

Supporting Theoretical Physics for the Third World Development. The Ford Foundation and the International Centre for Theoretical Physics in Trieste (1966-1973)

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Speakers and writers often do not know what they think until the words are out. Foundations, similarly, do not know what they are doing until they do it. It appears that the waverings and changes in Ford's program strategies for Europe have been grounded in the difficulties and complexity of sustaining clear rationales for venturing out from home shores, and maintaining confidence in them.

Francis X. Sutton¹

Serious consideration should be given to the decision making process underlying the funding of scientific projects. Are these decisions made by the funding bodies determined by general factors of administration and policy, or more specific and individual applicant-centred considerations? At a historiographic level, the following question arises then naturally: Do our attempts to construct a coherent analysis of funding decisions adequately account for either of these factors or do they impose misleading political interpretations on routine financial matters? This critique concerns studies of national and international organisations in general, and American philanthropic foundations in particular. Certainly, a substantial part of fund-awarding officers' duties consist of seeking out and selecting projects that match the general policies of the organisation. Huge programmes, such as those on agriculture (green revolution), health and population in the Third World responded to a particular conception of not just philanthropy, but of development and the "developing" regions. In many ways, they tell us more about the culture with which the foundations are imbued than the problems they seek to solve.² This is not the only motivation to fund, however.

¹ Francis X. Sutton, "The Ford Foundation and Europe: Ambitions and Ambivalence," in Giuliana Gemelli, ed., *The Ford Foundation and Europe (1950's-1970's). Cross-fertilisation of learning in social science and management* (Brussels: European Interuniversity Press, 1998), pp. 21-66. The quote is on p. 59-60.

² For an excellent discussion on the foundations' prejudices see Marcos Cueto, "Visions of Science and Development: The Rockefeller Foundation's Latin American Surveys of the 1920s," in Marcos Cueto, ed., *Missionaries of science: 4/16/06*

General policies are not always clear guides when officers have to make a decision regarding specific requests. Therefore, as I will suggest, a portion of grants results from the applicants' initiative, persistence and pressure. During the evaluation process, contingent factors such as the personality of the applicant, the political pressure of influential actors, and the prejudices of the personnel dealing with the application, are important elements that affect the decision on each application. The weight of each of these elements should be assessed for each specific case along with other historical variables.

We must remember that usually the number of applications exceeds the number of approved projects. Thus, it is natural, even necessary, that the reaction to these requests is indeed to resist. Resistance is a natural instinct that officers cultivate as part of their selection strategy. As David Edgerton suggests, the problem in science policy is primarily the one of stopping projects, rather than the problem of starting projects. Thus, in this context "resisting" should not carry the negative connotation with which the term is usually associated.³ One may extend Edgerton's analysis by pointing out that there is a tendency to concentrate science-policy analyses on the approved projects, when there seems to be a far richer field to explore by studying projects that were stopped, or approved with serious reservations. This is not a symmetry argument in the sense of calling for a study of the unsuccessful applications *after* studying the successful ones. Exploring the grey area between the selection criteria and the decision to sponsor projects that do not match those criteria may teach us about the selection processes operating in large organisations, the distribution of power within those bodies, and the practical aspects of decision-making in science and technology policies. From the point of view of the historiography of the grantees, this grey area is extremely useful because the origin and evolution of the donors' resistance sheds light upon the applicants' fundraising strategies and effectiveness.

In this paper, I focus on the relationship between the International Centre for Theoretical Physics (ICTP) at Trieste and the Ford Foundation (FF), a relationship marked by the Foundation's resistance and scepticism towards the ICTP idea. In one sense, my contribution might be considered as anomalous in a volume concerned with science in the European context, as the ICTP was primarily aimed at the developing countries.⁴ However, for reasons that will become clear later, the

The Rockefeller Foundation and Latin America (Bloomington, IND: Indiana University Press, 1994), pp. 23-51. Also, Deborah Fitzgerald's "Exporting American Agriculture: The Rockefeller Foundation in Mexico, 1943-1953," *Social Studies of Science* 16 (1986): 457-483, reprinted in Cueto, *Missionaries of Science*, pp. 72-96, on the Rockefeller Foundation and the Green Revolution in Mexico.

³ David Edgerton, "From innovation to use: Ten Eclectic Theses on the Historiography of Technology," *History and Technology* 16, no. 2 (1999): 111-136, footnote n. 67.

⁴ There is a considerable literature about science in Europe and American philanthropic foundations. See, for instance, Finn Aaserud, *Redirecting Science: Niels Bohr, philanthropy, and the rise of nuclear physics* (Cambridge: Cambridge University Press, 2006).

FF classified it as a European project. For the FF officers, it was never obvious why it should finance the Centre. Yet the ICTP received two grants, one in 1966 (US\$200,000) and another in 1970 (US\$150,000).⁵ I am interested in the following questions: Why did the FF have initial reservations about the ICTP idea? How was the ICTP perceived by the largest American philanthropic institution? How did the ICTP's director cope with FF's resistance? Why, in spite of their doubts, did the FF decide to support the ICTP?

This paper is organised as follows. First, I briefly describe the main features of the ICTP. In Section 2, I present the main sources of resistance of the FF towards the ICTP's request. At this point it should be noted that the FF had little interest in sponsoring theoretical physics in the 1960s. A similar trend was found by John Krige in relation to CERN and Bohr's institute in Copenhagen a decade earlier, albeit in the 1960s the Foundation seems to have adopted a stricter policy against funding physics projects.⁶ In Section 3, I suggest what motivations prompted The FF to finance the ICTP in spite of its doubts. I conclude in Section 4 by stressing the implication of this case for the historiography of institutions sponsored by philanthropic foundations, pointing out the importance of looking at the foundations' activities in the Third World in order to understand their global politics.

The International Centre for Theoretical Physics at Trieste

The International Centre for Theoretical Physics was inaugurated in 1964, after intense diplomatic negotiation at the International Atomic Energy Agency. The Centre operated under the banner of

University Press, 1990); Pnina Abir-Am, "The Discourse of Physical Power and Biological Knowledge in the 1930s: A Reappraisal of the Rockefeller Foundation's 'policy' in molecular biology," *Social Studies of Science* 12 (1982): 341-382; Giuliana Gemelli, ed., *Big Science. Intellectual Cooperation in Large-scale cultural and technical systems* (Bologna: Cooperativa Libreria Universitaria Editrice di Bologna, 1994); idem, ed., *The Ford Foundation and Europe (1950's-1970's). Cross-fertilisation of learning in social science and management* (Brussels: European Interuniversity Press, 1998); John Krige, "The Ford Foundation, European Physics and the Cold War," *Historical Studies in the Physical and Biological Sciences* 29, no. Pt2 (1999): 333-361. See also, Kathleen McCarthy, ed., *Philanthropy and Culture: The International Foundation Perspective* (Philadelphia: University of Pennsylvania Press, 1984). In contrast, the literature concerning American philanthropic foundations and sciences in developing countries during the same period is not so large. However, see Marcos Cueto's pioneering works on Latin American medicine (especially Peru): for instance, "The Rockefeller Foundation's Medical Policy and Scientific Research in Latin America: The case of Physiology," *Social Studies of Science* 20 (1990): 229-254; idem, "The Cycles of Eradication: The Rockefeller Foundation and Latin American Public Health," in P. Weindling, ed., *International Health and Welfare Organizations between the First and Second World Wars* (Cambridge: Cambridge University Press, 1995); pp. 179-202; idem, "Science under Adversity: Latin American Medical Research and American Private Philanthropy, 1920-1960," *Minerva* 35 (1997): 228-246 (this volume is dedicated to philanthropic foundations). On Venezuela and the Rockefeller Foundation, see Hebe Vessuri, "Scientific Cooperation among Unequal Partners: the Strait Jacket of the Human Resource Base," in Jacques Gaillard, ed., *Coopérations Scientifiques Internationales, Les Science Hors D'Occident au XXe Siècle* (Paris: ORSTOM Éditions, 1996), pp. 171-186. On the Rockefeller and the social sciences in Brazil, see Sergio Miceli, *Betting on An Emergent Scientific Community (Ford Foundation and Social Sciences in Brazil)* (Sao Paulo: IDESP, 1992).

⁵ All figures in this paper are in current dollars.

the IAEA, which in 1970 was joined by UNESCO. However, although it was a United Nations centre, the bulk of its funds came from the Italian government.⁷

Salam was born in the region of British India that would later become Pakistan and read mathematics and physics in St. John's College, Cambridge. From his final year as a PhD student, he was one of the young promises of his generation due to his contributions to the problem of overlapping divergences in particle theories. As a result he was invited to the Institute of Advanced Studies, which under the directorship of J.R. Oppenheimer was an active centre of the young generation of theoretical physicists. It was in Princeton where Salam first met the most influential theoretical physics of the day in the United States. In particular Hans Bethe, Victor Weisskopf and Oppenheimer became very fond of Salam for his qualities as original physicist and his extraordinary charisma. In 1958, on Bethe's recommendation, Patrick Blackett appointed Salam the first Professor of theoretical physics at Imperial College (London). Under his leadership, the Imperial became a leading centre in the construction of unification theories of the fundamental forces of nature. In the 1970s this approach led to the establishment of the so-called "standard model" of particle physics. In 1979, Salam was awarded the Nobel Prize for physics (jointly with Americans Steven Weinberg and Sheldon Glashow).⁸ He, and the Trieste physicist Paolo Budini (now Budinich), Professor of Physics at the University of Trieste, were the main movers behind the creation of the ICTP. Budini, a respected figure in Trieste's intellectual and political milieu, was its first Deputy Director until the late 1970s. Salam directed the Centre during its first thirty years. Despite the literature on the subject tends to ignore the role of the ICTP and concentrates on Imperial, the Trieste centre was very important in these developments. Some of Salam's students and collaborators spent long periods of time in Trieste, working and interacting with other visitors.

⁶ John Krige, "The Ford Foundation, European Physics and the Cold War." See also his paper in this volume.

⁷ There is no written history of the ICTP. However, there are several commemorative volumes and articles of reminiscences by the ICTP fellows and officers; for instance, A.M. Hamende, ed., *From a Vision to a System* (Trieste: Fondazione Internazionale Trieste per il Progresso e la Liberta della Scienza, 1996) and the set of interviews by Aileen Qaiser, *The ICTP and its Scientific Visitors* (Trieste: International Centre for Theoretical Physics, 1992).

⁸ On Salam's early work on renormalisation theory, see Abdus Salam, "Physics and the Excellences of the Life it Brings," in Laurie Brown, Max Dresden, and Lillian Hoddeson, ed., *Pions to Quarks: Particle Physics in the 1950s: based on a Fermilab symposium* (Cambridge: Cambridge University Press, 1989), pp. 525-535. The story is retold by Salam's biographer in Jagjit Singh, *Abdus Salam: A Biography* (Calcutta: Penguin Books., 1992), pp. 23-25. Including this one, all works available about Salam are hagiographic; for instance, Azim Kidwai, *The Greats in Science from the Third World. Abdus Salam* (Trieste: Third World Academy of Sciences, 1989). For recollections about Salam see S. Ahmad, ed., *Abdus Salam as we know him* (Trieste: International Centre for Theoretical Physics, 1992). A selection of Salam's scientific contributions is A. Ali et al., eds., *Selected Papers of A. Salam (with Commentary)* (Singapore: World Scientific, 1994). Tom Kibble's "Muhammad Abdus Salam. 29 January--21 November 1996," *Biographical Memoirs of Fellows of the Royal Society* 44 (1998): 385-401 offers the most authoritative and accessible summary of Salam's scientific contributions. For a selection of Salam's writings and speeches on science, technology and development see Abdus Salam, *Ideals and Realities. Selected Essays of Abdus Salam*, edited by C.H Lai and A. Kindwai (Singapore: World Scientific Publishing Co., 1989).

Therefore, Salam's research programme developed in two scenarios, one at Imperial and another in Trieste.

The Centre was conceived as a space for international collaboration in science. The goal was twofold. Firstly, it sought to promote an exchange between East and West on topics of mutual interest such as plasma physics. Trieste was presented as an ideal site for such an exchange on account of its geographical location and cosmopolitan tradition.⁹ Secondly, the Centre sought to foster North-South scientific collaboration. Following a linear model, Salam argued that technological, and hence economic, independence required training a "critical mass" of people in basic science, and more specifically in theoretical physics as the most fundamental of the sciences. Whether East-West co-operation had pre-eminence over the North-South collaboration within the ICTP was a matter on which Salam and the Italians had different views. Whereas the Trieste scientists wanted to break their isolation by opening channels with Central and Eastern European universities, Salam was committed to promoting the idea of Third World development through science and technology.

The Centre had no scientific staff on a permanent basis apart from Salam and the deputy director. However, the Centre envisaged a scheme to allow it to be also a research centre, the Associateship scheme. Scientists who were appointed as associate members had the right to stay in the ICTP for periods ranging from six weeks to three months during five consecutive years. The idea was to open a space to Third World scientists to interact with "the international scientific community," meaning the community in the industrialised countries, without having to abandon their home countries indefinitely.

At the core of the ICTP's history is its precarious financial situation and permanent state of institutional uncertainty. When the Centre was finally approved by the Board of Governors in 1963, it was agreed that IAEA would provide resources *not exceeding* \$50,000, and that its existence should be ratified only after its first four years of functioning. The US had been the architect of this decision.¹⁰ In fact, despite Salam's efforts, after 1968 the ICTP's existence continued being subjected to periodic revisions and approval by the IAEA and, after 1970, UNESCO.

⁹ See Angelo Ara and Claudio Magris's study (*Trieste. Un'identità di frontiera* [Torino: Ed. Laterza, 1987]) about Trieste's identity as a border city. For a history of modern Trieste, see Elio Aphi, *Trieste. La storia politica e sociale* (Bari: Norton., 1988).

¹⁰ As was pointed out in a report by the State Department and forwarded by Hermann Pollack, from the International Scientific Affairs of the State Department, to J. Slater, August 9, 1964, in grant file 67-40, Ford Foundation Archives, New York (FFA hereafter).

Resistance to support the ICTP

During the early years, around 70% of ICTP's budget came from the Italian Ministry of Foreign Affairs. For Salam to advance his own agenda of promoting North-South collaboration, he had to find his own resources. The Italians wanted to increase ICTP's budget too. However, for Salam bringing international funds was a most important matter to balance the political power within the centre. In 1964, the ICTP was still in development. Its final shape, and the orientation of the kind of internationalism to be promoted there, would depend on the balance of power between Salam and Budini, which in turn depended on their respective shares in the enterprise.

In view of the instability of a centre entirely dependent on IAEA and one single government, Salam and S. Eklund, Director General of IAEA and a convinced champion of scientific co-operation for Third World development, used their personal contacts to get funds from private foundations in Europe, specifically the Volkswagen Foundation and various Swedish organisations.¹¹ A few months after the approval of the ICTP project by the IAEA General Assembly, Eklund and Salam contacted the FF. In early 1965, Eklund met Joseph Slater, from the Ford Foundation International Division, and Paul Hoffman, the first president of the Foundation and an energetic supporter of the United Nations.¹²

Despite of being an initiative concerned with the less developed nations, the application passed through the International Division as a European project. As the Centre was located in Italy, there were good reasons for this allocation. However, it also reflected Salam's conception of the Centre. He thought that it should be not a centre for development, with the patronising connotation such a term carried, but instead a centre of excellence in theoretical physics, with substantial participation by scientists from the Third World. The ICTP's contribution to the less developed countries would derive from the high quality of the research carried out there; its aim ought to be

¹¹ S. Eklund to Dr. Ing. Gotthard Gamke (Secretary General, Stiftung Volkswagenwerk), July 4, 1966, D.804, Abdus Salam Papers (ASP hereafter), NCUACS reference number pending (Salam's archive is still in process of being catalogued by the National Cataloguing Unit of Archives of Contemporary Scientists at the University of Bath, hence it has not been assigned a definitive number yet). On suggestion of Lamek Hulthén (from the Royal Institute of Technology), Salam and Eklund contacted the Nathhorst Foundation, which eventually financed visits to the ICTP by Swedish physicists (Hulthén to Salam, December 8, 1969, D.783, ASP).

¹² This meeting was reported two days later in an internal memorandum by J. Slater to S. Stone May 20, 1965, FFA. After the meeting, Hoffman insisted; in a Post Data Slater informed that: "Paul Hoffman called today to state that he felt that help for Eklund's proposal (for the physics training center) in Trieste was a very solid enterprise and one we should look at very seriously." Hoffman had been an administrator of the Marshall Plan and as first president of the Foundation he promoted programmes for international intellectual exchange; see Paul Hoffman, *Peace Can be Won* (Garden City, New York: Doubleday and Co., Inc., 1951), cited by Kathleen McCarthy, "From Cold War to Cultural Development." After leaving the Foundation, Hoffman served as a high officer at the United Nations. An example of his support to international scientific co-operation for Third World development is his participation at the meeting on science and the new nations, held in the Weizmann Institute, Rehovoth (Israel) (Ruth Gruber, ed., *Science and the New Nations* [New York, Pyramid Books, 1960], pp. 332-337).

keeping Third World physicists “scientifically alive.” The Centre would demonstrate that scientists from the South could do physics of the same quality and relevance as their colleagues in the North. If the ICTP was to be revolutionary, it was for its capacity to help the Third World develop its own scientific resources. In his view only scientists, and theoretical physicists in particular, were essential for training good technicians, without having to depend on Western know-how. Moreover, any differential treatment of these scientists, such as classifying them as scientists for development, and not just scientists, would be discriminatory. The ICTP ought to be the new Copenhagen Institute or a version of the Institute of Advanced Studies at Princeton but addressed to the needs of less developed countries’ scientists.¹³

Salam requested the International Division of the FF to provide one million dollars to finance visiting scholars, conferences and federation agreements. The latter were agreements that facilitated the exchange of scientists where it was difficult to apply the associateship scheme, most prominently in socialist countries. Not surprisingly, the Foundation considered that, whatever their interest in the subject might be, the Foundation would never consider granting that amount.¹⁴ The Foundation was willing to provide “matching grants” to support new projects, but it would never pay entirely for a new United Nations institute.

The FF did not regard natural sciences programmes as one of its areas of action unless tied to political or ideological interests. In the 1960s this policy became even stricter. The 1962 study about the direction of the Foundation in the 1960s had established six “critical problems” upon which the Foundation should act: education; development of cultural television; strengthening of the Atlantic partnership; accelerating growth in less developed countries; strengthening of artists’ positions in the US; and urban improvements.¹⁵ The report made clear the necessity of turning towards “action” and away from “research.” With the appointment of McGeorge Bundy as the new president of the FF in 1965, this view was reinforced. Thus, the only conceivable scientific research the foundation would finance should be addressed to education and *development* programmes, if not towards ideological and political ends. In 1967, for instance, the ICTP was the only recipient related to research in natural sciences, even in connection to overseas development projects. The case of

¹³The Copenhagen Institute was certainly a reference point, especially for the European physicists who aspired to recreate the almost mythical environment that put Copenhagen at the centre of world physics in the late 1920s. Some, like Luciano Bertocchi, member of the ICTP scientific advisory board, have even talked of a special Trieste “spirit,” implicitly alluding to the “Copenhagen Spirit” (Luciano Bertocchi, ‘The ICTP: Historical Developments and Present Status, A.M. Hamende, ed., *From a Vision to a System*, pp. 38-61). Nevertheless, Salam was probably influenced by his experience as graduate student visiting the Princeton Institute for Advance Studies. Salam invited Oppenheimer to chair the first ICTP scientific council.

¹⁴ J. Slater to Herman Pollock, August 17, 1965, in grant file 67-40, FFA.

¹⁵ Ford Foundation, “The Ford Foundation in the 1960s. Statement of the Board of Trustees on Policies, Programs, and Operations,” (New York: Ford Foundation, 1962). The study was directed by J. Slater and chaired by J. J. McCloy.

the Universidad Nacional de Ingeniería in Lima, Peru, is illustrative. The Ford Foundation was instrumental in bringing a number of Argentinean physicists and mathematicians, as well as in providing the University with a good scientific library. However, the award was intended not for research, but “[f]or improvement of curricula, staff and equipment.”¹⁶ Likewise, grants to science faculties and libraries in Latin America (Chile and Argentina) and Africa were part of larger packages to strengthen the educational system.

Thus, paradoxically, what Salam viewed as a strength turned out to be an obstacle. The FF had sponsored international contacts and even scientific collaboration in physics. The grants to CERN and Bohr’s institute are two cases in point. However, even then the Foundation was not interested in the production of knowledge *per se*, but the political dimension of international contacts between scientists.¹⁷ Moreover, by the time of the ICTP’s request, the FF had decided to finance no programmes in physics. When Slater informed S. Stone, then director of the International Division, about Salam and Eklund’s request, he replied in an internal memo that: “We should talk because a few years ago we were shunted off the physics track.”¹⁸ Likewise, when the Italian diplomats approached him to recommend the ICTP, he explained that “our problem remains a decision made a few years ago: that we would not continue to make grants in the field of theoretical physics.”¹⁹

Both Slater and Stone informed Salam about the Foundation’s constraints on funding theoretical physics. In spite of the discouraging responses, Salam was insistent. He met Slater several times to explain why theoretical physics and Third World development were intertwined. Technical assistance without developing endogenous scientific capabilities would create another form of dependency, Salam reasoned. Physics was the most fundamental of the sciences. Hence, a truly developmental programme should include the promotion of physics. Theoretical physics had, besides, an additional advantage for poor countries: it was cheap.²⁰ He insisted that in order to ensure the international character of the initiative, it was essential to end the dependency on Italy.²¹ Simultaneously, three other fronts of pressure were activated to try to influence the FF: Salam’s

¹⁶ Ford Foundation, Annual Report 1967 (New York: Ford Foundation).

¹⁷ In 1956, Stone assured to FF’s President that the Copenhagen and CERN grants were made “specifically for the expansion of international activities and not for the support of science as such” (Stone to Gaither, 1956; quoted by J. Krige, “The Ford Foundation, European Physics and the Cold War”).

¹⁸ S. Stone to J. Slater, memo, 8-Jun-65, in grant file 67-40, FFA.

¹⁹ S. Stone to Egidio Ortona, 17-Sep-65, in grant file 67-40, FFA.

²⁰ This was Salam’s main argument to get support from the IAEA when it was proposed in the 1962 Annual Conference. Salam’s speech is reproduced in Salam, *Ideals and Realities. Selected Essays of Abdus Salam*, pp. 219-223.

²¹ Salam to J.Slater, July 5, 1965, in grant file 67-40, FFA.

allies in the American scientific community; IAEA's Director General; and the Italian Diplomatic Service.

Salam's contacts with the American scientific community were at the highest levels, partly because of his own professional reputation, and partly due to his post as scientific adviser to the President of Pakistan. One of these contacts was Jerome Wiesner, Dean of the Division of Engineering and Applied Physics at MIT, who served as scientific adviser to J.F. Kennedy, and was actively involved in foreign affairs during the 1960s.²² Like Bundy, Wiesner's contacts with members of the Council on Foreign Relations were close. In 1965 he wrote to Slater saying that he knew that the FF would "ordinarily not support such an activity for its scientific value alone, ... [but] that the international cooperative effort that the Center makes possible, ... and the fact that it was started by *their* initiative" made it an appropriate thing for the Foundation to support because, "[f]irst of all, Salam himself, is extraordinary both as a physicist and a human being." Wiesner was impressed that someone could "participate of modern science and still maintain ties with their native lands." He also referred to Robert Marshak, V. Weisskopf and Murray Gell-Mann, who were "extremely please[d] with the performance."²³ Indeed, Weisskopf and Marshak also sent recommendation letters expressing their positive views on the Centre. Weisskopf regarded the Centre's list of publications as "impressive, and among them are some of the decisive achievements of theoretical physics in that period," pointing out that "[i]t is not only the scientific achievement that counts," but the opportunity of scientists in developing countries to "get in touch with the most modern developments," in a space where "experienced scientists from the USA and Western Europe together with a large number of younger people from many under-developed countries, and also from the communist countries." Marshak had been not only responsible for the famous Rochester Conferences, the largest international conferences in theoretical physics in the 1950s and 60s. In 1963, he was appointed Chairman of the Science Advisory Committee for Eastern Europe, where he had previously served as Vice-chairman. The Committee advised the US State Department on scientific exchanges with the Eastern bloc.²⁴

In the meantime, Eklund's approach to Paul Hoffman had proved effective at attracting the attention, as this internal memo from Slater to Stone demonstrates: "Paul Hoffman called today to state that he felt that help for Eklund's proposal for the physics training centre in Trieste was a very

²² Wiesner was member of the "Cambridge discussion group," who met to discuss on the problem of Vietnam. Among the members there were H.A. Kissinger, J.K. Galbraith and J. Killian. There is an extensive documentation on this that in Jerome Wiesner's papers at the MIT archives.

²³ V. Weisskopf to J.E. Slater, July 19, 1965, in grant file 67-40, FFA (my emphasis).

²⁴ Anon., *Phys. Today*, July, 1963, Vol. 16, N. 7, p. 70.

solid enterprise and one we should look at seriously.”²⁵ In a visit to the FF headquarters in 1966, Eklund described the ICTP as “the best thing (the most deserving of support) with which he has dealt since he has been Director of the International Atomic Energy Association [*sic*].”²⁶

Progress on the third front, the Italians, was also on the way. It was probably Budini who asked Egidio, an experienced diplomat with connections in the American political circles,²⁷ to explain the ICTP’s financial difficulties to Stone, and how important the FF grant would be. Simultaneously, the Counsellor of the Italian Embassy in Washington and the Deputy Consul General of Italy in New York called Stone “to express the hope of the Italian Government that the Ford Foundation would support” the ICTP.²⁸

Pressure was overwhelming, but resistance was strong too. In August 1965, Slater received a report from the State Department about the ICTP, which he forwarded to Stone with an attached memo calling his attention to the Department’s views. Stone overwrote on the same memo: “Joe, I am ready. As I told Salam – why do we have [illegible] to support physics and not other sciences [?]”²⁹

Despite Stone’s sceptical tone, this seems to have been a turning point in the evaluation of the project. The question was no longer a resistance to fund physics, for many insisted that the Centre should be seen mainly in political terms, as a centre to assist Third World development. The problem now was the same one Salam had faced a few years back in the IAEA: how to convince those in the developed world that some of his colleagues in Argentina, Brazil, Pakistan, Turkey, Ghana, etc, wanted and, in his view, had the qualities to be part of the international scientific community and contribute to their country’s development. For Salam it was frustrating to learn that while scientists in the industrialised countries were highly respected, and physics was considered an important subject for the development of advanced technology in the West, Third World theoretical physicists were utterly dismissed as valuable agents of modernisation. The general view in the industrialised countries was that Third World countries had other priorities, and that basic science

²⁵ J. Slater to S. Stone, memo, May 20, 1965, in grant file 67-40, FFA.

²⁶ J. Slater to S. Stone, memo, March 30, 1966, in grant file 67-40, FFA.

²⁷ Ortona was a crucial figure during the negotiations to create the ICTP securing Italian funds for the new Centre. Ortona had worked in the Italian embassy in New York for almost 10 years before being promoted to Director General of Economic Affairs at the Ministry of Foreign Affairs in Rome in the early 1960s. He would eventually return to the US a few years later as Italian Ambassador. On his diplomatic life see his memoirs: Egidio Ortona, *Anni d’America: La ricostruzione, 1944-1951* (Bologna: Il mulino, 1984); Idem, *Anni d’America: La diplomazia, 1953-1961* (Bologna: Il mulino, 1986); Idem, *Anni d’America: La cooperazione, 1967-1975* (Bologna: Il mulino, 1989), Idem, *Gli anni della Farnesina: pagine del diario 1961-1967* (Milano: Spai, 1998). Ortona seemed to have a personal relation with Stone as the tone of the letter suggests (E. Ortona to S. Stone, August 14, 1965, in grant file 67-40, FFA).

²⁸ S. Stone to J. Slater, memo, August, 1965, in grant file 67-40, FFA.

²⁹ J. Slater to S. Stone, August 17, 1965, in grant file 67-40, FFA

was not one of them. Food and birth control problems ought to be solved before thinking about, for instance, developing exotic quantum theories. It was felt that building a scientific tradition required solving “more basic” problems first. Salam saw this as overt discrimination. He would not accept that science and scientists should play different roles in the North and in the South. He was asked to explain what was assumed in most Western scientific circles after World War II, that physicists were essential actors in modern societies.

The recommendations by senior members of the scientific community prompted the FF to reconsider the ICTP request. In a one-sentence memo to Stone, Slater bluntly noted: “Shep: In view of the Weisskopf, Eklund, Oppenheimer, and other recommendations, we should talk at your convenience about the attached.” The attached document was the State Department report on the ICTP.³⁰

In 1966, the first grant was approved, but the doubts about the role of theoretical physicists and mathematicians persisted in the minds of the FF officers. In 1968, Francis Sutton took Slater’s post as the officer responsible for the ICTP’s grant. He became enthusiastic about the idea, and in 1970 recommended a second grant. However, the question of the role of physicists in Third World development continued to be a puzzle. In 1973, he wrote a long report about the Centre stating that:

These people are not directly useful in development, and they do not have a distinctive cultural coloration. The case for concern with them must lie in the influence they have on good quality teaching and research in the sciences and such general inspirations as their quality may give to the intellectual and cultural development of their countries. These influences certainly seem to me not trivial. On the other hand, I am uncertain how much of our attention and resources they deserve.³¹

After having received two grants worth US\$350,000, the Foundation turned down a third request in 1973. By then, the oil crisis had imposed austere policies in the US and Europe.

Motivations for supporting a young centre

Political pressure does not, on its own, constitute a reason for supporting a request. Most applications to donor bodies are backed by more or less influential personalities. Yet, not all requests are approved. Therefore, the motivations to provide grants to the ICTP must lie in those features of the ICTP that were potentially interesting to the Foundation.

The first thing Slater did when Eklund and Salam approached him in 1964 was to request Herman Pollack, Acting Director of the State Department International Scientific and Technological

³⁰ J. Slater to S. Stone, memo, 17-Aug-65, in grant file 67-40, FFA.

³¹ F.X. Sutton to D. Bell, February 1, 1973, in grant file 70-158, FFA.

Affairs, if they had any thoughts on the ICTP.³² A few months later, Pollack forwarded him a State Department report stating that “the US was unenthusiastic about this project” when first proposed in 1960, but the Mission in IAEA had reconsidered its position and Ambassador Henry Smyth was now “tremendously impressed by the enthusiasm and cooperative spirit of those working there.” Given the “promising picture” of the Centre, it concluded, “the Department was wholeheartedly in favour of private support for this kind of activity.”³³ The Foundation also consulted Smyth, who wrote on the same lines, stressing that the ICTP was an interesting project “both from the point of view of the scientific production and its political usefulness.” The problem was that, in spite of the widespread enthusiasm, nobody wanted to pay for it, implicitly reflecting the constraints on IAEA’s contribution introduced by the US delegation. On the possibility of establishing a link between the ICTP and UNESCO, Smyth told Stone: “I am sure you are familiar with the difficulties of working through UNESCO. Personally, I would be very reluctant to accept major support for this Center from UNESCO if it meant becoming involved in their red tape.” In relation to this possibility, he assured Stone that “some support from the Ford Foundation would be of great assistance directly and indirectly.”³⁴

Helping to advance American foreign policy was a good incentive for FF to intervene. According to the State Department, the activities at the ICTP were of interest due to the political character they saw in the ICTP. The important thing is that, for the FF, such an interest prompted it to consider the ICTP’s application seriously. After all, its international activities were closely linked to the State Department views, as the early consultation about the ICTP showed. As the State Department’s report stated, American hostility towards the creation of the ICTP was based on the fragile situation of the IAEA.³⁵ The US thought that a research centre was a burden that a poor organisation could not bear. Following the same line of thought, the US wanted to avoid the proliferation of redundant centres depending on UN agencies.³⁶ However, the US did not want to

³² This spontaneous reaction of consulting the State Department confirms what other authors have pointed out about the close relationship between the FF and American foreign policy. Most of these studies are concerned with cultural activities related to ideological warfare during the Cold War. In particular, see Kathleen McCarthy, “From Cold War to Cultural Development: the International Cultural Activities of the Ford Foundation, 1950-1980,” *Daedalus* 116, no. 1 (1987): 93-117 for a study about the cultural Cold War in Asia. Frances Stonor Saunders, *Who Paid the Piper? The CIA and the Cultural Cold War* (London: Granta, 1999), tells in detail the story of the Congress for Cultural Freedom in Europe. Curiously, neither of them considered in their studies any scientific intellectual involved in the cultural Cold War. On the other hand, Krige (“The Ford Foundation, European Physics and the Cold War”) demonstrates that the cultural Cold War extended to scientific institutions such as CERN and Bohr’s Institute too.

³³ H. Pollack to J. Slater, August 9, 1964 in grant file 67-40, FFA.

³⁴ H.D. Smyth to S. Stone, August 10, 1966, in grant file 67-40, FFA.

³⁵ See D. Fischer, *History of the International Atomic Energy Agency: The First Forty Years* (Vienna: IAEA Pub, 1997), especially Chapters 2-3.

³⁶ During the negotiations to create the ICTP, one of the alternatives presented by the US and other European countries to Salam’s idea was to broaden the IAEA’s fellowship programme to send Third World students to the existing institutions in the West. The ICTP was indeed considered redundant by the American delegation (and members of the 4/16/06

give the impression that they were leading the opposition against a project popular amongst Third World countries. As the State Department report to FF said:

The US position, *which we never pushed very hard in view of the enthusiasm generated among the underdeveloped countries for the center*, was based on our feeling that there were many well established centers for study in theoretical physics and these existing centers were sufficient to meet the need.³⁷

Striking in this statement is the ambiguity of the US position towards the ICTP. In 1964/65, with the positive assessment of the US scientific elite, including the diplomat Smyth, these mixed feelings became more evident. A solution that could demonstrate the US willingness to revise its position towards the ICTP, without compromising its policy towards the UN research centres, was to back Salam's application to the major American philanthropic foundation. The FF shared Smyth's concern over the ICTP's involvement with UNESCO, also expressed by Salam himself.³⁸ Furthermore, as Stone informed Bundy, Salam and Eklund had expressed their confidence that "after a five-year period the Centre will be fully supported by governments."³⁹ In summary, the FF and the State Department shared the view that if the ICTP was to be a valuable centre it had to be taken away from the UN. In 1969, a FF officer bluntly described the situation as follows: "the Centre is a lively program of first-class quality *despite its UN connection*."⁴⁰

Another reason to support the ICTP was the possibility of establishing contacts with the communist bloc. This was not an isolated effort. The Ford Foundation, especially during the Bundy years, showed particular interest in exchange programmes with Eastern Europe and the Soviet Union. Bundy's personal interest in arms control and security influenced other levels of the FF hierarchy.⁴¹ Francis Sutton argued that one of the few motivations to support physicists was their

IAEA Director's scientific advisor committee such as Isidor Rabi and Homi Bhabha), who thought that the US and European universities were more than enough to cover the Third World demand. His hostile position contrasts with Rabi's support to CERN in the 1950s, as evidenced in Dominique Pestre, "The First suggestions: 1949-June 1950," in A. Hermann, et al., ed., *History of CERN. Vol. 1* (Amsterdam: North-Holland, 1987), pp. 63-96; John Rigden, *Rabi: Scientist and Citizen* (New York: Basic Books Publishers., 1987). I should like to thank Dr. Rigden for a useful discussion on this point.

³⁷ J. P. Trevichick to H. Pollack, July 30, 1956, in grant file 67-40, FFA (my emphasis).

³⁸ In the 1960s, the FF partially financed some programmes sponsored by UNESCO (see Ford Foundation Annual Reports from these years). This does not necessarily contradict the critical views about that organisation. The Foundation's concern about the ICTP being corrupted by UNESCO's bureaucracy increased in the late 1960s, when the agreement between UNESCO and the Atomic Energy Agency on the ICTP's operation was signed. For instance, in the early 1970s, Francis X. Sutton described the ICTP as a "victim of UNESCO 10-year rule," and expressed his concern for UNESCO's pressures to use geopolitical distribution of staff positions (F. X. Sutton to IR-10, July, 1973, in grant file 70-158, FFA). Some FF officers viewed positively Salam's strategy to resist such pressures by publishing no statistics on country-by-country participation in the ICTP activities (S.T. Gordon to F.X. Sutton, July 28, 1969, in grant file 67-40, FFA).

³⁹ S. Stone to M. Bundy, April 7, 1966, in grant file 67-40, FFA.

⁴⁰ S.T. Gordon to F.X. Sutton, July 28, 1969, in grant file 67-40, FFA (emphasis added).

⁴¹ Francis X. Sutton, "The Ford Foundation and Europe: Ambitions and Ambivalence," p. 56.

central role in arms control.⁴² Presumably, the FF thought that such contacts would help the US intelligence services to gather information regarding scientific and technological facilities there, as well as on potential defectors.⁴³ Krige has suggested that in the late 1950s there was a genuine view among FF officers that scientific contacts could improve bilateral relations.⁴⁴ Between 1956 and 1965, the Foundation donated US\$500,000 to Bohr's institute "for the participation of American, East European, Soviet and Chinese physicists," as Stone reminded Bundy.⁴⁵ In the late 1960s, this was still part of the International Division rationale. As Sutton pointed out some years later, in fiscal 1970, the FF located US\$2,700,000 for this kind of exchange with countries behind the Iron Curtain. The ICTP grant, in this respect, represented a tiny investment.

The ICTP offered an ideal place to attract Eastern European scientists without raising suspicions. As was well known by the FF, the ICTP had decided to use a definition of the United Nations regulations according to which those countries were considered "developing countries."⁴⁶ This allowed the Centre to use funds from IAEA, UNESCO and other organisations concerned with "Third World development," to bring scientists from the Socialist bloc. The architect of that was Budini, who wanted to bring Trieste out of its peripheral situation by creating a network of Eastern and Central European institutions. The effort to link Trieste to its intellectual hinterland had started long before the creation of the ICTP, in the mid-1950s, in the context of what was then called the "European Network." It was proposed in UNESCO and consisted of a system of research centres, each one specialised in a different branch of science and technology and working in co-ordination.⁴⁷ The idea did not come to fruition. The classification of these countries as "developing" was the result of Budini's plan, Salam's agenda, and the necessity of creating a tradition of internationalism in the Centre. Part of that necessity had to do with attracting funds from bodies concerned with

⁴² F.X. Sutton to D. Bell, February 1, 1973, in grant file 70-158, FFA.

⁴³ Some of the Western scientists visiting the ICTP were approached by intelligence services in their home countries to enquire about the activities of the Russians and Eastern Europeans. Ray Rivers, an Imperial College PhD physics student who visited the Centre at the time, recalls being interviewed by an officer from the British Foreign Office soon after his returning from Trieste. In the interview it was clear to Rivers that the intelligence services were remarkably well informed about who was there and doing what. He speculated that the source of it were the Americans at the oceanography centre at Trieste, with whom most ICTP physicists interacted in social meetings (Rivers, interview with the author, August 8, 1999).

⁴⁴ J. Krige, "The Ford Foundation, European Physics and the Cold War."

⁴⁵ S. Stone to M. Bundy, April 7, 1966, in grant file 67-40, FFA.

⁴⁶ S.T. Gordon to F.X. Sutton, July 28, 1969, in grant file 67-40, FFA.

⁴⁷ In a forthcoming autobiography, Budini says that this project was jointly proposed by W. Thirring (in Vienna), G. Marx (in Budapest), Osredkar (Lubiana) and Supek (Zagreb). (I should like to thank Prof. Budinich for providing me a manuscript of his book.) Contemporaneously, a similar idea was suggested by the British mathematician Levy Hyman. Henri Laguier, a leftist and former head of the French National Science Council, argued that this network should be under the flag of the United Nations (Aant Elzinga, "Unesco and the Politics of Scientific Internationalism," in Aant Elzinga and Catharina Landström, ed., *Internationalism and Science* (London: Taylor Graham, 1996), 89-131, see p. 104).

scientific internationalism. As for the FF, the classification was certainly convenient, for it assured the neutral character of the exchange.

The 1965 Trieste seminar on plasma, a branch of physics concerned with potential ways of controlling energy released in fusion reactions, intended to be a continuation of the International Conference for the Peaceful Uses of Atomic Energy, in which the exchange between Soviet and American experts in plasma physics began. In the early 1960s, the USSR had the largest magnet used to isolate the reaction. The hope of producing fusion reactors turned out to be disappointing, but in the early 1960s there were great expectations. Like the Atoms for Peace Conference ten years before, and other meetings of plasma physicists, the ICTP activities were not particularly significant in terms of scientific results. After the conference, the American and Soviet leading teams decided to set up a joint research group in the ICTP. Although the kind of research was too highly theoretical to be of any use, Trieste became one of the few places to have access to Soviet scientists engaged in an area reputedly dominated by the USSR. By 1966, the collaboration was almost nominal. Nevertheless, Salam, the Italians, and some of the US scientists, such as Oppenheimer, saw and presented it as a programme of great potentialities, especially for the West. Among the reasons given by Stone to Bundy on why the Centre had become a “significant force” was this contact with the Soviets.⁴⁸

The ICTP plasma physics programme was short lived; by the early 1970s, it had practically disappeared as a collaboration project between the USSR and the US.⁴⁹ However, by then the FF grant had been approved. After 1968, the plasma physics programme was not mentioned in the FF headquarters. Emphasis was then put on the “East-West character of the Centre”⁵⁰ Indeed, in addition to the classification strategy, the ICTP had created another mechanism to simplify the mobility of scientists from behind the Iron Curtain: the Federation agreements. The Associateship scheme worked well with scientists from developing countries, but not for socialist countries. The socialist regimes in these countries would not allow their scientists to travel to the West on a regular basis without any official control. It was thought that agreements between the ICTP and the official institutions would facilitate the exchange. Moreover, it had an additional advantage: the agreement established that, the institutions would pay travel costs, and the centre would pay only for the living expenses in Trieste. This programme was later extended to cover other parts of the world, but its original intention was to overcome the constraints laid upon Eastern Europeans to visit Italy. By

⁴⁸ S. Stone to M. Bundy, memo, April 7, 1966, in grant file 67-40, FFA.

⁴⁹ However, some Third World scientists came to the Centre and worked in theoretical aspects of plasma physics with no aspirations of having any realistic application in energy production, as can be inferred from R.K. Varma’s ‘Plasma Physicists at ICTP: some reflections from an Indian Physicist’, in A.M. Hamende, ed., *From a Vision to a System*.

1969, the ICTP had signed 20 Federation agreements, nine of them with Eastern European institutions, mostly through the Foundation's funds.⁵¹

The third motivation to finance the ICTP was closely related to the possibility that Salam's schemes could be applied to other institutions. This applied for both the Associate scheme and the Federation agreements. In 1966, Salam participated in the "International Symposium on Science in South Asia," sponsored by The Rockefeller University and the New York State Department of Education. A few months later, Salam sent the article to Edward Shils, who published it in Minerva.⁵² Salam ordered 500 reprints.⁵³ The article, originally titled for the conference as "Advanced Scientific Research in Developing Countries," was widely distributed and read, becoming a common reference on the "Isolation of the Scientists in Developing Countries" (as it was re-titled for the Minerva issue). Salam wanted to publicise the Associateship scheme, inviting other institutions to copy it. He expected that this would tie the ICTP to a network of research centres especially in England and North America. In his article, aimed at the American intellectual community, Salam suggested that:

Universities and institutions with the wealth and scientific eminence of Princeton, Harvard, Cambridge, All Souls, Rockefeller University, New York State University, the Imperial College in London and others should seriously consider the establishment of their own associateship schemes. It ought to be considered not only for theoretical physics but for other subjects too.⁵⁴

A few years later, Salam published another article, this time in the Bulletin of the Atomic Scientists, where he described the Associateship scheme invented by the ICTP. He insisted that he hoped that "the idea will catch on, and even before an international university comes into existence," other institutions in the US will "[fund] their own associateships." Then he put the FF on the spot: "We do not yet possess the funds or the stability to make our scheme an ongoing one, but there is the possibility of a special Ford Foundation grant to strengthen it."⁵⁵ In other words, not helping ICTP meant contributing to the isolation of Third World scientists.

A few months after the publication of his first article in Minerva, Salam met Slater in New York. In a memorandum to prepare for the meeting, Slater was told that:

⁵⁰ S. Stone to M. Bundy, memo, April 7, 1966, in grant file 67-40, FFA.

⁵¹ IAEA and ICTP Final Report to FF 1970-1971, in grant file 67-40, FFA.

⁵² Abdus Salam, "The Isolation of the Scientists in Developing Countries," Minerva IV, no. 4 (1966). Re-printed in Salam, *Ideals and Realities*. pp. 211-216.

⁵³ A. Salam to E. Shils, May 20, 1966, D.149, ASP.

⁵⁴ A. Salam, "The Isolation of the Scientists in Developing Countries." This quotation is in p. 216 in Salam, *Ideals and Realities*.

⁵⁵ Abdus Salam, "The United Nations and the International World of Physics," Bulletin of Atomic Scientists, February (1968): 14-15. A few months before this article was published, Salam gave an interview to the popular science writer Nigel Calder ("A Man of Science – Abdus Salam," *Science Year: The World Book Science Annual* (1967), reprinted

You might want to learn more about the new dimension which Salam expressed in his phone call to you...: the ‘projection of the Center’s activities into other places’ – which means the creation of similar centers in other parts of the world. If this were to happen, unquestionably we’d be asked for support – and this is one you would want to think over first, I am sure.⁵⁶

Despite the fact that the proposal did not materialise, apparently the idea was seriously considered; or that is what some Americans made Salam believe. This was crucial for a FF decision. The Board of Trustees report recommending the approval of the first grant observed that: “Several American institutions, such as MIT and Princeton, are considering the creation of similar associateships modeled [sic] after those at the Trieste Centre.” A few years later, when the ICTP requested a second grant, Slater reported that: “Dr. Salam is confident that in time the Associate program will be copied by other institutions and disciplines. He mentioned that the National Academy of Sciences (Harrison Brown) in the recent past talked about a program of 300 ‘Associates’ for all disciplines of interest to N.A.S.”⁵⁷ Slater noted with interest that UNESCO and the National Research Council of Canada had announced their intention to incorporate similar programmes.

Indeed, when Salam applied for a second grant, the possibility that the ICTP was to be used as a model became a central issue in the light of the discussions on a “World University.” What eventually became the United Nations University was officially proposed by UN General Secretary U Thant in 1969 and approved by the General Assembly in 1972. Salam had been involved in the discussions of the Panel for an International University since the late 1960s. However, Salam had a different view from the rest of the Panel. He thought that if the University was restricted to an Institute of Global Problems (as the Panel did), there was no need for a new body. His idea, following the UNESCO model discussed above, was to create a network of decentralised institutes each of them dedicated to a specialised subject of *research and post-graduate* training.⁵⁸ The similarity with Budini’s network model was not accidental. Both wanted the ICTP to become the science faculty of the “World University.” In 1973, Italy offered to finance a Faculty for Basic Sciences in its territory (dealing with Life Sciences, Mathematical Sciences, Physical Sciences, Chemical Sciences). In March 1969, a few months before U Thant’s announcement, Salam wrote J.A. Stratton from the FF, expressing his concern about the ICTP’s finances after 1970. There was, Salam argued, a good reason why the FF should continue supporting the ICTP:

Salam, *Ideals and Realities*. pp. 441-450) in which he acknowledged the Ford Foundation’s “special support” to the ICTP.

⁵⁶ Charlie [unidentified] to J. Slater, September 6, 1966, in grant file 67-40, FFA.

⁵⁷ S.T. Gordon to F.X. Sutton, July 28, 1969, in grant file 67-40, FFA (emphasis in the original).

⁵⁸ Salam pointed out to a Member of the Pakistan delegation to UNESCO that the ICTP should be used as a prototype because “since its inception some eight years ago, the Centre has created something of a revolution so far as advanced study of Physics in the developing world is concerned” (Abdus Salam to Qudrat Ullah Shahab, 16 June, 1972. G.278, ASP).

The widening of the Centre's mandate is relevant, in my personal view, to the Centre's existence in the broader context of a world university idea. As you are aware, there is a renewed interest among the world academic community in the founding of one or more world universities. A first step which has been suggested in this context is a World Federation of International Institutes for Advanced Study... The International Centre at Trieste is the one concrete example of a truly international United Nations institute of higher education which could form a part either of a world university or of a world federation of research institutes of distinction.⁵⁹

From there onwards, the reference to the World University and the ICTP's participation in it was a recurrent theme in the internal and external correspondence of the FF regarding the Centre.⁶⁰ In 1982, Sutton wrote retrospectively about it:

The Trieste Center has often been seen as a model for other fields and there was an effort at one time to generalize the model. I recall a meeting at the U.N. which Jay Stratton, myself, and perhaps other from the Foundation attended, much under the stimulation of Harrison Brown. I am not aware of anything concrete that followed on this effort but it may have had some influence in the movement towards a United Nations University.⁶¹

The fourth factor involved in explaining the Foundation's support for the ICTP was the brain-drain problem. On this point, the FF shared a widespread concern about the emigration of scientists from underdeveloped countries. Yet, it is worth noting that also in Europe the brain-drain was associated with the scientific and technological gap with the UNITED STATES.⁶² However, as Gaillard and Gaillard observe, "embedded in an ideology of Third Worldism... gave [the brain drain] the aura of a problem."⁶³ The Foundation was sensitive to this discourse also because it had been involved in the mobilisation of scientists during the rise of the Latin American dictatorships, particularly in Argentina in 1966.⁶⁴

As we have seen, the Associateship scheme assumed that, besides the usual political and economic elements, an intellectual factor dragged the best brains out of the poorest countries. To illustrate this point, Salam never ceased to use his own case as an example of a "victim of isolation" forced to leave his country.

⁵⁹ Salam to J.A. Stratton, March 21, 1969, in grant file 67-40, FFA.

⁶⁰ See, for instance, S.T. Gordon to F.X. Sutton, July 28, 1969, in grant file 67-40, FFA.

⁶¹ F.X. Sutton to The Files, February 19, 1982, in grant file 70-158, FFA.

⁶² For an insightful discussion of the perception of the brain drain problem in the United Kingdom, see Hillary Rose and Steven Rose, *Science and Society* (London: Allen Lane the Penguin Press, 1969), Chapter 10, especially pp 203-209. For a review of the literature on the subject in relation to the Third World see, for instance, Anne Marie Gaillard and Jacques Gaillard, "Introduction: The International Mobility of Brains: Exodus of Circulation," *Science, Technology & Society. An International Journal Devoted to the Developing World* 2, no. 2 (1997): 195-224.

⁶³ Anne Marie Gaillard and Jacques Gaillard, "Introduction."

⁶⁴ The case of the Universidad Nacional de Ingeniería in Lima, Peru, is again a good case in point. Despite being conceived as a grant to improve education in Peru, it effectively helped nearly 60 physicists from Argentina to flee the country during the "intervention" of the University of Buenos Aires (Eduardo Ortiz, conversations with the author, 1999). Ford Foundation also helped to pay the salaries of the seventy-three Argentinean scientists who went to Chile (Thomas Glick, "Science in Twentieth century Latin America," in L. Bethell, ed., *The Cambridge History of Latin America. Vol. VI, Ideas and Ideologies in Twentieth Century Latin America* [Cambridge: Cambridge University Press, 1994]).

From the Western perspective, Salam was in many senses an ideal counterpart to implement modernisation programmes. In order to count in Third World countries with figures like Salam, the FF should help to prevent their emigration. There is in this respect an ironic ambiguity in Salam's status. On the one hand Westerners failed to appreciate that Salam was to a great extent a product of Cambridge and therefore very atypical of Third World scientists. On the other hand, it was the very mixture of origin in a Third World country and Cambridge training that made him so attractive as someone capable of implementing Western models of modernisation. Still, although Salam's charisma, impeccable scientific reputation, and brilliant diplomatic skills helped, the FF officers found it very difficult to see the function of mathematicians and theoretical physicists in Third World countries. A FF officer depicted the situation in these words:

I have heartily supported his [Salam's] Associateship Program as an important tactic to keep foreign-trained teachers and researchers down on the farm, once they have returned to their home institutions. It could well be used in many other instances where scholars from developing countries are tempted to immigrate because of lack of proper facilities and stimulation at home.⁶⁵

The cultural prejudice is evident. In many ways, that was exactly the kind of reasoning Salam had been trying to combat since 1960. Nevertheless, how could he possibly explain to a member of the FF in New York that *some* physicist in Buenos Aires, or Ankara, or Islamabad had more in common with a New Yorker than with most of his national fellows? How would he demonstrate that Third World scientists had similar aspirations and capabilities to their colleagues in the North? Although it was indisputable that it was not clear how theoretical physicists could contribute to solving famine and disease in those countries, industrialisation during the 1950s transformed most agrarian societies in the Third World, including the role of the scientific communities in national government. In post-colonial countries like India and Pakistan, the first generation of *national professional* scientists emerged after 1948, most of them educated in elite universities in the metropolis (Salam for example).⁶⁶ Benefiting from the deficit of European students in American universities, and before that from the "Good Neighbour" policy, during the same period an important number of Latin American scientists had returned home waiving fresh PhDs and had gone on to work in universities and the atomic energy commissions that emerged after 1955.⁶⁷ This intellectual elite was considered insignificant for most Western governmental and non-governmental officers, as well as for some intellectuals, whose "problematization of poverty" set a

⁶⁵ Charlie [unidentified] to J. Slater, September 6, 1966, in grant file 67-40, FFA.

⁶⁶ This is just a particular case of what Benedict Anderson has noted regarding emerging nationalist intelligentsias in the Twentieth-Century. In contrast to the nineteenth-century Europe, they were very young in age individuals educated in the West, usually (but not always as the Indian case reminds us) the *first* generation (Benedict Anderson, *Imagined communities. Reflections on the Origin and Spread of Nationalism* (London, New York: Verso., 1999), see pages 118-119).

specific definition of the developing world.⁶⁸ In such a discourse, locals had little or no agency in the solution of the problem, and that included the scientists. Salam shared most of the developmentalist ideology, but in the elitist environment of Cambridge and the “international scientific community”, he learned that the driving force of development was the local scientific elite, and he was committed to helping his fellows.⁶⁹

In spite of the FF’s lack of an articulated explanation about why these “agrarian” countries should have mathematicians or theoretical physicists, it decided to bet on Salam’s initiative. Apart from the reasons described above, we must remember that, the ICTP’s requests were insignificant for a foundation “at the peak of its power,” as Sutton described the situation later.⁷⁰

Concluding remarks: From Europe to the Third World

I have analysed the resistance that the ICTP encountered when it approached the Ford Foundation. The source of this resistance is the type of project the ICTP represented. For many years the Ford had dealt with research institutions in the First World and, separately, with programmes for Third World development. The Centre’s location, subject of study and mixture of First and Third World personnel, was very unconventional by the Foundation’s usual standards. The FF’s resistance to accepting the idea that theoretical physics was a priority in areas of the world where the large majority of population suffered from urgent and profound problems ought not to surprise us. What it failed to recognise was that the modernisation process in those regions had engendered also a small but important community of highly trained scientists struggling for recognition, both at international and national levels. Whereas in previous projects, such as CERN and the Copenhagen Institute, Ford could justify its support in terms of the political role of scientific intellectuals in Europe and the United States, it had difficulty in appreciating any specific role for Third World scientists either in foreign affairs as well as agents of ideological warfare.

The Foundation officers did not accept easily Salam’s claim in the sense that theoretical physics was a generic field with value to all sectors of research. However, the FF did reconfigure Salam’s project to fit it with their eventual willingness to fund. This willingness was in line with

⁶⁷ See Thomas Glick, “Science in Twentieth century Latin America,” H. Vessuri, “The Universities, Scientific Research and the National Interest in Latin America,” *Minerva* 24, no. 1 (1986): 1-38.

⁶⁸ I am deploying the term in the sense Arturo Escobar describes the new relationship of domination between North and South as shaped by the invention of a discourse and a practice of development in Arturo Escobar’s *Encountering Development: the Making and Unmaking of the Third World* (Princeton: Princeton University Press, 1995).

⁶⁹ The author is currently working on Abdus Salam’s discourse of science and development.

⁷⁰ In 1964, FF’s assets climbed over US\$4 billion. This figure was never reached again in constant dollars; Francis X. Sutton, “The Ford Foundation and Europe: Ambitions and Ambivalence.”

the kind of factors that prompted the Foundation to support the Niels Bohr Institute and CERN in the 1950s.⁷¹

Lacking the experience to deal with a project of this nature, the FF trusted in the opinion of reputed American scientists and the State Department. Furthermore, when assessing the ICTP the State Department also trusted in the views of the senior members of the American scientific community. In this respect Salam's good relations with them were crucial not just in inventing a scientific tradition in the ICTP, but in spreading of the image of a centre of excellence. This is not to say this was a misrepresentation of the Centre's character. The important point is that while part of the elite publicly expressed a belief in the ICTP's "decisive achievements" that they felt necessary for creating interest within the State Department and the FF, the younger faction dismissed the ICTP's scientific production (with the exception of Salam's own work).

In order to arrive at a final decision about the ICTP's request, the FF did not trust only in external advisers. It also had to elaborate its own motivations. The East-West character of the Centre, promoted by the Trieste physicists and practically exploited by Salam was so important because, as the 1962 study stressed, the FF ought to stimulate "East-West intellectual and cultural exchange and to encourage common projects in scientific, educational and cultural fields."⁷²

Reservations about the UN, and particularly UNESCO, became central in the decision to help the Centre establish its independence from what the FF officers saw as endemically bureaucratic, inefficient, poor and "politicised" organisations. Finally, the prospect of "generalising" the ICTP model is a good example of the way the FF saw the Centre. Despite their doubts about the actual role of the ICTP in Third World development, the FF was prepared to invest and learn about a novel scheme of assistance for the Developing Countries that was likely to be applied in other areas and institutions. In summary, the FF's bet on the ICTP was motivated by the anticipation of indirect benefits.

Although my analysis discusses the political lobbying by Salam and his allies before the Foundation's attempt to find justification for funding the ICTP, this division does not correspond to the chronology of actual events. Both elements were present throughout the interaction between the ICTP and the FF. During a period of seven years, the ICTP continuously provided "evaluations" of the Centre. Meanwhile the FF officers strove to find motivations to support it. I wish to stress the necessity of determining what is the size of the grey area generated by ambitious and vague

⁷¹ I thank John Krige for helping me to clarify this important point.

⁷² Ford Foundation, "The Ford Foundation in the 1960s, quoted in p. 12.

requests, both in terms of approved projects and invested capital. This case has been illustrative in demonstrating that applicants needed to possess a set of resources supporting an attractive idea. Moreover, if well administrated, these resources may compensate for reservations that can otherwise prevail in the final decision. We should investigate whether this form of resistance and strategy is a pattern or an exception. However, if we really want to learn about patterns of funding by American philanthropic foundations, we must start by looking at their activities in the Third World, where these bodies invested more than twice their total budget on “institutions in Europe.”⁷³

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⁷³ Francis X. Sutton, “The Ford Foundation and Europe: Ambitions and Ambivalence,” p.42-43.
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