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# The "Periphery Principle": Unesco and the international commitment of scientists after World War II

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## The Colonial Legacy

When head of the Unesco Science Department, Needham tried to reconstruct the international scientific relations in many ways: the necessity to link basic sciences and their applications; the support given to new form of scientific co-operation (such as new international laboratories); the inclusion of the social aspects of science; the importance given to the history of science inside the Science Department itself; and so on.<sup>1</sup> But the main ambition of Needham's administration was his "Periphery Principle", an attempt to reorient the international scientific co-operation towards the countries beyond the main industrial centres with the help Unesco.

Needham's perspectives for Unesco were rooted in the British "Social Relations of Science Movement" (SRSM) of the 1930s and 1940s.<sup>2</sup> But Needham differed from the majority of his fellow socialist scientists in taking seriously the "I" of the international and social function of science. He differed even more in giving the priority to what will be called later "the Third World".<sup>3</sup>

Unesco was established in November 1945, yet in the colonial period. The colonial empires have been destabilized by the nationalist movements, and by World War II. But the main colonial powers were trying to reorganize their empire, not to decolonize it. The great majority of scientists was not different from common people, and was marked by the colonization and the colonial ideology. Furthermore, most scientists were unaware of the links between science and colonization.

Science has been a decisive constituent of the colonial ideology, with the racialism, the hierarchical classification of races or civilizations according to supposed scientific criteria. Science was presented as THE model of altruistic colonization.<sup>4</sup> Science has been more than a material tool for colonization.

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<sup>1</sup> See Patrick Petitjean, "Needham and Unesco: perspectives and realizations", in Unesco (ed) (2006), *Sixty years of science at Unesco, 1945-2005*, pp.43-47.

<sup>2</sup> See Gary Werskey (1988), *The Visible College*, Free Association Books, London (first published 1978). The "S" in Unesco is widely the result of a fight led by Needham and his fellow scientists of the SRSM. See Gail Archibald, "How the 'S' Came to Be in Unesco" in Unesco (2006), *op.cit.*, pp.36-40 – Patrick Petitjean, "Defining Unesco's Scientific Culture", in Unesco (2006), *op.cit.*, pp.29-34 – Aant Elzinga, "Unesco and the Politics of Scientific Imperialism", in Elzinga and Langström (eds) (1996), *Internationalism and Science*, Taylor Graham, London, pp.89-131.

<sup>3</sup> Many changing terms have been used along the years to name these countries, with different implicit prejudices and meanings. Though anachronistic the words "Third World" are used in this contribution, because they fit the best Needham's "Periphery Principle".

<sup>4</sup> Even nowadays, when someone is arguing about the so-called "benefits" of colonization, the diffusion of science is the main argument. Among the now abundant literature about science and imperialism, see Daniel R. Headrick (1981), *The Tools of Empires*, Oxford University Press – Patrick Petitjean, Catherine Jami and Anne-

It has been also a constituent of the colonial policies after the conquests, what the British called the "constructive imperialism" and the French the economical "*mise en valeur*".

The development of modern science owed much to the overseas explorations. But, from the 19<sup>th</sup> Century, indigenous knowledge was looked at with more and more contempt, often ignored and sometimes destroyed by colonization. Universal science was opposed to local knowledge. Sometimes even, science was considered as Western by nature and not only by historical contingency. When recognized, the scientific contributions of other civilizations were relegated to a remote past. This colonized scientific ideology remained strong far into the second part of the 20<sup>th</sup> Century. A small number of scientists opposed this ideology, such as, for example, in the late 19<sup>th</sup> Century, some Indian scientists who tried to incorporate the Indian and Western traditions. In the mid-20<sup>th</sup> Century, Needham opposed the scientific Eurocentrism by developing his picture of modern science as a big sea into which the rivers formed by different traditions were permanently merging.<sup>5</sup>

Science for the Third World to come (whether direct colonies, dominions or independent countries) was organized through specific colonial scientific institutions, whether in the metropolis or in the colonies, with their own network for international co-operation. The military components were important in many colonial scientific disciplines. Some colonial scientific main issues of the 1930s – such as desertification, food, human life in humid tropics, mineral resources, plant acclimatization – were to become Unesco issues after World War II.

Beside bilateral relations, two main multilateral scientific bodies existed in the 1930s: the Organization of Intellectual Co-operation (with the International Commission – founded in 1922 by the League of Nations – and the International Institute – founded in 1925, but mainly active from 1931) where science was marginal, and the International Council of Scientific Unions (ICSU – founded in 1931 – to succeed to the former International Research Council), where the issue of science development beyond Europe was not considered as a relevant question: science is universal, then, why bother? Such an attitude lasted until the mid-60s. Some non-European scientists participated to these bodies, but they had many difficulties to find a place. The Intellectual Commission has even been accused of Eurocentrism by the Indian writer Rabindranath Tagore.<sup>6</sup>

Finally, most of the socialist scientists in the 1930s were probably as Eurocentric as their fellow scientists. They were politically radical against colonialism, but they had a paternalistic frame: science was to guide the peoples towards the progress and, step by step, towards the socialism. When Bernal wrote about Indian science,<sup>7</sup> he only considered the past contributions, and urged the Indian scientists to join the anti-colonial struggle, which was for him more important than the laboratory work.

After World War II, Nazism had discredited the racialist theories, but Eurocentrism in science remained the common frame of many scientists. When Unesco was organized in 1945-46, the British and the French Governments showed no intention to give up their own colonial scientific systems. On the contrary, they reinforced them.

Significantly, the same month (July 1946)<sup>8</sup> when the Unesco Preparatory Commission adopted its programme project, including a detailed scientific part, the Royal Society organized in London the

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Marie Moulin (eds) (1992), *Science and Empires*, BSPS 136, Kluwer Academic Publishers, Dordrecht – Benedikt Stuchtey (ed) (2005), *Science Across the European Empires 1800-1950*, Oxford University Press.

<sup>5</sup> Joseph Needham (1966), "The Role of Europe and China in the Evolution of Ecumenical Science", reprinted in Needham (1970), *Clerks and Craftsmen in China and the West*, Cambridge University Press, pp.396-418.

<sup>6</sup> Institut International de Coopération intellectuelle (1935), *Orient / Occident (Correspondances IV)*, Paris, pp.33-70.

<sup>7</sup> John D. Bernal (1939), *The Social Function of Science*, Routledge and Kegan Paul Limited, London, pp.207-208: "Probably the best workers for Indian science to-day are not the scientists but the political agitators who are struggling towards this end "(a self-reliant and free community).

<sup>8</sup> In July 1946, hundreds of scientists converged to London from everywhere to participate to important scientific events: the Newton Tercentary, organized by the Royal Society; the Empire Scientific Conference; The Unesco Preparatory Commission; the ICSU General Assembly; and the founding conference of the World Federation of Scientific Workers.

Empire Scientific Conference. One hundred and thirteen delegates from all parts of the Commonwealth met during three weeks in London, Cambridge and Oxford.<sup>9</sup> They drew plans for a new organization of science inside the British Empire, taking into account the action of the British Commonwealth Scientific Office (BCSO) during World War II. Of course, co-operations with ICSU and Unesco were discussed, and valued, but they were considered to be secondary to the strengthening of imperial links, and mainly part of "bilateral" relations between an imperial organization and Unesco or ICSU.

After the Liberation, in 1945-46, the French Government strongly developed the Colonial Office for Scientific Research (ORSC), which has been created in 1943 by the collaborationist regime but hardly came into existence.<sup>10</sup> A robust central structure was created, a specific training for colonial scientists was implemented, scientific centres were established in many colonies, and subsequent money dedicated to the ORSC. The similarity between the pre-war scientific colonial issues and some Unesco programmes favoured the co-operation of French colonial scientists with Unesco in the 1950s.

### Needham's Agenda in Unesco

The reconstruction of international scientific co-operation has been discussed by the end of World War II in many places and committees, leading to the reconstruction of ICSU and to the parallel establishment of Unesco<sup>11</sup> and of the World Federation of Scientific Workers (WFSaW). In these debates, a personal and specific contribution from Needham has been his leaning towards the Third World science. Needham was geographically in China, as the head of the Sino-British Co-operation Office in 1942-46; ideologically Marxist from the 1920s and activist in the SRSM in the 1930s; and politically anti-colonialist. His originality was rooted in this three-fold situation.

One of the first times Needham argued for the Third World priority was in December 1943, in a letter to Sung, who was then the Chinese Foreign Minister. He proposed a "World Science Co-operation service", for which,

one of the immediate aims would be the conveyance of the most advanced applied and pure science from the highly industrialized Western countries to the less highly industrialized Eastern ones; but there would be plenty of scope for traffic in the opposite direction too.<sup>12</sup>

This "opposite direction" is also distinctive of Needham, even if the imbalance between directions is evident. This priority has been developed in all Needham's memos during the war, and at length in the Unesco document published during summer 46.<sup>13</sup>

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<sup>9</sup> The Royal Society published in 1948 the Proceedings of the Conference (2 volumes). The Unesco aims and programmes were presented by Julian Huxley, its first Director (vol.2, pp.106-115). F.J.M. Stratton, its President, presented ICSU (vol.2, pp.138-142). And Alexander King, former head of the BCSO, exposed a general scheme for international scientific relations, giving a relative part to ICSU and Unesco (vol.2, pp.116-137).

<sup>10</sup> Christophe Bonneuil and Patrick Petitjean, "Science and French Colonial Policy. Creation of the ORSTOM: from the Popular Front to the Liberation Via Vichy, 1936-1945", in Terry Shinn, Jack Spaapen & Venni Krishna (eds) (1997), *Science and Technology in a Developing World* (Sociology of the Sciences Yearbook 1995), Dordrecht, Kluwer Academic Publishers, pp.129-178.

<sup>11</sup> After a founding conference in London, November 1945, a Preparatory Commission was established to organize Unesco, its structure and its programme. After the ratification of the chart by the required number of countries, the first General Conference was held in Paris in November 1946. Julian Huxley – also a participant to the SRSM – was chosen as the Director General in February 1946, and confirmed by the first Conference. He called back from China Joseph Needham in April 1946 to head the Science Department. Needham was substituted in May 1948 by Pierre Auger, a French physicist and also socialist. Huxley left Unesco in December 1948.

<sup>12</sup> Joseph Needham (1949), *Science and International Relations* (50th Robert Boyle Lecture, Oxford, June 1, 1948), Blackwell Scientific Publications, Oxford, p.20.

<sup>13</sup> Joseph Nedham (1946), *Science and Unesco. International Scientific Cooperation. Tasks and Functions of the Secretariat's Division of Natural Sciences*, Unesco.

In this document, after describing the former international scientific relations in peace and war, Needham asked the question: "what is the necessity for such an international science cooperation service ?" Needham felt "a universal desire among scientists to see better international scientific contacts in the coming years", and for him, it lied upon "the dependence of all modern world civilization on applied science". But immediately, Needham noticed that "this desire is more strongly expressed, however, the further one goes away from the great scientific and industrial centres of Europe and the United States" He also noticed that young scientists were more favourable to international cooperation than older ones, who are "distrustful of any machinery to develop it".

For Needham,

The fundamental error of believers in what we may call *laissez faire*, is that they look at the scene too exclusively from the European American point of view, that is to say they think of oscillating between Paris, Brussels, London, New York, Washington, Montreal and the like. They do not realize that the picture of world science looks very different when seen from Rumania, Peru, Java, Iran and China.<sup>14</sup>

He later called his fellow scientists to put an end to their "parochialism". In another Unesco document, scientists were called to show the "same devotions to these great ideals (raising the standard of life of all mankind to minimum civilized levels) as Buddhist and Christian missionaries did in the former ages to theirs".<sup>15</sup>

The unequal scientific development is analysed by Needham in terms of inside / outside a "bright zone":

For historical reasons, since modern science grew up in the civilization of Western Europe, where there is a "bright zone", where all the sciences are relatively advanced and industrialization highly developed. It is particularly the scientists and technologists in the far larger regions of the world outside the "bright zone" who need the helping hand of international science.<sup>16</sup>

For him, some parts of devastated post-war Europe were also outside his "bright zone". This quotation has been sometimes felt as despising for the countries outside the "bright zone". For Needham, it is clearly an historical and geographical contingency, more related to industrialization than to science in itself. And in the following paragraph, he developed that this priority has nothing to do with philanthropy, but the scientific potential of these countries would be a considerable contribution to international science, and Needham quoted some recent scientific discoveries from China, Japan, India, Estonia, Peru.

For Needham, Unesco should concentrate "to help where it is more needed", "that is the scientific men isolated around the periphery of the "bright zone", and that is what he called the "Periphery Principle".<sup>17</sup> A complementary principle was not to interfere too much within the "bright zone". This means that, beside financing the ICSU, most actions of the science division would be dedicated to the Third World.

## **The Unesco Science Department and Needham's Administration**

This Third World leaning is encountered in all Unesco activities during Needham's administration, with two main emblematic and original initiatives: the Field Scientific Co-operation Offices (FSCOs), and the International Laboratories.

Beside these, it is worth quoting other initiatives prepared with Needham, when he was in Unesco or just after: the scientific conferences organized in Montevideo (1948, Science in Latin America) and in Lima (1949, High altitudes biology); the meeting of the Societies for the Advancement of Science

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<sup>14</sup> Needham (1946), *op.cit.*, p.7.

<sup>15</sup> *The Field Liaison Work of Unesco* (1950), Paris Unesco, p.17.

<sup>16</sup> Needham (1946), *op.cit.*, p.7.

<sup>17</sup> This principle is introduced in Needham (1946), *op.cit.*, p.8.

in 1950;<sup>18</sup> the scientific exhibitions starting in Latin America in 1950; the *Scientific and Cultural History of Mankind* project from 1947; and the History of Science conference in India in 1949.

This leaning might also be encountered in the general "clearing house" function of Unesco; in the rhetoric used by Needham, with so many examples in his texts and discourses taken from science in the Third World; and in the nationality of the scientists working for the Science Department. Among the 38 scientists who worked during Needham's administration, 5 were Chinese, 4 Indians, 3 French, 3 British, 5 Latin Americans. Globally, half of them were from outside the "bright zone".<sup>19</sup>

### 1- The Field Scientific Co-operation Offices

The first programme, (Summer 1946) contained an ambitious aim, to set up 10 scientific regional centres, later called FSCOs. 'Field' is used to put the stress on direct contacts, on the field, with local scientists. The proposed locations were East Asia – Australia and Oceania – South-East Asia – India – Middle East with North Africa – Africa, south of Sahara – Central America and the Caribbean region – South America – North America – and finally Eastern Europe. The Unesco Headquarters in Paris would act as a regional centre for Western Europe.<sup>20</sup>

For Needham, the model would be the Sino-British Scientific Office in Chung-king, for the scientists employed as well as for the kind of activities.<sup>21</sup> In Chung-King, 6 British scientists, 1 Indian and 10 Chinese were directly working for this Office. For the Unesco regional offices, Needham suggested no more than 3 or 4 scientists from the scientifically advanced countries, with a majority of local scientists. Such a composition would have been a guarantee against the Unesco group to be felt "as a foreign intrusion". For Needham, science being international, a Chinese scientist could work in Unesco headquarters, or be sent to Latin America as an Unesco representative, or work in the Chinese FSCO, but only as a local scientist.

Eight fields of precise duties were defined for the FSCOs, which were summarized by the term "facilitation" for the collection, exchange and dissemination of scientific knowledge in a two-way flow, between each particular region and the rest of the world; with a stress on personal contacts and exchanges of scientists; and with a special regard to the raising of the standard of life of the non-industrialized people.

Actually, only four FSCOs were established to give aid and assistance to scientists and technologists in all places isolated from the main centres of science and technology. 3 were set up in 1947 in Brazil, Egypt and China. The fourth one was established in India in 1948, but the fifth had to wait 15 more years, for Africa. And only in the 1970s did the FSCOs reach a significant level of activity (after de-colonization, with the Technical Assistance programmes, and with the development of environmental programmes).<sup>22</sup>

### 2- The International Laboratories

The proposal to establish international scientific laboratories was made in May 1946 simultaneously by Needham in Unesco and by Henri Laugier with the UN Economic and Social Council. Both were mainly concerned by the Third World.<sup>23</sup>

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<sup>18</sup> The Brazilian Society for the Advancement of Science (SBPC), created in 1948, was enthusiastic to co-operate with Unesco in its first years.

<sup>19</sup> Needham (1949), *op.cit.*, p.24.

<sup>20</sup> Needham (1946), *op.cit.*, p.18

<sup>21</sup> Needham (1946), *op.cit.*, pp.3-4

<sup>22</sup> See Jurgen Hillig "Unesco Field Science Offices", in Unesco (2006), *Sixty years of science at Unesco, 1945-2005*, pp.72-75. For a general presentation: *The Field Scientific Liaison Work of Unesco* (1950, Paris, Unesco).

<sup>23</sup> Patrick Petitjean, "L'ONU a-t-elle voulu dominer la science mondiale ? Les projets de laboratoires scientifiques internationaux entre 1946 et 1949", in Juan José Saldana (ed) (2005) *Science and Cultural Diversity, Proceedings of the XXIst ICHS (Mexico, July 2001)*, Universidad Nacional Autonoma de Mexico y Sociedad Mexicana de Historia de la Ciencia y de la Tecnica, Mexico, vol.19, pp.1332-1347 (CD-Rom). Patrick

Laugier's proposal was more general, turned towards some fields of applied science, and more centralized, with a kind of International Scientific Council along the lines of the French CNRS. He was accused by the *New York Times* to try to rule the international science.

Needham had a more pragmatic approach, starting from the proposals made in May 1946 by some national delegations. For instance, the Brazilian delegate proposed an Amazonian Institute, laboratories for Nutrition (a proposal also supported by the USA and France) and parasitology institutes (supported by Mexico and France). The French delegate proposed also a computation centre.

Needham and Huxley seized with much interest the Brazilian proposal for an Amazonian Institute, as coherent with their "Periphery Principle". As soon as the summer 1946, Needham chose a British botanist to create the Institute. The Institute was made the priority in 1947 for the Science department, and Unesco transformed it into one of its four overall priorities for 1947. The Institute was established in 1948, but got paralysed in 1949, and disappeared soon after.<sup>24</sup>

Needham supported the creation of the computation centre, and tried to establish it in Asia, whether in India or China, as a compensation to the unjustified (for him, and for many scientists) destruction by the US Air Force in 1945 of the Japanese Synchrotron. But finally, this Centre was established only in the 1960s, and in Roma. A consequence of the Amazonian failure was that the Arid Zones programme continued as a committee, and never transformed itself in an international institute, as initially proposed by the Indian delegation in 1948. It was nevertheless an important success.

None of the proposed international laboratories<sup>25</sup> came into existence during the 1950s. The only achievement was the European Nuclear Centre (Geneva), which was not among the 1949 proposals. It was proposed by the American delegation in June 1950, and immediately supported by Unesco. But it was a regional centre, in Europe and not in the Third World, and it was for Nuclear Physics, far from the applied sciences, and was not the most direct way to improve the living standards for Humankind.

### 3- Contradictions "in vivo": The Latin American Case

What happened to Unesco during the years 1947-1949 in Latin America is a perfect example of its difficulties and contradictions behind its Third World priority.

At first the FSCO was established in Brazil, Rio de Janeiro, and its main aim was to create the Amazonian Institute, with which he shared the same director, E.J.H. Corner.<sup>26</sup> He was a colonial botanist, trained in Cambridge, and therefore part of Needham's scientific networks. He has spent all his academic life in the Singapore botanical gardens, assuring the continuity of his work during the Japanese occupation. He returned to Cambridge after the war, and was looking for a job, when Needham proposed him to go to Brazil to establish the Amazonian Institute. He never had any knowledge of Latin American natural sciences and scientists, and did not speak Portuguese nor Spanish. His assistant was a Greek physician.

Corner was badly received by his Brazilian Colleagues. Paulo Carneiro, the Brazilian biologist and a member of the Unesco Executive Committee, who initially made the proposal for the Institute, wrote an angry letter to Huxley in March 1947, accusing Unesco to show colonial attitudes and prejudices

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Petitjean, "Post-war international laboratory projects", in Unesco (2006), *Sixty years of science at Unesco, 1945-2005*, pp.52-57.

<sup>24</sup> This failure had many reasons. Unesco mistakes and changing priorities played a role. But Brazilian reasons were dominant: the economical exploitation of the Amazon region appeared to be contradictory with an international institute dedicated mainly to basic natural sciences and to anthropology; and the "international" dimension of the Institute provoked a nationalist campaign against the "internationalization of the Amazon region", though the Americans themselves opposed the institute. See Heloisa Bertol Domingues and Patrick Petitjean, "International Science, Brazil and Diplomacy in Unesco (1946-1950)", in *Science, Technology and Society*, 9:1, 2004, pp.29-50.

<sup>25</sup> In August 1949, an expert meeting set up a list of proposals for international laboratories. See Petitjean (2005) in Saldana, *op.cit.*

<sup>26</sup> David J. Mabberley, "E.J.H. Corner", in *Biographical Memoirs of the Fellows of the Royal Society*, The Royal Society, London, 1999, pp.79-93

against Brazilian scientists. The "bright zone" did not have to rule Brazilian science this way. Carneiro obtained from Huxley a six-month official mission to supervise Corner and to establish the Institute.

When established, the Institute headquarters moved to Manaus, and so did the FSCO. But Manaus was a periphery inside Brazil, and it was impossible to do scientific liaison from Manaus for Latin America. Furthermore, the Institute appeared rapidly to be controversial among Brazilian scientists.<sup>27</sup> The FSCO had to be cut from the Institute, and in September 1948, the Latin American Scientific Conference accepted the FSCO transfer from Manaus to Montevideo (Uruguay), with a new Director, Angel Establier. He was an exiled Spanish Republican, a biochemist, and he has worked for a year as the liaison officer between Unesco and ICSU. His assistant was an Italian physicist, Cacciapuotti.

The new FSCO appeared rapidly to be popular among Latin American scientists, but also entered in conflict with the Brazilian Government. The Brazilian national commission for Unesco, and official scientists, denied Establier the right to work directly with Brazilian scientists without asking previously the authorization to the Brazilian diplomats... Indeed, Unesco was an inter-governmental organization, but the diplomatic path was certainly not the best way for efficient scientific liaison. And it took years, before the Latin American FSCO, as the other FSCOs, could follow their own way for scientific co-operation.

### Concluding remarks

Among the many innovations Needham tried to introduce into the international scientific relations with the Unesco science department, the "Periphery Principle" was the least successful, at least in the short term: no international laboratory was established, or soon to be created; the FSCOs had still to meet many difficulties to fulfil their function in the Unesco co-operation system. How to account for this failure? Both the political / social context and the internal limitations of Needham's "Periphery Principle" have to be considered.

By the end of the war against fascism, immediately another war began, the Cold War. Needham, and most of his fellow socialist scientists, believed in the possibility – and in the necessity – to go on with the war alliance between the Western democracies and the USSR, to go on with the popular fronts in various countries. Soon, this proved to be a political illusion.

For some years, Unesco and some other international agencies offered a space for independent initiatives, even for some radical ones in the Unesco Science Department. The specific hybrid nature of Unesco in its early years (an inter-governmental agency with an institutional part recognized to intellectuals), and the neutral image of science opened such a space.<sup>28</sup> But it did not last long. Progressively developed into a traditional inter-governmental organization, changing its chart. And in the fifth General Conference (Florence, May-June 1950), the USA gained the political hegemony (later in 1952 the political control) over Unesco.

As soon as 1945, the Cold War has been declared by the West and by Stalin. The celebration of the 220<sup>th</sup> anniversary of the Russian Academy of Sciences (June 1945, Moscow), with dozens of scientists from everywhere has been an exception. 1945 marked also the rise of a nationalist campaign against the Western cultural influences in the USSR and the beginning of a period of cultural xenophobia. The cultural exchanges – included the scientific ones – fell to a very low level. The Soviet government refused to join Unesco, the same way it kept deaf to the numerous appeals to join the WFScW. The Wroclaw conference in August 1948 was convoked by the pro-soviet peace movements, and marked a lasting fracture between the intellectuals. Unesco failed to be representative of the cultural diversity, and the USSR failed to organize an open alternative to Unesco in the cultural field. Needham's own friends, Bernal, and Joliot-Curie, became more and more distrustful of Unesco. USSR joined Unesco and the WFScW only in the mid-1950s.

As the Cold War developed, the two camps were in deep rivalry to influence developing countries. The Third World was a too sensitive, too political issue, to be left to an international agency such as Unesco, and even more to its leftist Science Department. The British and the American governments tried to limit – and even to stop – most of the international co-operative projects initiated under the

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<sup>27</sup> See note 24 for the history of the Institute and its difficulties.

<sup>28</sup> See Elzinga in Elzinga and Langström (eds) (1996), *op.cit.*



"Periphery Principle" by Needham and his friends. The financial support, depending upon the American good will, has never been sufficient to provide a chance of success to these initiatives.

Besides, France and United Kingdom, the two other big powers within Unesco, were (as noticed previously) still colonial powers. They intended to rely upon Unesco to help their colonial development policies and to go on using science development to legitimate the colonization process. They proposed many colonial scientists as Unesco collaborators. For instance, France and the UK were represented by colonial scientists for the first scientific Amazonian Conference (Belem, Brazil, August 1947). And many colonial scientists entered the Arid Zones programme.

Politically isolated, Needham was also socially isolated within the scientific community. In no other field, Needham's ideas have been so contrary to most of his fellow scientists. When the majority was trying to build a new imperial science, and was satisfied with the ICSU way to organize the international scientific co-operation in the "bright zone", Needham called for applying a new "Periphery Principle"; far from imperialism and Eurocentrism. After leaving Unesco, Needham expressed his bitterness about his colleagues:

I am frankly rather tired of the people who sit in their own laboratories and never give a thought for their colleagues at the other end of the world who are working in difficult conditions and even desperate need. If they were to travel about the world and visit the places which are really remote, those are the conditions they would find.<sup>29</sup>

Significantly, Lucien Febvre expressed the same bitterness when facing the hostility of his colleagues against the *Scientific and Cultural History of Mankind* project he was developing in complete agreement with Needham. According to Febvre, the difficulties met by the project were "due to the obstinacy with which so many representatives of the so-called 'European' or 'Western' civilization regard the latter – their own – as the only true civilization".<sup>30</sup>

Within Unesco, Needham's main allies were the Chinese and the Indian scientists, together with exiled scientists from Spain or Portugal, such as Angel Establier and Armando Cortesao (History of Science), which was not much. Before his contacts with Chinese scientists in Cambridge and his stay in China, Needham probably shared with his Western colleagues the ignorance of what was really science in the Third World. He was not much engaged in international co-operation beyond Europe.

Even in the name of the "Periphery Principle", Needham organized the activity of the Science Department "from the top", the Secretariat in Paris. Without enough links to scientific networks in the Third World, it has been a permanent source of misunderstandings and difficulties. The Science Department itself was multicultural, reflecting Needham's voluntarism, but most of the experts meetings were not, even for the *Scientific and Cultural History of Mankind* or for the international laboratories. Science being universal, this was not supposed to be a problem, but in fact, it has been a difficult practical question, for instance to compose the FSCO staff.

Such an abstract conception of international science was a common contradiction for socialist scientists, between their political anti-colonialism and their representation of science as neutral tool for economical development, which could therefore easily be used for social aims.<sup>31</sup>

This instrumentalist conception of science was a common ground for many scientists, not only for Needham and his friends. It left them unarmed to face the new paradigm which shaped the international scientific co-operation system in the 1950s, including Unesco. The origin is known as Truman's Point IV of his Presidential discourse in January 1949, about the Technical Assistance to the underdeveloped countries: science is reduced to a technical tool for economical development, following the Western model of a "free world". The Technical Assistance scheme easily replaced Needham's "Periphery Principle" for Unesco in the 1950s.

Obvious in the short term, the failure of Needham's "Periphery Principle" is less clear in the medium term. Needham initiated in these years through Unesco a recognition of Third World science and scientists. He facilitated their integration in the scientific co-operation system. Decolonization

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<sup>29</sup> Needham (1949), *op.cit.*, p.29

<sup>30</sup> Letter from the French National Commission, 24 April 1950, to Unesco (Unesco document 5C/PRG/2, Annexe I, p.13)

<sup>31</sup> For Bernal, science was even more than neutral: "in its endeavour, science is communism" (Bernal (1939), *op.cit.*, p.415)

brought a new political context, in which the Third World countries acquired an important weight in Unesco, such a leaning being characteristic of Unesco's culture. Science in the Third World became a major issue for Unesco (and ICSU) in the 1960s and in the 1970s. This was a far echo of Needham's "Periphery Principle".