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"Fostering a Love of Truth"

Conceptions of Science in UNESCO's Early Years

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4.1 INTRODUCTION

The right to enjoy the benefits of scientific progress and its applications was first included (inter alia) in Article 27 of the Universal Declaration of Human Rights in 1948, and later in Article 15(1)(b) of the International Covenant on Economic, Social and Cultural Rights (ICESCR) in 1966. The Right to Science thus has a long history in the UN family and in UNESCO in particular. Beneath the ideas about the right to participate in science and to access the body of knowledge produced via science, stands the concept of science itself. The UNESCO General Conference at its thirty-ninth session in 2017, adopted the Recommendation on Science and Scientific Researchers (which replaced the 1974 Recommendation on the Status of Scientific Researchers) and in doing so it stated, among other things, that:

(1) the word "science" signifies the enterprise whereby humankind, acting individually or in small or large groups, makes an organized attempt, by means of the objective study of observed phenomena and its validation through sharing of findings and data and through peer review, to discover and master the chain of causalities, relations, or interactions; brings together in a coordinated form subsystems of knowledge by means of systematic reflection and conceptualization; and thereby furnishes itself with the opportunity of using, to its own advantage, understanding of the processes and phenomena occurring in nature and society;
(2) the term "the sciences" signifies a complex of knowledge, fact, and hypothesis, in which the theoretical element is capable of being validated in the short or long term, and to that extent includes the sciences concerned with social facts and phenomena.[1]

* I would like to take the opportunity to sincerely thank Assistant Professor Sarah Awad (Alborg University), for her substantial comments on and willingness to discuss earlier drafts of this chapter

[1] Recommendation on Science and Scientific Researchers, November 13, 2017, UNESCO. Available at: http://portal.unesco.org/en/ev.php-URL_ID=49455&URL_DO=DO_TOPIC&URL_SECTION=201.html. When I in the following use the term science, it is in a broader understanding of science as both "the enterprise" and the disciplines.

https://doi.org/10.1017/9781108776301.006 Published online by Cambridge University Press

While these definitions may seem commonplace for many present-day readers, they are in fact the result of substantial debates and conceptual negotiations, which have been ongoing throughout the history of UNESCO. This chapter takes a closer look at what the concept of science meant in the early years and how it influenced the initiatives carried out by the Natural Science Section of UNESCO.

The S(cience) in UNESCO was added very late in the process of the organization's founding. In the original plans for its creation, UNESCO was to be an organization for education and culture only. That it became UNESCO and not UNECO was due to several factors, but especially the persistent pressure exhorted by Joseph Needham (1900–1995), who was to become the first head of the Natural Science Sector in UNESCO, and the first Director-General Julian Huxley. Their visions of science strongly influenced the conceptualization and direction of science in UNESCO.[2] On a structural level, another current undoubtedly played a crucial role in getting the "S" in UNESCO, and that was the unset of the Nuclear Age. If science still retained any enlightenment innocence in the eyes of the global public before the end of the second world war, it was hard pressed by the invention and use of the nuclear bombs dropped over Hiroshima and Nagasaki in 1945. The harnessing and destructive use of atomic energy left the broader public with an attitude characterized by both hope and fear.[3] These sentiments were well captured by the UK Minister of Education, Ellen Wilkinson, at the Conference for the establishment of UNESCO in 1945, as she said:

> In these days, when we are all wondering, perhaps apprehensively, what the scientists will do to us next, it is important that they should be linked closely with the humanities and should feel that they have a responsibility to mankind for the result of their labours. I do not believe any scientists will have survived the world catastrophe, who will still say that they are utterly uninterested in the social implications of their discoveries.[4]

As I will return to later, this conflicted public opinion towards science after 1945 was seen as a real and important problem by UNESCO's science section in the early years. In what follows, I focus first on the conceptualization of science in the formative years from 1945–1965 in UNESCO. I trace the different ideas of science as they were articulated within UNESCO to illustrate what the organization itself understood by the concept of science and its relationship to concepts of modernity, progress, and development. This will shed light on the significant role that UNESCO was to continuously play in international science cooperation from that point on. Taking up the legacy from the League of Nations, UNESCO became, and remains, a central

[2] Petitjean (2006). Petitjean, Zharov, Glaser, Richardson, de Padirac, and Archibald (2006), pp. 43–47.

[3] See Weart (2012). For the American context see: Boyer (1985/1994). For the British context: Grant Matthew (2009).

[4] UK Minister of Education, Ellen Wilkinson: Conference for the establishment of the United Nations Educational, Scientific and Cultural Organisation, Held at the Institute of Civil Engineers, London, from the 1st to the 16th November, 1945, ECO/CONF./29, p. 24. UNESCO Archive, Paris.

place for science and science policy discussions. An exploration of how views on science developed within UNESCO may therefore offer useful background to the historical routes that the development and establishment of the Right to Science took.

4.2 HISTORIES OF SCIENCE IN UNESCO (HISTORIOGRAPHY)

Throughout the last three decades, the history of the way in which UNESCO conceptualized science has received much needed attention. This is not least due to the persistent and admirable work of Patrick Petijean. Today Petijean stands as one of the central figures within the historiography of UNESCO and science, and was one of the central editors behind the celebratory anthology *Sixty Years of Science at UNESCO 1945–2005*.[5] This anthology still stands as one of the central works on science in UNESCO. Bringing in both historians and former UNESCO science employees, the book gives a detailed and vivid account of the historical development of the science section in UNESCO. Despite its celebratory starting point, the anthology is not merely a narrative of triumph. It acknowledges the hardship, the failures, and the frustrations as well as the success and fruitful cooperations that were fostered within the UNESCO science section.

The historical role of UNESCO in international science cooperation has generally been highlighted, not least by Elzinga (1996), Krieger (2006) and to some extent Finnemore (1993). While interpretations of the effect of the Cold War divide the historical accounts of UNESCO's role in the realm of international science cooperation, there is a general consensus that the natural science section did do important work by bringing together and funding different international science communities. The disagreements occur along the more traditional lines of antagonism between the realist and idealist approaches to international politics and the role of international organizations within the Cold war setting.[6] Some argue that UNESCO and its science initiatives willingly or unwillingly became part of the "western" (that is, US-dictated) battle for the hearts and minds of people during the Cold War (Krieger 2006). Others, like Finnemore, ascribe more autonomy and (moral) power to UNESCO (Finnemore 1993), especially in relation to international norm setting and knowledge accumulation. Since this chapter deals with the conceptualization of science in UNESCO and less with the specific initiatives and their impact, I will not venture further into this discussion here.[7] The literature on UNESCO's

[5] Petitjean et al. (2006).

[6] In the realist approach to international politics, the states are traditionally seen as the central actors in an international political system in which there are no transnational authority. The states act (only) based on rational self-interest and in pursuit of power (self-preservation). The liberalist approach, on the other hand, rejects the idea that power politics is the only possible outcome of international relations and hence gives a significantly bigger role for international organizations to play in the international system, See e.g. Baylis, Smith and Owens (2017).

[7] For a more detailed discussion, see Christensen (2016). For the broader discussion on science and the cold war, see e.g. Doel (1997).

conception of science is rather limited. There seems to be a general agreement that it was strongly influenced, during the period covered here, by what Sluga describes as an "Enlightenment-coddled trust in the universal power of knowledge and education."[8] And as Elzinga has argued, it functioned "within an overall framework of western bias."[9] We may however come even closer to understanding the concept by looking more closely at actual usages of the concept within UNESCO.

4.3 APPROACH

My approach will be that of conceptual history which rests on several important assumptions that should be stated upfront. The first assumption is that our understanding of the present is created in the continual interactions between our past experiences and our expectations of the future. Furthermore, it assumes that this fundamental relationship between past, present, and future manifests itself in the concepts through which we try to make sense of our world. If we are correct in assuming this, then the conceptual architecture of our source material lends itself as prism, giving insight into pasts, presents, and futures past. In other words, the concepts are made up of spaces of experience and horizons of expectation.[10] Thus, through the analysis of concepts we gain an understanding of how historical agents understood their past, what they found relevant in their present, and how they imagined their future. The concepts function as both indicators of past ideas and as factors affecting contemporary events, pointing towards a horizon of expectation.

In this study, the conceptualization of science has been tracked from 1945 to 1965 in documents produced by and around the Natural Science Section in UNESCO.[11] In order to analyze and interpret the various concepts of science in these documents special attention has been paid to concurrent concepts and counter-concepts, which is to say concepts that, through their oppositional character, codefine the concept of science (such as the concepts of magic and religion). Through this conceptual mapping, the semantic field of the concept of science in UNESCO 1945–1965 emerges, which in a condensed and simplified form could be presented as in Figure 4.1 below:

This initial mapping of the semantic network of the concept of science in UNESCO forms a starting point for the following sections. These will elaborate on the different meanings attached to the concept and the ways in which it has

[8] Sluga (2010), p. 397.
[9] Elzinga (1996), p. 166.
[10] Koselleck (2004).
[11] The search has been conducted in the UNESCO online archive Unesdoc (https://unesdoc.unesco.org/) using the search terms "Science*," "Scientific*," "Natural Science*." The extensive amount of documents yielded by this search was surveyed and exemplary documents selected for analysis. These documents have been supplemented with documents gathered from research visits to the UNESCO Archive in Paris. There were several collaborations between The Section of Natural Science and other UNESCO departments, and these have been included although they may not have originated from the Science section itself.

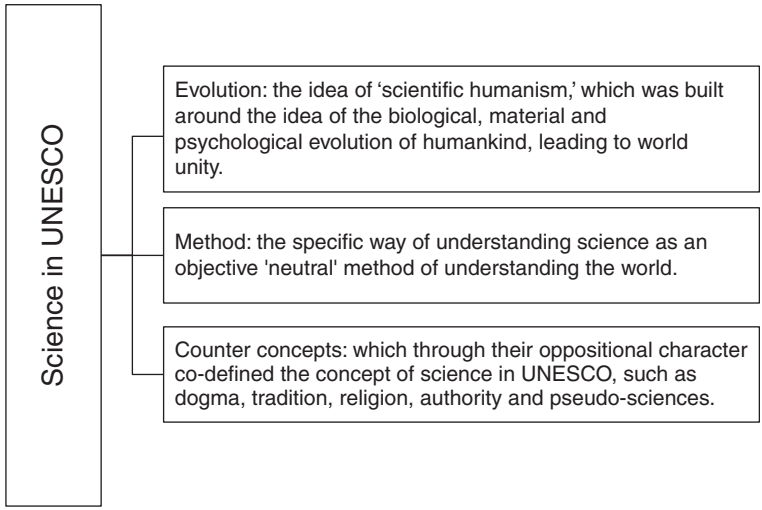

FIGURE 4.1 Semantic field of the concept of science in UNESCO 1945–1965

shaped how science was understood within the organization, and how it has been communicated to the wider public through UNESCO's Natural Science Section.

4.4 SCIENCE, EVOLUTION, AND WORLD UNITY

On the threshold of the nuclear age, public opinion towards science in general, and natural science in particular, was ambivalent. Fear of global destruction and hope of utopian futures were mingled together in unclear discourses of modernity and progress, in which science played a crucial but also ambiguous role. In the view of Julian Huxley (the first Director General of UNESCO) and Joseph Needham (the first head for the Natural Science Section) science, however, had a completely different status. For them, science was an ideologically neutral prerequisite of progress for the benefit of humankind.[12] This was manifested not least in Huxley's idea of "scientific humanism," which was constituted around a notion of (the) biological, material, and psychological evolution of humankind, leading to world unity:

> the unifying of traditions in a single common pool of experience, awareness, and purpose is the necessary prerequisite for further major progress in human evolution. Accordingly, . . . unification in the things of the mind is not only . . . necessary but can pave the way for other types of unification. Thus in the past the great religions unified the thoughts and attitudes of large regions of the earth's surface; and in recent times science, both directly through its ideas and indirectly through its

[12] Elzinga (1996), p. 166.

https://doi.org/10.1017/9781108776301.006 Published online by Cambridge University Press

> applications in shrinking the globe, has been a powerful factor in directing men's thoughts to the possibilities of, and the need for, full world unity.[13]

Huxley's scientific humanism was in all relevant aspects a scientific evolutionism. As Elzinga has also noted, his conception of science and human evolution was ripe with ideas about progress and cultural stratification. UNESCO should seek to lift up the culturally "backward" countries and races, Huxley argued,[14] and this should be done not least through the distribution of science and education. He saw in science the promise for social development and progress of different nations, rather than the fear of the consequences of scientific developments in relation to wars and destruction. On this last subject Huxley was ad idem with Needham. From the onset in 1945, the science section of UNESCO had a strong focus on the distribution of scientific knowledge from the Western to the Third World countries.

The third-world focus in UNESCO's science efforts in the post-war years was due in large part to the personal commitment of Needham. Needham had a background, like Huxley, in the UK-based "Social Relations of Science Movement" (SRSM). Needham opposed the scientific Eurocentrism that he saw in Western intellectual circles. His focus was on the distribution of advanced scientific knowledge and applied sciences to third world countries. This ambition manifested itself in the establishment of the Field Science Cooperation Offices in Asia, Africa, and Latin America. These offices were to become important sites for later efforts to promote science policy implementation in the Third-World member states. Science was the key (along with basic, and particularly science-focused, education) to entering modernity and lifting the living standard of humankind. What was needed was the free flow of ideas (and intellectuals) on a global scale. Within this scientific ethos, the fear and reluctance among the broader public towards science could only be seen as irrational, if not childish. Pierre Auger, the next head of the Natural Science Section after Needham, put it starkly:

> Again and again we have heard people criticize the advances of science, labelling their effects dangerous, destructive and baneful. … They want to turn back the clock, to return to the Gods they lament, but there is no longer any question of doing so, and no answer is called for; we are caught up in an automatic process, a natural process which we men are powerless to arrest.[15]

Belief in a scientific evolutionism was thus very strong and the ideas of an inevitable (scientific) process seem central to the understanding of science within UNESCO in the early years.

However, both Needham's idea of a grand international science cooperation and Huxley's vision of UNESCO as Mannheim's "free floating intellectuals" were

[13] Huxley (1947), p. 17.
[14] Elzinga (1996), p. 172.
[15] Auger (1950), p. 108.

eventually stifled by the onset of the Cold War.[16] As the Cold War accelerated, a tight web of secrecy was spun around so-called "sensitive information," especially the nuclear programs, and the desire for an international "free flow of ideas" was partly subdued under the weight of national security interests. However, these factors – important as they were – did not stop ambitions to organize international science cooperation and to support scientific communities through such international cooperation. That said, the tense political situation may have still influenced how science was conceptualized and communicated by UNESCO. This could be seen in their efforts to highlight the "neutral," objective nature of science, which was particularly emphasized through a specific way of understanding the scientific method. This brings us to the second theme in the semantic field of the conceptualization of science in UNESCO, that of scientific method and objectivity.

4.5 "ONE CANNOT TRIFLE WITH NATURE": SCIENCE AND OBJECTIVITY – METHOD AND WORLDVIEW

Objectivity and science emerge as co-occurring concepts in this period, to the extent that we may be allowed to conclude that they were in fact seen as largely defining each other. Comtean positivism was still untouched by deconstruction, social constructivism, or linguistic turns, and objective truth was therefore also a relatively unproblematic and potent idea.[17] In the preamble to UNESCO's constitution, the member states thus verified that:

> For these reasons, the States Parties to this Constitution, *believing in full and equal opportunities for education for all, in the unrestricted pursuit of objective truth, and in the free exchange of ideas and knowledge*, are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives.[18]

In their conceptual architecture, tight lines linking the concepts of objectivity, science, and method were drawn. The scientific method was seen as the foundation of objective knowledge and as the driving force in the progress experienced by modern society and in the peace and solidarity of humankind. As in Auguste Comte's understanding of proper science, the core of the scientific method had

[16] Karl Manheim (1893–1947) had in the early-twentieth century proposed the idea that the intellectuals unlike other groups in modern society could (and should) form a relatively classless stratum, which would be able to function as a dynamic mediator between left and right wings of the European political spectrum. See e.g. Heeren (1971).

[17] The term Comtean positivism refers to the epistemological principles proposed by August Comte (1798–1857), which sets outs the methods of the classical physics experiment as the goal for all types of science including the human and social sciences.

[18] Emphasis added. UNESCO Constitution available at: http://portal.unesco.org/en/ev.php-URL_ID=15244&URL_DO=DO_TOPIC&URL_SECTION=201.html.

the experimental method as its ideal. Science, one of the UNESCO representatives stated: "requires verification by experiment – the experiment is the final arbiter. No quantity of words can be used successfully to camouflage a disproven idea or belief."[19] It was due to the scientific method that scientists had now "tamed the atom" and a strong belief prevailed among the scientific community in and around UNESCO that:

> The accelerating pace of man's progress in the natural sciences is to a great extent brought about by the power of the scientific method. A method that was developed over the centuries and followed by more and more men, beginning with Galileo in the 16th century . . . Always, the scientist and technician strives for objectivity and honesty – prejudice and falsification have been found to be disastrous. One cannot trifle with nature.[20]

It is thus safe to say that the epistemological grounds beneath the concept of science were strongly influenced by a Comtean-inspired positivism and scientific rationalism. To Needham, Auger, and their staff, the Natural Science Section was taking up a proud heritage, not only from an epistemological point of view, but also from the point of view of international scientific cooperation. Here UNESCO (in its own narrative) came to represent the apex of a development begun by European intellectuals in the seventeenth century, manifested in the astronomers' conferences in the early-nineteenth century, institutionalized in the League of Nations and now, in the mid-twentieth century, continued in an international "brotherhood" spearheaded by UNESCO. The prerequisite of this brotherhood was freedom, as Bart Bok mentioned, and here science and the newly established Universal Declaration of Human Rights joined forces: "As long as science is free, scientists are almost automatically joined in a world brotherhood and it is fervently hoped that the scientists of the world will realise that in the Universal Declaration of Human Rights lies the promise of a guarantee for their cherished freedoms."[21] Apart from being an evolutionary process, a method, and an international brotherhood, science was also conceived of as a worldview in a broader sense.[22] The function of science was not limited to the actual inventions or methods produced and used. Its function extended into the realm of what is best captured by the German term *bildung*, meaning both creation and education. Science teaching was seen as the key to disseminate this scientific attitude to life:

> Science, and Physics especially, is better fitted than other subjects to develop the ability to distinguish fact from opinion, and to form judgements and base conclusions on the known data. Prejudice, superstition and dogmatic assertion are the

[19] Frank (1947), p. 3.
[20] Ibid.
[21] Bart Bok cited in The UNESCO Courier's article "The Scientist and Human Rights." (1950) III (11), p. 2.
[22] Christensen (2016).

> enemies of progress and vigorous development. The scientific spirit implies belief in a rational universe, and scientific studies should form the basis of an attitude to life.[23]

Science was a way of understanding the world and forming opinions and judgments about different matters. Science was also the primary defense against the enemies of progress and development, and it had to be taught from an early stage in order to form the "right" worldview. The time had passed, or so it was argued in UNESCO circles, where young people could get along in life without a proper understanding of science.[24] In 1954, at the General Conference in Montevideo, resolutions were thus adopted in order to advance science teaching in general and "to stimulate the extension and improvement of science teaching."[25] The values believed to be inherent to the scientific worldview went far beyond the classroom. It constituted a prerequisite for life in the modern world and could assist in producing useful citizens and wise parents.[26] Some even argued that the teaching of science could alter fundamental preferences and: "awaken [the] capacity to observe, describe, and evaluate (discovering, investigating, comparing, classifying) thus fostering a love of truth and intellectual honesty, pleasure in work well done and a liking of order."[27] Science was presented as a way of seeing the world, and a way of distinguishing fact and reality from opinions and prejudgments. Superstitions and dogmatic assertions were therefore positioned as the enemy of science and progress. This brings us to the third theme in the semantic field of the concept of science in UNESCO, that of counter concepts – not what science is, but also what it is not.

4.6 SCIENCE AND "THE ENEMIES OF PROGRESS"

UNESCO's conception of science found its antithesis in concepts such as dogma, tradition, authority, and pseudoscience. Regarding the latter, the pseudosciences, it was clear that the scientific community in and around UNESCO felt a need to distinguish their conception of science, "true science," from other less methodologically sound practices. Huxley had already taken up the subject of "borderline fields" such as "parapsychology," "Hindu yogi body control," and "eugenics" in his 1947 publication.[28] Huxley argued that while science should remain open to the possibility of radical extensions of our knowledge from these borderline fields, UNESCO should disregard or even oppose that which is unscientific:

[23] Boulind (1957), p. 3.
[24] Gillett (1957).
[25] UNESCO Eighth Session, Montevideo 1954, General Conference Resolutions IV.1.2.321 and 1.2.322.
[26] Joseph (1953).
[27] "A Proposed Programme in Science Teaching," UNESCO, WS/104.70, November 5, 1954, Paris, p. 4.
[28] Huxley (1947), p. 37. Regarding Eugenics, Huxley firmly believed it should be brought entirely within the preserve of science, as he believed that scientific eugenics would be a necessity in the not too distant future (ibid., p. 38).

> Such facts may be modified and extended, but not overthrown. Though not dogma, they may, perhaps, properly be described as scientific doctrine. Unesco must see that its activities and ideas are not opposed to this body of established scientific doctrine, just as it must encourage the use of the scientific method wherever it is applicable. Thus it cannot and must not tolerate the blocking of research or the hampering of its application by superstition or theological prejudice. It must disregard or, if necessary, oppose unscientific or anti-scientific movements, such as antivivisectionism, fundamentalism, belief in miracles, crude spiritualism, etc.[29]

What was at stake was the drawing of borders around a broad, "scientific" epistemic community, and this was by no means an easy task. Once again, the scientific method lent itself as a possible demarcation line and became the primary weapon in the fight against pseudo-sciences. In order to oppose these practices effectively, Huxley argued "widespread popular education is required in the facts of science, the significance of the scientific method, and the possibilities of scientific application for increasing human welfare."[30] Almost a decade later, Huxley's views were echoed at the UNESCO conference on the Dissemination of Science in Madrid in 1955. At this point in time, it was particularly the growing popularity of numerology, astrology, hypnotism, and clairvoyance that troubled the scientific community. They lamented the "'average man's' relative or total lack of culture" which made him an easy target for the pseudosciences.[31] It was well known, they argued, that: "the pseudo-science recruits no followers among those who recognize the value of scientific experiment; and it is confidence in scientific experiment that we must inculcate in people today."[32] The concern was twofold. Firstly, pseudoscience and similar practices pretended to be somehow "scientific" and attempted to convince followers of the veracity of this claim. Secondly, there were those practices that did not claim to be scientific, yet still proclaimed dogmatic authority over their followers, such as religions. The question of religion was a difficult and contentious one. When Huxley would argue that science "is by its nature opposed to dogmatic orthodoxies and to the claims of authority" then a conflict with religion seemed imminent and inevitable. Auger, the second director of the Section of Natural Science, offered a somewhat more diplomatic position when he, in his writings in 1950, addressed the issue:

> the religions which, in the course of time, have reached the highest pitch of refinement, have realized the absolute barrier of dogma. They have accordingly removed dogma to a different plane, where it runs no risk of coming into conflict with the discoveries of science. And with that plane, where it may not set foot, science is not concerned.[33]

[29] Ibid., p. 37.
[30] Ibid.
[31] Ibid.
[32] Bessemans and Hougardy (1955).
[33] Auger (1950), p. 108.

https://doi.org/10.1017/9781108776301.006 Published online by Cambridge University Press

Religion was, according to Auger, simply to be relegated to "a different plane," where the dogmas would not come into conflict with science. Auger (wisely) did not elaborate on whether the religions had willingly removed dogma, or to what "plane" they had been moved. However, he reaffirmed that it was in science that we could all work together with the same language, "since Science is the same in every land" and through this scientific common ground of communication, "a common attitude of mind, inspired by the common goal of the advancement of science, is maintained throughout this society."[34]

4.7 CONCLUDING REMARKS: ACTIONS AND RIGHTS

Looking back at the intense efforts made within UNESCO to define and promote a particular definition of science in the early years, one can of course wonder why these efforts seemed to be of such crucial importance. Several things are, however, at stake when defining a key concept like science. As touched upon above, the definition of science helped to demarcate the borders of an epistemic community. These borders were established through highlighting what science was in terms of biological, material, and psychological evolution of humankind, objective knowledge seeking, and a scientific methodological approach. Just as important, these borders were established through highlighting what science was not, as such science was defined in opposition to dogma, tradition, religion, authority and pseudosciences.

Furthermore, the definition manifests a certain understanding of the past: where we came from and, in line with this, where we are going in the future. The definition thus creates specific horizons of action within which some paths of action seem rational and others are deemed illogical and contrary to human progress. The understanding of science in UNESCO, as outlined above, became the conceptual background for the impressive amount of actions carried through by UNESCO and its Natural Science Section. In line with the understanding of science as a prerequisite for development and progress, UNESCO, immediately after the war, set out to rebuild the science infrastructure in war-devastated regions. They sought to facilitate already existing science organizations, and international cooperation, both financially and organizationally, and published a great variety of science material. One such piece was the very popular "Suggestions for Science Teachers in the Devastated Countries" by J. P. Stephenson, which by the early 1960s had been expanded and translated into more than thirty languages. The book contained detailed instructions on how to conduct "good science teaching" despite a lack of proper materials, and instructions on how to build cheap apparatuses from everyday materials.

The strong focus on science teaching in UNESCO becomes more evident when we look at it in light of exactly what science meant to the organization, and how it

[34] Ibid.

was conceptualized and distinguished from other practices. In understanding science not only as a set of methods of inquiry, but as a worldview and an attitude to life, the science teaching classroom becomes the ideal place to form the mindset of the new generations from an early age. This was indeed an enculturation process, although it was not conceived as such by the scientist involved in the science teaching planning. The classroom could not only be used to install this scientific gaze in the pupils. It could also be used to correct what many scientists believed was the (misunderstood) image of the scientist in the broader public. As Boulind stated in the UNESCO House:

> the teaching should be such as to prevent pupils from thinking of scientists in general and nuclear physicists in particular as Frankensteins, hell-bent on producing monstrous machines they cannot control. Instead they should realize that science and magic are poles apart, that scientists are ordinary human beings who are the servants of mankind, and not its masters.[35]

In this manner, the teaching of science was also an arena well suited to combat what scientists saw as the unrealistic fears (and hopes) of the broader public in the nuclear age. In relation to this, we can also see that the Natural Science Section in UNESCO cooperated cross-departmentally many times, with both the Division of Dissemination of Science, the Department of Mass Communication and the Department of Education.[36]

Another UNESCO science-initiative, the establishment of the Field Science Cooperation Offices in Asia, Africa, and Latin America, likewise takes on a deeper significance when we understand it in light of the fundamental definitions of science in the early years of UNESCO. These offices represented not only a means to distribute scientific knowledge from a Western center to the developing countries, but also an institutionalization of the world brotherhood to which scientists were imagined to belong, and an establishment of a common world language of science that is oriented towards world development.

From the definition of science as a vocation, a worldview, and an ideologically neutral knowledge that benefits all humankind, springs also the claim for rights for scientists. This came in the wake of the massive influx of state control, censorship, and secrecy that especially nuclear scientists were subjected to during World War II, and which only increased during the Cold War.[37] Huxley took up the subject in 1949 and posted the question in both *Nature* and the *Bulletin of the Atomic Scientists*:

> How should men of science act in the face of the increasing concern of the State with science, and the subsequent increasing pressure of the State on science? Can they accept the existence of an official scientific policy? Can they accept the possibility that the majority of men of science shall be paid by the State and that

[35] Boulind (1958), p. 4.
[36] Christensen (2016).
[37] Krige (2006).

> the major cost of scientific work shall be borne on government funds? Can they accept official direction as to what subjects shall be investigated?[38]

Huxley was lashing out at both the Soviet Union and the Western allies for their attempts to control their respective science communities. The answer to Huxley's question (or one of them), came from Bart Bok, Chairman of the National (US) Research Council's Committee on Science in UNESCO. Under the headline "Freedom of science and the Universal Declaration of Human Rights" Bok argued that scientists had been given a powerful weapon in their fight for basic rights in the Declaration, and he urged his fellow scientists to seize the opportunity given:

> The Universal Declaration of Human Rights is issued at a time when the freedom of science is under attack from many sides. Scientists have reason to be grateful to the drafters of the Declaration, for we have been given an inspiring restatement of basic principles to guide us in the fight for the freedom of science.[39]

Thus, looking at the conceptualization of science by UNESCO, and the different ideas of science as they were articulated within UNESCO, we see what the organization itself understood by the concept of science and its relations to the concepts of modernity, progress, and development. UNESCO defined its borders concretely with the firm commitment to the "S" in its name, which made it better able to defend those borders when it came to asserting scientific freedom in opposition to state control, censorship, and secrecy that scientists, particularly nuclear scientists, faced during the Cold War. It was that definition and UNESCO's strong defense of science, that was put into practice when the onset of the Cold War posed its own challenges to the Mertonian norms of science and to the ideas of international science cooperation in general.

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[39] Bok (1949). Bok also published his thoughts on the subject in the UNESCO publication "La Liberté de la science" in 1949.

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