, which is often put forward, becomes less convincing when it is clear – and there are no doubts about this in the light of experience – that no organisation is completely protected against misconduct and that the "reputational damage" – which is the reason for any "clarification" which attempts to conceal matters – is all the greater if the institution does not tackle the problem vigorously enough. Apart from the above, the question of which solution should be given preference can only be answered after an examination of the organisation of the respective scientific system.

A solution through a central body would have to deal with a very large scientific system in Germany, i.e. a system which carries out science in a wide range of organisational forms. A central investigative institution would not have at its disposal all knowledge of the local conditions, it does not know the rules of the internal governance structures, knows nothing about the social structures within the institution etc. - details which might have to be "discovered" after a good deal of time and effort. When it comes to mediation in a conflict situation in particular, if proposed solutions for the future have to be made for better cooperation, it is frequently more effective to act on the basis of knowledge of the local circumstances. At the level of sanctions it has to be borne in mind that – at least in Germany – reprimands are reserved for the scientific institution. For any sanctions relating to plagiarism or deception in qualification documents, this is self-evident: the rules for determining jurisdiction under administrative law considers the authority which issued the repealing administrative act to be responsible for the *actus contrarius*.⁴² However, the competent authority must investigate the circumstances itself, so that it cannot be legally bound by the findings of a different body because it bears the obligation to perform investigations itself *ex officio*.⁴³ It is indeed able to adopt the result of an investigation as its own, but does not have to do so. Especially when the credibility of individuals is important, the assumption of the results of third-party evidence is frequently even "second best".

In principle, the German solution is decentralised, although on the basis of the White Paper already cited it has the specific feature of the "Research Ombudsman" as a central body, a collegiate body consisting of three members which is personally legitimised by the DFG and financed by it as an externally funded project, but which in all other respects is completely independent of the DFG. Every scientist in Germany can appeal to this body. Such a body is also required in a system which is decentralised in principle. *Firstly*, this becomes apparent when two parties which belong to different institutions are in dispute with one another, the consequence of which is generally that both sides at best place their trust in the ombudsman of their own institution, but certainly not in the ombudsman of the other institution (which both parties consider to be biased). Mediation by an outside third party therefore has considerable advantages in this respect. However, if sanctions are involved, this ombudsman also has to transfer the matter to the body which is responsible under administrative law. A *second* situation which includes the indispensability of a neutral central body applies if a petitioner does not trust the ombudsman structures of its own institution; especially in the case of smaller institutions, the idea may be substantiated that ombudsmen do not maintain a sufficient distance from individuals who have a strong sphere of influence at the scientific institution.

2. If the question needs to be answered about what preventive measures can be undertaken in order to avoid scientific misconduct, there are a few simple answers which suggest themselves (a). A more complicated question is the one of the causes of such malpractice. If these were

⁴² Especially in connection with the retraction of doctoral degrees, see for example *Gärditz*, Expert opinion on the procedure in the matter concerning Professor Dr. Annette Schavan, 2013; *von Coelln*, *Research and Teaching* 4/2011, 278 f.

⁴³ See Section 24 Administrative Procedures Act; an authority may resort to "findings, investigative results and evidence from other authorities"; even so, it must form its own picture of the meaningfulness of the evidence used with respect to the decision to be taken on its own responsibility, see *Kallerhoff*, in: *Stelkens/Bonk/Sachs*, *Administrative Procedures Act*, 8th edition 2014, Section 24, marginal number 23.

known, prevention would be made significantly easier (b).

a) The simple answers include the fact that the rules of good scientific practice have to be taught to early career researchers. This involves not so much the basic rules of the prohibition on plagiarism and forgery, which should always be self-evident, but which perhaps according to some forms of tolerance practised at schools is becoming increasingly doubtful in conjunction with the opportunities offered by the net. At any rate, the spelt out inherent laws of science have to be taught.

In the last annual report of the Research Ombudsman⁴⁴, the committee pointed out that it is the task of university teachers responsible for the next generation of scientists to take over this teaching task themselves because only then does it become sufficiently clear that it involves everything that all scientists necessarily have in common. Many a question can be better explained as a practical case that has occurred in the working group rather than being represented theoretically. For example, if it is necessary to decide what procedure should be adopted if an "outlier result" is obtained in a series of tests which disrupts the beautiful harmony of previous data, the possible means of reaction have to be discussed together.

The best form of instruction is the convincing practical methods adopted when dealing with the rules by the mentors of the up-and-coming generation; the application of the rules has to be *practised* by example. Furthermore, the establishment and enforcement of the rules – this is also a parallel to the compliance structures⁴⁵ – is a management task.

Prevention also means that the institutions concerned confront cases of misconduct in transparent procedures with the will to investigate such cases and respond to them if necessary with a convincing sanction. One can be reasonably certain that the removal of academic titles in cases of plagiarism, which have received wide publicity (which was not always the situation in the less prominent cases in the past), significantly reduces – at least for a certain time – the attempts to "cheat one's way through with the intellectual property of others. Anyone who teaches criminal law knows that a convincing concept of punishment has a general preventive effect.

One important pillar in the area of prevention is ultimately the division of the complex of the "rules of good scientific practice/detection and imposition of sanctions on misconduct" in the phase of consultative ombudsmanship which tackles the developing conflict in good time so that a solution for a failed communication relationship between two scientists who are standing up for their supposed or even respectable interests can be found before misconduct by one party occurs. Most ordinances take this into account by setting up an ombudsman who can be called upon in confidence by one party, who contacts the other party after submitting an undertaking to maintain confidentiality and who searches for a solution to the dispute which is appropriate in the field of science. It arises specifically from the knowledge of such conflict issues which new rules are introduced⁴⁶ because conflicts are mostly capable of being broken down into separate types.

For example: the Research Ombudsman emphasises in his rulings that team research carries within it to a certain extent traits of company law, so that each scientist is obliged to promote joint research and subsequent publication. Especially in the publication phase, however, there are occasionally profound disruptions to communication – for whatever reason – in respect of which a co-author is proving obstructive. However, an article may only be published if all of the authors approve it. The arbitrary veto of a co-author therefore also prevents publication, on which it is possible that other co-authors may be totally reliant for reasons of their scientific qualification; in any event, the obstruction would prevent the new research being published. At the same time this attitude contradicts the agreement made within the team to work together on a specific project.

⁴⁴ Annual report of the Research Ombudsman 2013: http://www.ombudsman-fuer-die-wissenschaft.de/fileadmin/Ombudsman/Dokumente/Downloads/Berichte/Jahresbericht_2013_Ombudsman.pdf.

⁴⁵ Rules of good scientific practice as compliance at universities and research institutes, in: Compliance-Management an Hochschulen – mehr als Regelkonformität ("Compliance management at universities – more than regulatory conformity"), conference proceedings. Scientific symposium, FOM University, Munich 2012.

⁴⁶ Supplemented and updated DFG White Paper "Ensuring Good Scientific Practice" (http://www.dfg.de/foerderung/grundlagen_rahmenbedingungen/gwp/).

If such a conflict is brought before an ombudsperson, this body will recommend as a last resort the author who is willing to cooperate – and after all moderation options have been exhausted – to publish the article without the obstructive author, but to refer to the fact in an asterisk footnote or any other place that is available that the article has not been approved by the author and to make it clear that an ombudsman has recommended this approach. In most cases this possibility results in the effects which a *fleet in being* displays: the fact that it is possible to fire (in this way) then suggests the conclusion of a peaceful arrangement between the parties involved. The effectiveness of such an arrangement can be increased if the parties agree to accept it as an arbitration ruling on the basis of an arbitration agreement. In this way the ruling of the ombudsman has a greater chance of being enforced without conflict.

b) A much more difficult question to answer is that of the reasons for such moral failure. One always hopes that if one knew the motives and driving forces behind misconduct, one would be able to design the structures in such a way that the motivation to act improperly would be smaller. Such questions have long been the subject matter of research projects.⁴⁷

Here it has to be said in the first step that the intrinsic motivation of curiosity and ambition is accompanied. Although *curiosity* and *ambition* are somehow combatants, the pleasure derived from their role as journeymen is rather limited.⁴⁸ The German word "Neugier" ("curiosity") includes the word "Gier" ("greed"), which is certainly not a virtue, and Ehrgeiz ("ambition") expresses the willingness to be stingy ("geizig") with one's honour ("Ehre") for the sake of the goals being pursued. A potentially risky situation as far as his or her character goes, and one which each individual scientist has to master from the moral aspects, is unavoidably created at any rate in the scientific process.

If one asks in a second step whether the creation of the system leads to false incentives which promote the development of improper behaviour, a huge field of speculation opens up. It should be clear at any rate that the fundamental condition of the pursuit of research, for example competition in the struggle to discover the new, is inherent to this and could not be modified at all. It should also be clear that whatever form the framework conditions for moral misconduct take, they are not the cause of the errors, which are due to the morally reprehensible behaviour of the individual. The framework conditions cannot be used as an excuse either. Nevertheless, it is a precept of worldly wisdom to design framework conditions in such a way that they do not involuntarily provide incentives for misconduct.

After all, the scientific system can attempt to keep the pursuit of non-scientific interests as low as possible using science as the vehicle. The Research Ombudsman pointed out in its last annual report,⁴⁹ without intending to generally discredit the work performed there, that in the field of university medicine it is the recruiting practice of German hospitals to very frequently employ scientists who are qualified as a professor as their Chief Physicians, thereby making "science" a qualification tool for such appointments outside the scientific system; the intrinsic motivation of the candidates who are considered for such posts might then no longer be guided not only by their interest in making progress with respect to certain scientific work, but by their interest in the next publication, thereby removing doubts cast on the credibility of the results in the interests of the publication.

3. As far as the imposition of sanctions for misconduct is concerned, it is advisable to distinguish between errors that relate to qualification documents (a) and errors which have to be borne in mind "during operations" (b).

a) As regards forgeries and plagiarism in qualification documents, the scientific system has shown in a number of cases that it certainly responds energetically in the interests of maintaining the integrity of science. This even applies if those involved in the procedure come under

⁴⁷ As can be read, for example, on the website of the German Federal Ministry of Education and Research (BMBF) project "Humiliated Science. Reintegration vs. Stigmatisation of Misconduct" (*Reinhart*, HU Berlin) or in the article by *Crocker/Cooper*, *Nature* 479 (2011), 151 ff.

⁴⁸ This is also shown in the novel referred to in the aforementioned footnote 9 "The Lost Manuscript" by *Gustav Freytag*.

⁴⁹ Annual Report of the Research Ombudsman 2013: http://www.ombudsman-fuer-die-wissenschaft.de/fileadmin/Ombudsman/Dokumente/Downloads/Berichte/Jahresbericht_2013_Ombudsman.pdf

uncalled-for external pressure.⁵⁰ As far as the law is concerned, the doctoral regulations provide the requisite procedural tool which enables the ex officio investigation of the circumstances.⁵¹ If it has been claimed that the above tools need to be supplemented – for example in order to obtain third-party expert reports which confirm the plagiarism – this has to be contradicted on the basis of the jurisdiction rules under administrative law: an authority which has the ability to issue administrative acts with specific contents also has the ability if necessary to recognise their illegality.⁵² Up to now, withdrawal decisions of the faculties before the administrative courts by the banks have proven to be legitimate.⁵³ It may be that in individual borderline cases it is difficult to arrive at a clear conclusion on the question of the imposition of sanctions, but this is nothing atypical; for good reasons, the decision on the withdrawal of an academic title is taken as a collegial decision; the latter gives these decisions a relatively high guarantee of accuracy.

b) For misconduct which is not related to qualification documents, it is not certain to the same degree whether the scientific system can respond appropriately (and whether it always has the will to respond appropriately if scientists "in office and dignity" are involved). It is self-evident that the only appropriate response to manifest misconduct is one based on the legal structure of the employment relationship of which the scientist guilty of misconduct is part. The conceivable forms of response are limited as a result: according to employment law it is possible to respond with a warning or termination of the employment contract – depending on the severity of the misconduct.

After all it has to be borne in mind for all employment relationships that there is a connection between the withdrawal of an academic title and the individual's professional status: if the academic title was acquired by deception, this justifies termination of the employment contract because the academic qualification in the sector of the scientific institution will normally have been a precondition for recruiting the individual. The same applies to civil service law: an appointment brought about by fraudulent deception has to be taken back (Section 12 paragraph 1 subparagraph 1 BeamtenStG).⁵⁴

If the deception is not carried out in a qualification document, but in other (subsequent) publications or behaviour, an additional sanction – if this is authorised in the doctoral regulations – is consideration of the withdrawal of the doctorate because of unworthiness, as the Federal Administrative Court has recently confirmed.⁵⁵ For tenured scientists, one tool for imposing sanctions that can be considered is the somewhat cumbersome⁵⁶ disciplinary law, since this conclusively describes the options for imposing sanctions on a civil servant.⁵⁷ Although this contains a differentiated regime of legal consequences – from a warning, through a reduction in salary, demotion and dismissal from one's post – it is nevertheless time-consuming and costly. Nevertheless: infringement of the rules of good scientific practice is a disciplinary offence because compliance with the rules is an official duty.

According to the criminal code, "scientific fraud" is not considered to be "fraud" as such.⁵⁸ There remains at best the option of reacting to misconduct in the currency which governs the academic world: with the loss of reputation. The fear of loss of reputation is to a certain extent

⁵⁰ See the documentation of the Dean of the Faculty of Philosophy at the University of Düsseldorf, Professor Dr. Bruno Bleckmann, in the case at the time against the BMin Annette Schavan, Düsseldorf Administrative Court dated March 20, 2014 – 15 K 2271/13, available on the Internet at the address <https://docs.google.com/file/d/0B9F6ub8wD7gqOHVEM3F0MzY4dDA/edit?pli=1>, last retrieved on December 8, 2014.

⁵¹ See the presentation by Gärditz, *WissR* 46 (2013), 3 f.

⁵² See the controversy between Zöllner, *Frankenberg* and *me*, *Research and Teaching* 8/2014, 614 f.

⁵³ See for example the reference in footnote 15 above.

⁵⁴ Fraudulent deception requires that the applicant was aware of the inaccuracy of his or her information (see *Reich*, *BeamtStG*, comments, 2009, Section 12 marginal number 3), which in a specific case may be a precondition which it is difficult to prove.

⁵⁵ Federal Constitutional Court *WissR* 46 (2013), 386; see Gärditz, *WissR* 47 (2014), 119.

⁵⁶ See the references under Löwer, in: Dreier/Ohly (footnote 4), p. 51, 63 f.

⁵⁷ See the case reported in the article in footnote 56 about an extra-disciplinary sanction (removal of the equipment from a university teacher stealing intellectual property from his female student) and the decision of Cologne Administrative Court dated September 19, 2008 declaring this to be inadmissible – 3 L 702/08. In this case the disciplinary statute of limitations had occurred.

⁵⁸ . *Goeckenjan*, *JZ* 2013, 723 ff.; see also *Ottemann* (footnote 4). At best, consideration may be given in exceptional cases to breach of trust or subsidy fraud; see in conjunction with the first major scandal in Germany *Schmidt-Aßmann*, *NVwZ* 1998, 1225, 1228 f. on Criminal Law.

the highest trump for the ombudsman mediating in a dispute, as the parties concerned assume that they are threatened with loss of reputation merely because they have been drawn into ombudsman proceedings as an affected party. However, the loss of reputation only occurs (albeit in addition to any inadmissible indiscretions) if misconduct could be made public by a Misconduct Commission, e.g. by informing the public without the consent of the scientist "convicted" of misconduct, for example by means of a corresponding report in the *Journals* in which the incriminating articles were first published. Whether this is legally possible against the will of the party concerned is not undisputed. Anyone who demands a specific authorisation basis for this⁵⁹ will consider such information to be inadmissible. In my view there are certain arguments in favour of being allowed to publish such information because it relates to science as a necessarily communicative process – one only has to imagine that a falsified article were to remain uncorrected and would therefore mislead further research attempts, i.e. perpetuating the falsification process in a harmful way – which only protects the honest discourse surrounding the truth.⁶⁰ Anyone who enters into such an open discourse also has to live with its consequences. Incidentally, "retractions" with the consent of those affected are by no means rare; they frequently relate, however, to errors, which in the world of science are always forgivable. It will often be the case that publications about purported misconduct without the consent of the party affected will result in legal disputes between the parties affected and the Misconduct Commission, because the latter is fighting for its reputation. Careful work on the part of such commissions reduces this risk, so that there is an effective incentive to take care. This is also required in the interests of the matter at hand.

⁵⁹ Berlin-Brandenburg Higher Administrative Court NVwZ 2012, 1491, 1493; also *Schiffers* (footnote 4), p. 131 f.

⁶⁰ Tendency for the correction informing the public *Gärditz* (footnote 51), p. 33 and *Schulze-Fielitz*, in: *Löwer/Gärditz* (footnote 4), p. 46.