

Para 7 in combination with paras 48 and 88 (also para 56): “Knowledge which is solely based on tradition or revelation or authority, without the possible contrast with reason and experience, or which is immune to any falsifiability or intersubjective verification, cannot be considered science” (para 7); “States Parties must also establish protective measures in relation to messages from certain pseudoscience” (para 48); “States Parties should provide for the establishment of effective mechanisms and institutions...to prevent violations of the right” (para 88). If these phrases taken together mean that **pseudoscience**, if it has harmful consequences, is a violation of Art. 15.1.b ICESCR, this should be stated clearly.

Para 7 in combination with para 67: Para 7 states that “Knowledge which is solely based on tradition ... cannot be considered science.” This could be reiterated in para 67 on **traditional knowledge**.

Paras 12–13 (also paras 16): “[T]he right of every person to take part in scientific endeavors” (paras 12–13) The phrase “**scientific endeavors**” can be misread as meaning that people without any scientific expertise have an equal say in science as people with such expertise. A similar potential misunderstanding arises in “ordinary people doing science” (para 16).

Para 17 (also paras 53, 68, 83, 85): The draft General Comment should clarify that the concepts of **intellectual property and copyright** contain a series of rights (for example, the rights of disclosure or of withdrawal) but that only two of these rights are moral rights or human rights in the sense of Art. 15.1.c ICESCR. These two human rights are the right to claim authorship of the work (also: right of authorship, right of paternity, right of attribution) and the right to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honor or reputation (also: right of respect, right of integrity). Both are implicitly protected by Art. 15.1.c ICESCR; in addition, the right of integrity is protected by Art. 17 ICCPR (right to reputation).

Para 18 (also paras 25, 28, 30, 50, 53, 59, 85, 86): The draft General Comment should clarify whether the phrase “**the freedom indispensable for scientific research**” can be summarized as “freedom of scientific research” and the latter in its turn as “freedom of research” or “scientific freedom.” I think that the phrase “freedom of scientific research” – used in paras 18, 25, 28, 30 – is indisputable in contrast to the other two phrases. The phrase “freedom of research” – used in paras 18, 53, and 85 – is problematic because not all research is scientific. The phrase “scientific freedom” – used in paras 50, 59, and 86 – can be construed as a concept larger than “freedom of scientific research” because science encompasses more than research activity alone.

Para 19 (also paras 26, 32): “The development of science is also strongly linked with the enjoyment of the **right to education**.” The draft General Comment should give an articulated view of the link between Art. 13 ICESCR (education) and Art. 15.1.b ICESCR (enjoy benefits of

science), or at least refer in detail to General Comment 13 on the Right to Education. The draft General Comment could (and perhaps should) also clarify a passage in this General Comment 13: “The Committee wishes to emphasize, however, that staff and students throughout the education sector are entitled to academic freedom.” This statement is surprising because it is already a matter of controversy whether students in higher education enjoy the same degree of academic freedom as lecturers and researchers (the relevant UNESCO Recommendation of 1997 does not mention academic freedom for students), and it is even more questionable to allocate academic freedom to secondary-school teachers, let alone their students, and even far more so, to primary-school teachers and their pupils.

Para 39 (also para 46): “Special temporary measures, such as the establishment of quotas reserved for women in scientific education, might be necessary ...” A specification of “temporary” may be useful.

Para 50: “[C]reating an enabling and participatory environment for the conservation, development and diffusion of science and technology, which implies inter alia academic and scientific freedom [...]” I gave remarks on scientific freedom under para 18. As to academic freedom, I think that the draft General Comment should clarify that “freedom of scientific research” is not the same as “academic freedom.” Freedom of scientific research is *broader* than academic freedom because science can be carried out outside higher education institutions. At the same time, and in contrast to this, freedom of scientific research is also *narrower* than academic freedom because academic freedom does not only encompass freedom of scientific research but also freedom of teaching implied in the right to education (Art. 13 ICESCR) and freedom of expression (Art. 19 ICCPR).

Para 50 in combination with para 75: “[C]reating an enabling ... environment for ... science and technology, which implies inter alia academic and scientific freedom, including freedoms of opinion and expression, to seek, receive and impart information [...]” (para 50) and “This new industrial revolution...might change...human beings themselves, through genetic engineering or the incorporation in human bodies of technological devices that transform some biological functions” (para 75). In line with para 75, I think that impermissible interference with intellectual freedom is increasingly likely, making its protection more urgent than ever. The draft General Comment should therefore clarify the relationship between science and intellectual freedom. Intellectual freedom is broader than “freedom of scientific research” and, more importantly, it is its precondition. Intellectual freedom is implied in Art. 15 ICESCR but expressed clearly in Art. 18.1–18.2 ICCPR (freedom of thought) and Art. 19.1 ICCPR (the right to hold opinions without interference). As such, it is absolute and non-derogable. I believe that we are at the brink of a revolutionary reaffirmation of the absolute character of Art. 18.1–18.2–19.1 ICCPR. In this light, Art. 7 ICCPR (The right not to be subjected without one’s free consent to medical or scientific experimentation) also gains renewed importance.

Para 67: “Local, traditional and indigenous knowledge, especially regarding nature, species (flora/fauna) and their properties, has an important role to play in the scientific global dialogue and development.” In the sequence “regarding nature, species” I would add “culture.” The disciplines of anthropology and history are based on it.