RULES TO ENSURE GOOD SCIENTIFIC PRACTICE

Preliminary note

*Scientific honesty and compliance with the principles of good scientific practice are indispensable prerequisites of all scientific work that aims to gain knowledge and is to be respected by the public. Violations of the principles of good scientific practice are possible in many ways, ranging from lack of care in the application of scientific methods or in the documentation of data to serious scientific misconduct through deliberate falsification and fraud. In any case, such violations are incompatible with the nature of science itself as a methodical-systematic research process aimed at verifiable knowledge gain. Moreover, they destroy the public's trust in the reliability of scientific results as well as the trust of scientists * among themselves, which is an important prerequisite of scientific work in the division of labor that defines science today.*

Even if dishonesty in science cannot be completely prevented by rules and regulations, appropriate precautions can ensure that all those involved in the research process are regularly made aware of the standards of good scientific practice. This makes a significant contribution to limiting scientific misconduct.

The basic rules of good scientific practice listed here take up the implementation of the relevant recommendations of the German Research Foundation of January 1998 by the Max Planck Society in its version of November 24, 2000 and adapt them to the research conditions of the Parmenides Foundation. They are binding for all those involved in the research work of the Parmenides Foundation. For further information on the problem, explicit reference is made to the presentation "Responsible Conduct in Science" prepared by a working group of the Scientific Council of the Max Planck Society, which was noted with approval by the Senate of the Max Planck Society at its meeting on November 24, 2000. This text analyzes in detail the conditions and concrete threats to good and responsible practice in science. At the same time, it represents an invitation to participate in the further development of relevant recommendations. _____

** Designations such as scientist, author, contact person, etc. are used in this text as function designations to be understood as always encompassing all genders.*

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1. General principles of scientific work

As general principles of scientific work in the Parmenides Foundation the following regulations are to be considered in particular:

a) Rules for everyday scientific practice

- Close attention to discipline-specific rules for obtaining and selecting data,
- reliable backup and storage of primary data; clear and traceable documentation of all important results,
- Rule of systematic skepticism: Openness to doubt even about one's own results or the results of one's own group,
- Awareness of tacit axiomatic assumptions; control of wishful thinking motivated by self-interest or even morality; systematic attention to possible misinterpretations as a consequence of the methodologically limited comprehensibility of the object of research (overgeneralization),
- Originality and quality as evaluation standards always take precedence over quantity as performance and evaluation criteria, particularly for promotions, hiring, appointments, and resource allocations.

b) Rules of collegiality and cooperation

- Not obstructing the scientific work of competitors, for example, by delaying reviews or sharing scientific results obtained in confidence,
- Promoting the scientific qualification of young researchers,
- Openness to criticism and doubts from colleagues and employees,
- Careful, disinterested, and unbiased peer review; waiver for bias.

c) Rules for the publication of results

- publication in principle of results obtained with public funds (principle of publicity of basic research),
- Publication of even falsified hypotheses in an appropriate manner and admission of errors (principle of an open-minded scientific culture),
- strict honesty in recognizing and giving due consideration to the contributions of predecessors, competitors and employees (principle of recognition).

2. Cooperation and leadership responsibility in working groups

The management of the Parmenides Center for the Study of Thinking is responsible for an appropriate organization that ensures that, depending on the size of the individual scientific working units, the tasks of management, supervision, conflict regulation and quality assurance are clearly assigned and that they can actually be carried out.

Cooperation in scientific working groups must be such that the results achieved in a specialized division of labor can be mutually communicated, criticized and integrated into a common body of knowledge, irrespective of hierarchical considerations. This is also of particular importance for the training of young scientists in the group to become independent. In larger groups, a regulated form of organization is recommended, e.g.

through regular colloquia. The mutual review of work results must be ensured, also by making one's own results accessible. The primary test of a scientific result is its reproducibility. The more surprising, but also the more desirable a result is, the more important is - as far as possible with reasonable effort - the independent repetition of the way to the result in the research group before it is passed on to the outside.

Leadership functions in working groups can only be performed responsibly if all the relevant circumstances are known; leading a working group requires expertise, presence and an overview. Where this is no longer sufficiently given due to the size of the group or for other reasons, management tasks must be delegated in such a way that the respective management span remains manageable.

3. Supervision of young scientists

Special attention must be paid to the training and promotion of young scientists and their guidance in observing the principles of good scientific practice. The special importance of good cooperation with the universities is explicitly pointed out in this context.

In the departments or working groups at the institutes and research facilities of the Parmenides Foundation, care must be taken to ensure that appropriate supervision is provided for young scientists, especially for diploma and doctoral students as well as younger postdocs and habilitation students, and that a primary contact person exists. For the supervision of doctoral students, it is recommended to provide for supervision by another experienced scientist in addition to the primary reference person. Appropriate involvement of the university at which the doctoral degree is awarded must be ensured (doctoral supervision group/thesis committee).

4. Backup and retention of primary data

Primary data as the basis for publications must be stored on durable and secure carriers in the institutes or research facilities where they originated for at least ten years, if this is possible. Access to the data must be guaranteed for authorized interested parties.

Scientific investigations, experiments and numerical calculations can only be reproduced or reconstructed if all important steps can be traced. Therefore, a sufficiently complete protocol and the storage of the protocols for at least ten years is necessary, if only to be able to fall back on the records if published results are doubted by others.

The further details and responsibilities - in particular the requirements for proper logging as well as the access rules for the use of data - are to be regulated and defined in writing by the institute management.

5. Scientific publications

Publications are the most important medium for communicating research results to the scientific and general public. In doing so, authors announce results for whose scientific reliability they assume responsibility. Publications that are intended to report on new scientific results must therefore describe the results and the methods used in a complete and comprehensible manner, and must provide complete and correct evidence of their own and others' preliminary work; previously published results should only be repeated to the extent that this appears necessary for an understanding of the context. Findings that support or question the results presented should be reported equally.

If several authors are involved in a research work or in the publication based on it, only those can be named as co-authors who have contributed significantly to the conception of the studies or experiments, to the preparation, analysis and interpretation of the data and to the formulation of the manuscript itself, and who have agreed to its publication. The authors always bear joint responsibility for the content; so-called "honorary authorship" is not permitted. Support from third parties is to be acknowledged in an acknowledgement.

6. Appointment of ombudspersons

A neutral, qualified ombudsperson with personal integrity must be elected by the scientific staff of each institute or research institution of the Parmenides Foundation to advise in cases of conflict in matters of good scientific practice. In particular, the ombudsperson has the task of being available as a confidential contact person and advisor to those involved in cases of suspected violations of the principles of good scientific practice.

Further details on the election and function of ombudspersons are regulated separately by guidelines in the appendix. The regulations for initiating an investigation procedure in the event of suspected scientific misconduct remain unaffected.