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# INTERVIEW WITH KAPIL RAJ

## ENTREVISTA CON KAPIL RAJ

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Kapil Raj (1949, Amristar, India). D. in Philosophy and History of Science from the Sorbonne Université in 1982. Specialist in epistemology and history of science to address the question of the production and transmission of scientific ideas between different cultures. Director of studies at the Alexandre Koyré Centre, EHESS, France.

## INTERVIEW WITH KAPIL RAJ

México City, October 23, 2022

*Thank you for agreeing to this interview. First of all, tell me your story, your background. Where were you born? Where did you study?*

I was born in India, in Amritsar,<sup>1</sup> the holy city of the Sikhs, in October 1949, two years after Indian independence from British colonial rule, a momentous event in itself but one which also completely and fundamentally changed people's lives from Northwestern and Eastern India. Independence from Britain came in the form of a partitioning of the country on religious lines, with the emergence of the Islamic state of Pakistan. It was divided in two parts, West Pakistan, between India and Afghanistan, and East Pakistan, carved out of the state of Bengal, separated by almost 2,000 km of Indian territory. In 1971, East Pakistan broke off from Pakistan to become an independent country called Bangladesh. My father's family came from the part that became West Pakistan and so were refugees in India with no secure home. As my father was still exploring possibilities for the family's future with no fixed lodging, my maternal grandmother, who was from Amritsar in Indian Punjab, looked after my mother while she was expecting me, and that was where I was born. Meanwhile, my father had found his future, buying a printing press in New Delhi, where I was to grow up. Even so, life was not easy at the start, as we were lodged in a tent in a refugee colony for the first three years of my life.

*And you studied there.*

Yes, in an Irish missionary school for 11 years. Although this was a Catholic institution, with some religious education, there was no proselytization.

*You were there for your basic formation?*

Yes, from kindergarten to high school. In 1965, at the age of 16, I passed the Indian School Certificate (at the time organized by the University of Cambridge), and then went to St. Stephen's College, an Anglican college run by the Cambridge Mission<sup>2</sup> and affiliated to Delhi University, between 1966 and 1970. There I studied mathematics, physics and chemistry majoring in mathematics, a subject I was passionate about then. I would perhaps have continued in mathematics, having enrolled for a Masters in mathematical physics. But other momentous events,

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<sup>1</sup> City in the state of Punjab in northwestern India, close to the border with Pakistan. Its Golden Temple is the holiest of Sikh places of worship. <<https://www.britannica.com/place/Amritsar>> [Accessed: february 13th, 2024].

<sup>2</sup> St. Stephen's College was founded in 1881 by the Cambridge Mission to Delhi in conjunction with the Society for the Propagation of the Gospel. <<https://www.ststephens.edu/history/>> [Accessed: february 13th, 2024].

in India and the world, changed my life radically. Growing up in the late 60s was an experience similar to other people in other parts of the world with the rise of a counter-culture: rock n'roll, pop music, The Beatles. . . This reinforced our global consciousness and feeling that we all belonged to the same *-modern-* world. They spurred our impatience for a new and more tolerant world. This was also in tune with our generation born at the time of India's independence, especially in the shadow of Gandhi.<sup>3</sup> But the decade also witnessed a number of other processes and events, such as the Arab-Israel War, the Prague Spring, the assassination of Martin Luther King, and the US invasion of Vietnam, which made us sit up to new and unsettling questions. Other events affected us more specifically as teenagers: a massive famine in eastern India in 1967 which killed tens of thousands, the horror of which many of us saw at first hand or through films and newspaper coverages. Despite the massive human tragedy, the United States had refused to help send food and other aid to punish India for its refusal to back them on Vietnam.

At the same time, through the African students at Delhi University, we learned about the Biafra war in which many western countries supported the Nigerian government to crush the rebellion. Exactly at the same time, Vietnam was exploding next door to us. This then was the cataclysmic world in which we suddenly found ourselves. The only ray of hope seemed to come from the Cultural Revolution in China just to the north. Many of us were thus drawn to the writings of Chairman Mao<sup>4</sup> and his *Little Red Book*,<sup>5</sup> copies of which were clandestinely being distributed across the campuses of India by militants and sympathizers of a nascent Maoist movement.<sup>6</sup> This is how I was attracted to Marxism. History was really not a subject I liked at all in school. You had to learn dates, and changes of dynasties, and periods of domination, and that's all; history meant everything had to be organized around dates. Now suddenly there was a new vision of what history meant. It meant that there was a reason for human action, it was going somewhere. And for someone who was a mathematician, the reason in the rationality behind

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<sup>3</sup> “Mahatma Gandhi: Mohandas Karamchand Gandhi, (1869-1948) Indian nationalist thinker and leader. The main architect of his country's independence (1947), he was the most important figure on the Indian political and social scene during the first half of the 20th century and one of the most influential personalities in contemporary history”. <<https://www.biografiasyvidas.com/biografia/g/gandhi.htm>> [Accessed: february 13th, 2024].

<sup>4</sup> Mao Zedong, Mao Tse-Tung or Mao (1893-1976), Chinese politician, founder of the Chinese Communist Party. He established the People's Republic of China on 1 October 1949. In 1966, he initiated the Cultural Revolution, an attempt to “purge the country of impure elements and revive the revolutionary spirit”. <[https://arboldelademocracia.cuaieed.unam.mx/autor/Mao\\_Zedong](https://arboldelademocracia.cuaieed.unam.mx/autor/Mao_Zedong)> [Accessed: february 13th, 2024].

<sup>5</sup> Mao's Red Book (Traditional Chinese: 毛主席語錄), also known as the Little Red Book, was published in April 1964 by the government of the People's Republic of China containing quotations and speeches made by Mao Zedong as chairman of the Communist Party of China.

<sup>6</sup> “The Naxalite–Maoist insurgency is a conflict between Maoist groups known as Naxalites or Naxals -(group of communists supportive of Maoist political sentiment and ideology- and the Indian government. The insurgency started after the 1967 Naxalbari uprising which led to the creation of the Communist Party of India (Marxist–Leninist). They recruited students and launched wide-spread violence in West Bengal against the “class enemies” such as landlords, businessmen, university teachers, police officers, politicians of the right and left and others. Rabindra Ray, *The Naxalites and their Ideology*, New Delhi, Oxford University Press, 1988; Puspitarani Bardhan, “Maoist movement in India”, *The Indian Journal of Political Science*, vol. LXXVI, n. 4, oct-dec 2015, pp. 870-876.

this made total sense to me. So it was not just reading the little *Red Book*, it was also reading Marx and Engels, the fundamental texts, especially historical materialism.<sup>7</sup> The meaning of history based on reason resembled mathematical reasoning, it was like a theorem. You started with a certain reasoning, and you came to a certain conclusion. And this was very important for me. To make this very long story short, after a year into my Master's I decided to quit my studies and join my Maoist comrades in raising people's consciousness as a militant in rural India.

However, unlike the others, I did not believe that as vanguards of the revolution, we were to lead with guns and slaughter rural landlords. Violence was against my principles, so I went instead to teach. After all, I was a Marxist because it made sense, because it's Rational and I could teach Marxism the way I could teach mathematics. My path was then that of a teacher who wanted to teach people to get away from superstition, to get away from tradition. So, it was enough to teach people, and if you taught people, then they would become Marxists. Everything lay in pedagogy, and in bringing out the rational nature of society and of time. I left my studies, and I went to a village as a Marxist, as a Maoist militant who was nonviolent. And of course, the reception that I had was extremely enthusiastic. Everyone wanted to learn how to read and write. They wanted literacy, they sent their children to me, but they also, as adults, wanted to learn from me. This was very encouraging. This village is in the mountains, in the Himalayas. I couldn't go anywhere else for the simple reason that I'm too tall, and too fair. In most parts of India, people are shorter and slightly darker and I would have been picked up by the police immediately. As I come from North India, close to the Himalayas, it felt easier living amongst people who look like me. But after a few months, I began to realize that while everyone wanted to read and write, they did not want my capital-R Reason. They would have discussions with me and very soon the village began to organize competitions: who could beat me in reasoning? It was to prove that "you think like this, we think like that": "Why doesn't grass grow over here in this field? And why does it grow over there, just next door?" "It's because of lack of fertilizer, because of the soil and so on," I would reply. "No, no," they would object, "you can do what you like, you can change the soil, you can put soil from here and you can put it over here and it won't work". "So, what's your reason for this?" I would ask. "It's because over here, 70 years ago, someone was killed and for three generations nothing is going to grow over here. You can do what you like." And, so, in the beginning I used to laugh, and say, "Okay, let's experiment," and I did try to disprove them empirically. But, of course, it requires more than two or three months to make grass grow even if you change the soil, you sometimes have to wait for a year or so. So finding conclusive proofs was not immediate. But after a few months in this village, one day we were having a discussion. And before I was able to open my mouth, I suddenly realized that I could anticipate the response. And that completely destabilized me because I

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<sup>7</sup> Karl Marx (1818-1883) and Friedrich Engels (1820-1895), German philosophers, who wrote together fundamental works that gave birth to modern communism, scientific socialism, such as *The Holy Family* (1844), *The German Ideology* (1846) and *The Manifesto of the Communist Party* (1848). Marx published *Das Kapital* in 1867 and is the father of Marxism and historical materialism. Ceplair, Larry, "Karl Marx (1818-1883) and Friedrich Engels (1820-1895)", *Revolutionary Pairs: Marx and Engels, Lenin and Trotsky, Gandhi and Nehru, Mao and Zhou, Castro and Guevara*, Lexington, KY, Kentucky Scholarship, 2020 <<https://academic.oup.com/kentucky-scholarship-online/book/38288/chapter-abstract/333246885?redirectedFrom=fulltext>> [Accessed: february 13th, 2024].



suddenly realized that while I had capital-R Reason, and they had superstition -which means that it was random- if I could anticipate them. That meant that there was some form of logic in their thought as well. But I didn't have words for this then; I was 21. I didn't know what was happening around me. Suddenly I realized that if I have a system, they also have one. There was coherence on both sides because I had entered into their coherence, and I could understand how they were trying to reason. This led me to the question what was the status of my capital-R Rationality if I could learn another system of reasoning? Where was the unique status of my Reason? I was completely destabilized! However, I still believed in the revolution, but after a couple of years, I realized that our Maoist revolution was going nowhere. It had been crushed in most parts of India and some of my Maoist colleagues and friends had either been killed or else were in prison. The revolution had more or less fizzled out while I was in this village. I was very happy there, but there was no reason for being there anymore. Besides, I also fell seriously ill and had to go back to the city and see what I would do next. But then there was this big question on my mind about the nature of Rationality. Because that was what took me to the village, that's what had made me become a Maoist or a Marxist for a start. But now I was faced with the plurality of "rationalities" -the possibility that there were other forms of thinking and coherence. That's what made me go to philosophy. So, I went back to the university after three years to read philosophy for my Master's, but with a specialization in philosophy of science, because that was where I thought the answer to my question lay. In 1975 when I finished, I was living with my future wife, who is also my age. She was -and still is- a physicist (we are now divorced). She was finishing her doctorate because she didn't interrupt her studies as I did. And we were both looking for something meaningful to do but couldn't think of any definite path or profession that we could see ourselves in. One thing I was not prepared to do was to put my past behind me and start afresh. Since I got a first in my master's, I could have got a job and I would have had a scholarship to do my doctorate. However, I was still dogged by my questions. My master's in philosophy hadn't given me any answers and I couldn't see myself as many of my other erstwhile comrades who had abandoned Maoism, either to become Trotskyists<sup>8</sup> or else completely apolitical.

*And then you went to France*

Yes, I still had my questions and with my wife (we had meanwhile got married) we decided that we wanted to go elsewhere in the world to experience other things before making any decisions about what we wanted to do. And the one place that suggested itself immediately was France

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<sup>8</sup> "Trotskyism, a Marxist ideology based on the theory of permanent revolution first expounded by Leon Trotsky (1879-1940), one of the leading theoreticians of the Russian Bolshevik Party and a leader in the Russian Revolution. Trotskyism was to become the primary theoretical target of Stalinism in Russian Communist circles in the 1920s and 1930s." <<https://www.britannica.com/topic/Trotskyism>> [Accessed: february 13th, 2024].

for the simple reason that it had also had 1968,<sup>9</sup> which like for us in India was also a “failure”. I reckoned that, like in India, there must be lots of people who had become Trotskyists or become apolitical. But there must also be many others, like me, who were still asking themselves what happened and were trying to make sense of the world around them. And so that was what brought us to France. My wife had a postdoctoral fellowship in physics immediately, but I didn't as there were few fellowships for higher studies in philosophy and I also needed to learn French. I wanted to continue studying philosophy while continuing my political explorations. So my next question was: what to do in philosophy? I was drawn to the Frankfurt School,<sup>10</sup> because they were a critical school of Marxism. Jürgen Habermas,<sup>11</sup> the most prominent member of the School's second generation, had formulated a critical philosophy of knowledge and science. So, I decided to compare his thought with what was happening in contemporary Anglo-American philosophy of science, especially around Thomas Kuhn,<sup>12</sup> because with his philosophy, you had the possibility of changes of paradigm which meant that people could move from one system of thought to another. And I wanted to see how all this could be combined and become something which was more coherent for me. So that was the subject of my thesis.<sup>13</sup>

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<sup>9</sup> “The events of May '68, refer to a period in France during which large demonstrations and a general strike took place, accompanied by occupations of factories and administrative buildings, the generalization of forums for social and political discussions and proposals, an almost complete paralysis of the economic system and the administration, and the beginnings of egalitarian societal relations throughout France”. <<https://www.britannica.com/event/events-of-May-1968>> [Accessed: february 13th, 2024].

<sup>10</sup> “Frankfurt School, group of researchers associated with the Institute for Social Research in Frankfurt am Main, Germany, who applied Marxism to a radical interdisciplinary social theory. The Institute for Social Research (Institut für Sozialforschung) was the first Marxist-oriented research center affiliated with a major German university. Some of its members were T. W. Adorno, Erich Fromm, Herbert Marcuse, and Walter Benjamin. They tried to develop a theory of society that was based on Marxism and Hegelian philosophy but which also utilized the insights of psychoanalysis, sociology, existential philosophy, and other disciplines. Much of this research was published in the institute's journal, *Zeitschrift für Sozialforschung*, 1932-41 (*Journal for Social Research*)”. <<https://www.britannica.com/topic/Frankfurt-School>> [Accessed: february 13th, 2024].

<sup>11</sup> Jürgen Habermas (b. 1929) German philosopher and sociologist known for his work in political philosophy, ethics and legal theory, as well as in the philosophy of language. Member of the second generation of the Frankfurt School and one of the exponents of Critical Theory. <<https://www.philosophica.info/voces/habermas/Habermas.html>> [Accessed: february 13th, 2024]. Author, among others, of *Strukturwandel der Öffentlichkeit. Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft*, Luchterhand, Neuwied-Berlin, 1962. *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, Cambridge, MIT Press, 1989. *Historia y crítica de la opinión pública*, Barcelona, Gustavo Gili, 1981.

<sup>12</sup> Thomas Samuel Kuhn (1922-1996) American physicist, philosopher of science and historian, known for his contribution to the shift in the direction of scientific philosophy and sociology in the 1960s. His theory introduced into epistemological analysis the contribution of other disciplines such as history, sociology and psychology. Science is presented by Kuhn as a dynamic cognitive structure that emerges and develops within a social-historical context, a paradigm, constituted by a set of cognitive values that depend on the scientific community. <<https://www.philosophica.info/voces/kuhn/Kuhn.html#toc0>> [Accessed: february 13th, 2024]. Author, among others, of *The Structure of Scientific Revolutions*, Chicago, The University of Chicago Press, 1962.

<sup>13</sup> Kapil Raj, «La notion de “science” chez Habermas et Kuhn», Doctorat de 3ème cycle (Ph.D.) Philosophie et histoire des sciences, Université Panthéon-Sorbonne, 1982.

*Which is not published.*

Which is not published, no, because my idea then was not to carry on in an academic career at all. I wanted to do this for myself, to find an answer to my question about the possibility of many rationalities, and then perhaps look for something else to do in life. But things changed radically after I defended my thesis. The rapporteur of my thesis was a professor from the École des Hautes Etudes, Ernest Coumet,<sup>14</sup> a specialist of 17<sup>th</sup> century French Science, who really appreciated my work; I got a Summa cum laude. But after the thesis, during the reception I had organized, he came to me and said, “I just want to tell you one thing: although you studied your question really well in philosophy, it's a good exercise and you've done a very good piece of work. But your question, your fundamental question as to whether there are many forms of reason or not is not a philosophical question. Philosophy will never give you an answer to this. You can always find Kuhn and other people who can tell you things and you can become a relativist. But your fundamental question comes from your experience and your encounter with another part of your own culture. Your question is in fact historical.” As you can imagine, I was quite disconcerted. I told him that I knew no history, I'd never actually studied the history of science as history. I'd studied the history of science from the perspective of philosophy of science, that is as epistemological history. But he offered to help me find my way: Attending his seminars and reading both in the history of science and the history of India, I was finally able to come back to Coumet with a reformulation of my initial question: what was it that made my family or my part of Indian society change and appropriate different ways of reasoning, more in consonance with the colonial society of British-ruled India,<sup>15</sup> so that I could espouse Western philosophy and Western mathematics, whereas others in the same country continued reasoning in more traditional ways. Coumet triumphantly replied: “Now this is a historical question! So why don't you pick this question up and study it in historical terms? To encourage me, he offered helped get me a scholarship for a few months to compensate for having to give up my teaching contract at an engineering school through which I earned my living at the time. He insisted that I had to give up teaching for at least 6 months for archival research, go to London and look at the colonial archives there to see if I can find responses to my questions. He contacted Maurice Aymard,<sup>16</sup>

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<sup>14</sup> Ernest Coumet, (1933-2003), French historian of science and epistemologist at the Alexandre Koyré Centre and at the École des hautes études en sciences sociales (EHESS), where from 1980 he directed a seminar on the history of science in the classical age and reanimated the *Revue de synthèse*. See Myriana Ilic, “In memoriam: Ernest Coumet (1933-2003),” *Archives Internationales d'Histoire des Sciences*, 57(158), pp. 175-176. His writings have been compiled in Thierry Martin et Sophie Roux (éds.), *Œuvres d'Ernest Coumet*, t. 1, Besançon, Presses Universitaires de Franche-Comté, 2016 and Catherine Goldstein (éd.), *Œuvres d'Ernest Coumet*, t. 2, Besançon, Presses Universitaires de Franche-Comté, 2019.

<sup>15</sup> Kapil Raj, “Colonial Encounters, Circulation and the Co-construction of Knowledge and National Identities: Great Britain and India, 1760-1850” en S. Irfan Habib, Dhruv Raina (eds.), *Social History of Science in Colonial India*, Delhi, Oxford University Press, 2007, pp. 83-101.

<sup>16</sup> Maurice Aymard, (b. 1936), French historian, specialist in economic and social history in the modern period, disciple of Fernand Braudel. <<https://www.fmsh.fr/en/researchers/maurice-aymard>> [Accessed: february 13th, 2024]. Author, among others, of *Venise, Raguse et le commerce du blé dans la seconde moitié du XVI<sup>e</sup> siècle*, Paris, SEVPEN, 1966.



who was then Deputy Director of the Maison des Sciences de l'Homme who quickly arranged a short-term fellowship through the British Academy. He also arranged for me to present my project at an international conference in Delhi. This was 1986.

By that time, we had decided to settle down in France, although that was not our initial plan. France was a transitory experience, to understand what was happening and then go back to India with some answers to my questions and more at peace with myself. But, at that time India had few job opportunities in universities. Also, French degrees were at a disadvantage partly because my thesis was in French, but mainly because French degrees in the humanities were not easily recognized in India. So, there was little incentive to translate my thesis into English. And besides, there was no guarantee of a job. So, since we were more or less stably employed in France, we could at least begin to think of a future. And that is how I started training myself to become a historian. By then I was already 36, and also wanted to have a family.

*History has two coordinates, time, and space. You come from a very different space and when you went to Europe, you faced the confrontation of East and West, which has been always in your work: confrontation and also the link between those two spaces. And then, you gave it a kind of turn on how you approached history. You can even say that you made some comparisons between the areas. So the question is: do you consider yourself a global historian, a comparative historian, a connected histories historian, or what do you consider yourself? You have done everything. Your works connect things from different parts of the world, cultural links, popular links. You do history of mathematics and then you go to science and then you go to botanic and then you go to cartography, and you always have these two spaces. How do you handle that?*

As I said before, I wasn't trained to be a historian, so I wasn't following the templates of history and historians. The answer that established historians had is that western rationality was imposed on India through colonization. So, in a certain kind of way, to borrow from Serge Gruzinski's title,<sup>17</sup> it was the colonization of the indigenous imagination. However, the history of my own family, the history of people around me, suggested a different answer. As I realized, Indians saw opportunities in colonization; parts of society were looking to espouse new ways of thinking, strategies for which emerged through this colonial encounter. It was not easy at all to separate people along cultural or national lines. That was not the answer. In the history of science,<sup>18</sup> we have two classic answers to the question of Western science. One is that it is a composite of different scientific traditions or different knowledge traditions from different cultures. Joseph Needham<sup>19</sup> was the champion of this perspective. In this vision, Western science

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<sup>17</sup> Serge Gruzinski, *La colonisation de l'imaginaire. Sociétés indigènes et occidentalisation dans le Mexique espagnol XVIe-XVIIIe siècle*, Paris, Gallimard, 1988, [*La colonización de lo imaginario. Sociedades indígenas y occidentalización en el México español. Siglos XVI-XVII*, México, Fondo de Cultura Económica, 1991].

<sup>18</sup> Kapil Raj, "Go-Betweens and the History of Science" in Carmen Bernand, Eduardo França Paiva, Carmen Salazar (coords.), *Serge Gruzinski, le passeur persévérant*, Paris, Éditions du CNRS, 2017, pp. 297-310.

<sup>19</sup> Joseph Terence Montgomery Needham, (1900-1995), British biochemist and historian of science and technology in China. He was the first Western scholar to recognize China's scientific past through his *Science and Civilization in China* series, which studies the development of science in China. In it he asked his "Big Question" about the stagnation of technological development in China. <<https://www.britannica.com/biography/Joseph-Needham>> [Accessed: february 13th, 2024].

is in fact an aggregate of different scientific endeavors: Chinese, Indian, Arab, and so on.<sup>20</sup> But this was not my experience. My experience in the village was that there was a sheer split between their way of thinking and mine. It wasn't as if their way of thinking had contributed to anything at all: it was excluded by Western (scientific) rationality. Theirs was not rationality, so how could that be included? The other answer is diffusionism. In this vision, the West has the knowledge which it then spreads to the rest of the world. And I was at odds with that too, as I had learnt from my own personal experience. In fact, at the age of 21, going to this village was exactly being a diffusionist. As I have already told you, I discovered that that was not the way in which things worked either. So, from my experience, neither the irenic vision of a common rationality shared by all of humanity, nor the top-down diffusionist model worked. I realized that in order to make sense of my question, I had to think for myself, without theoretical models, and certainly without the Marxist, Maoist, ideology that had so far governed my thinking and actions. I tried then to build my own resources. It seemed to me, growing up with stories of all kinds being told around me, about my own family as well as others from my milieu, that it was through the active desire of certain sections of the South Asian<sup>21</sup> population for opportunities to benefit from the new order of the emerging colonial state that changes in their cognitive approaches and strategies began to occur. In fact, these elites had a tradition of acculturating into the worldviews and knowledge systems of the various conquerors who had preceded the Europeans through the past centuries. Not only did they learn their languages, but also their laws and culture and, at times, reshaping them to create new languages, etc. So, it was with these clues that I approached the records, by looking at specific cases in history to see how these new forms of thinking and acting were emerging through processes of negotiation between elites in the indigenous population and the Europeans colonizers, traders and missionaries, both looking for mutual gain. I started by looking for early attempts at introducing modern science teaching in schools in India. To my great surprise, I discovered that modern science was not introduced by Europeans but was the result of incessant demands by local elites -their active participation- who saw opportunities for themselves and their children in these new forms of learning and doing. Already in the early 19<sup>th</sup> century, just a few decades after the colonization of the Subcontinent, these elites opened their own schools and began asking for teachers and pedagogical material to teach science on condition that neither the teachers nor the material carried any reference to Christianity, as they were very wary of proselytization. This, I discovered, proved to be a great challenge, as science and science education in Britain were at the time inextricably tied with religion. New textbooks thus had to be written and new ways of transmitting knowledge had to be invented. This resulted in the emergence of a conception of scientific rationality specific to India, which at the same time broadly shared concepts with its European cousin, if you like. Modern science and the rationality on which it was based was thus not the monolithic block that it was seen to be. It could vary locally and regionally, with different ways of thinking, of practicing, of communicating while still belonging to the same

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<sup>20</sup> Joseph Needham, *The Grand Titration: Science and Society in East and West*, London, George Allen & Unwin, 1969.

<sup>21</sup> South Asia here refers to British colonial India, what is now India, Pakistan, Bangladesh and Sri Lanka.

family and being able to influence what we call Science (with a capital-S), as the example of new textbooks and pedagogies developed in India shows, but which then circulated beyond the Subcontinent.

With this new insight, I began to look for other cases of knowledge making through intercultural encounter between South Asians and Europeans. This became the broad theme of my work. I have thus looked at specific cases from the 17<sup>th</sup> century to the present day in botany<sup>22</sup> -one of the main forms of knowledge which formed the basis of European presence in Asia to trade in plants and spices- geography, surveying and map-making, linguistics, law and, in the 20<sup>th</sup> century, physics. In each case, I wanted to understand what actors were or are doing. In the case of plants and botany, the record shows how Europeans, and all foreigners for that matter, relied on local inhabitants for identifying plants and describing their uses. Botanical knowledge had necessarily to depend on local inhabitants for identifying plants and describing their uses. Botanical knowledge thus resulted from an exchange around needs and the knowledge of each side had to be adapted to satisfy these. Through a careful reading and analysis of the sources around each case-study I began to understand that what we call western botany was in fact the result of individual negotiations which was different from each side's original knowledge. I found a similar situation in geography and spatial knowledge and techniques and then in law and philology, which led me to thematize my work around the problematic of circulation, to focus on how existing notions and practices change through movement and intercultural encounter. Circulation is understood as a process of going forth and then coming back and then trying to see what changes in this process. Now, this is not diffusion, because in diffusion you only receive something. It's like a radio station where you emit a program and someone else receives this, whereas in circulation what's happening is that the receiver is also an emitter of something -something different- because there's an exchange and negotiation taking place in each point, and each is then a point of origin of something new, small or big.

So, your question was: how do you consider yourself? I'm really a micro-historian, but I focus on things in movement – knowledge practitioners, their practices, texts, instruments – and how they change as they arrive in new and different spaces and encounter other cultures of knowledge and practice and have to negotiate with them. So I could see myself as a “micro-” transnational, or “micro-” transcultural historian, as my research is not limited by national or cultural boundaries but is focused on the encounter between cultures. Also, my scale is limited to individual cases and not to global phenomena. Of course, my cases do have global consequences in that they deal with science which has global and universal significance.<sup>23</sup>

Also, I'm not a comparativist because although I see that my actors are comparativists, they are always comparing themselves and their practices with others, since they are different, but what I'm interested in is what happens when they meet. This is very different from the static world of the comparative historian who is interested in enduring contrasts. My world was so

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<sup>22</sup> Kapil Raj, “Surgeons, Fakirs, Merchants and Craftsmen: Making L'Empereur's Jardin in Early Modern South Asia” in Londa Schiebinger, Claudia Swan (eds.), *Colonial Botany: Science, Commerce, and Politics*, Philadelphia, University of Pennsylvania Press, 2005, pp. 252-269

<sup>23</sup> Kapil Raj, “Beyond Postcolonialism... and Postpositivism: Circulation and the Global History of Science”, *Isis*, 104, 2, 2012, pp. 337-347.

different from the world of the people in the village I went to. The comparison was there immediately, but it was I as someone in history who was comparing, but that was not the ultimate object of my curiosity.<sup>24</sup> It is what spurred me into finally examining what happens in the act of intercultural encounter. Does each party stay different? Does one simply appropriate from another? How do you understand the process of encounter in knowledge traditions? And then this becomes a political question at the same time because, as in any negotiation, each side tries to seek its advantage. It is a question of comparative power, asymmetric power relations. Power doesn't mean that you eliminate agency. Asymmetries in power relations certainly reduce the agency of the less powerful, of course, but do not eliminate it. There is always some room for maneuver, however limited. But one certainly doesn't see the kind of hegemonic story where the colonizer comes in like a bulldozer and crushes everything resulting in a westernized society. No, both sides are changing, although in asymmetrical degrees, and this is very different also from hybridization and mimicry dear to critical theorists like Homi Bhabha.<sup>25</sup> And it's also different from, and yet close to, connected history. As historian of science, I'm looking at historical dynamics, at the processes of *connecting* in history rather than the result, *connected* history.<sup>26</sup> I'm looking at the encounter, at how histories, especially of science become connected and what happens as a result, not necessarily that they stay connected. So, although I'm intellectually close to Sanjay [Subrahmanyam]<sup>27</sup> because we largely share the same worldview and vision of history, our points of focus are different. I'm not looking at what happens in social, cultural, political and economic history; I'm a historian of science and as such, I'm looking at processes of knowledge making and process of knowledge making are process of *connecting*.

*And where does identity appear here? You have encounters of two different people of two different cultures. Each culture has an identity bounded in politics, founded in economics and when they mix, when they meet, what happens to identity? We're talking about global history; people in China wear the same shoes as we do, they eat the same things, but does that mean that we lose our identity or enrich our identity by getting to know other cultures? What happens?*

For me, cultures don't lose their identity, they don't merge into another, more dominant one, nor do they get “enriched”. Identity again is also negotiated in the sense that it changes as a result of encounter. Identity is never fixed; new identities are continually being configured and reconfigured as a result of encounters and negotiations.

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<sup>24</sup> Kapil Raj, “Rescuing Science from Civilisation: On Joseph Needham's ‘Asiatic Mode of (Knowledge) Production’”, in Arun Bala Prasenjit Duara (eds.), *The Bright Dark Ages: Comparative and Connective Perspectives*, Leiden, E.J. Brill, 2016, pp. 255-280.

<sup>25</sup> Homi K. Bhabha (b. 1949), of Indian origin, academic and critical theorist of postcolonialism. Author, among others, of *The Location of Culture*, London, Routledge, 1994, [*El lugar de la cultura*, Buenos Aires, Manantial, 2002].

<sup>26</sup> Kapil Raj, «Connexions, croisements, circulations. Le détour de la cartographie britannique par l'Inde, XVIIIe-XIXe siècles» in Michael Werner, Bénédicte Zimmermann (eds.), *De la comparaison à l'histoire croisée*, Paris, Le Seuil, 2002, pp. 73-98.

<sup>27</sup> See the interview with Subrahmanyam en Zárate Toscano, V. (2024). *Aportaciones historiográficas en la voz de quince protagonistas*. Instituto Mora. Edition available in: <<https://doi.org/10.59950/IM.129>>

After having studied knowledge making as a result of intercultural encounters in the history of science, I thought I would examine a given locality with the same method, that is as an intersection of different circulations, to see how its history would then make sense. So, I've been studying the history of Calcutta in India,<sup>28</sup> for a century between the end of the 17<sup>th</sup> century and the end of the 18<sup>th</sup>. Calcutta lends itself ideally to this kind of study, it is like a laboratory mouse because, like the mouse, it is a relatively simple locality to study with just the characteristics one needs to observe. Let me explain. In 1690, when the British arrived there, Calcutta did not exist. It was a marshland dotted with little villages and a cotton market, but there was no city; in 1790, just a century later, Calcutta was already the largest city of the British Empire outside of Britain.<sup>29</sup> It was also the most important city for scientific development outside of Europe or the United States. It was far more important and dynamic than Philadelphia or Boston. As a matter of fact, scientific publications from Calcutta were so much in demand that they were pirated in Boston and Philadelphia, and some were even translated into French by savants at the Jardin des Plantes in Paris. It is remarkable that the first US ambassador that Thomas Jefferson<sup>30</sup> sent outside of Europe to anywhere in the world, was to Calcutta because he thought that this was where the future of Asia in the 19<sup>th</sup> century lay. So, for me this was an intriguing instance of the birth and development of a place which simultaneously developed into an urban space and a world capital of knowledge outside the West. This seems to be counter-intuitive: the place was a marshland, one of the unhealthiest places on Earth; it lost a quarter of its European population every year to disease and harsh climate. And yet it rose to become one of the biggest and most important cities in the world. What explains this success? I looked for its dynamic in its basic characteristic: a city of encounters. Although it was founded by the British as a trading factory with less than a hundred of them stationed there, most of the settlement was composed of people from elsewhere: money lenders and traders many of whom came from as far away as western India and Armenia, functionaries and literati from all parts of upper India and from as far away as Persia (Iran), Chinese merchants, Bengali craftspeople and so on. They were attracted to it because it was a marketplace. Now, while many of these communities settled there and acquired identities specific to the emerging city of Calcutta, these identities did not merge into one, Calcutta was no melting pot -everyone did not become like everyone else. It was an immense marketplace, a place of negotiation, in which one finds actors using their own languages and basing their arguments on their respective legal systems which led to many litigations and often their successful resolution. That is what made Calcutta a successful place. In practical terms, the process of litigation was based on translation from one language to another, from one legal system to another in order to arrive at a mutually acceptable outcome. That's when I began to realize that what lies at the heart of negotiation, is not tolerance towards the other, it's not a desire to become the other at all. It is a desire to transact something successfully and to do it, you have to compromise, to find a mutually satisfactory solution, not one that is ideal but the best one can

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<sup>28</sup> Kapil Raj, *Settling Differences, Managing Difference: Calcutta as a World Capital of Knowledge, 1690-1830* (provisional title), in preparation.

<sup>29</sup> Kapil Raj, "Régler les différends, gérer les différences: dynamiques urbaines et savantes à Calcutta au XVIII<sup>e</sup> siècle", *Revue d'Histoire Moderne et Contemporaine*, 55, 2, 2008, pp. 70-100.

<sup>30</sup> Thomas Jefferson (1743-1826), third president of the United States of America, from 1801 to 1809.



get in the circumstances. Then the city's communities were simultaneously living in two worlds, the common one of the marketplace and their own within their own communities. There was a sense of tolerance, but not in the moral or ideological sense implied in cosmopolitanism, rather a tolerance based on pragmatism. This pragmatic attitude also lies in material transactions in the marketplace with the introduction of new commodities. These are publicly transacted, but their appropriation is differentially naturalized depending on the communities which consume them. So, everyone's world is changing through processes of negotiation and exchange, and so are their identities, but not necessarily in a convergent way.

*Its métissage.*

Well, not really. For me *métissage* means that the result has a little bit of one culture, little bit of another culture. No, over here this is something which is new completely. For me there's a novelty. Of course, every novelty has an origin, nothing comes from nowhere, but *métissage* for me means that you have two ingredients and you get a third ingredient which contains a bit of both which fit together, whereas over here you don't necessarily get a single third ingredient, you get something which is completely different and which you cannot foretell, and which can be differentially appropriated on both sides of the encounter -unlike *métissage* which largely affects the extra-European world (I rarely see any examples pertaining to Europe!)- so there need not be a single result, each side can get something different out of it. In this sense, *métissage* is closer to the concept of hybridization. How things actually move is what interests me, and how they become something else. It is the process which interests me, not characterizing the result. The label can only be given afterwards, it's the historian's, or scholar's, etc label. It's pretty much like the difference between *connected* history and *connecting* history. So, calling it *métissage*, like *connected*, is the end result but that's not my focus. Like I said earlier, as a historian of science looking at the construction of knowledge, I'm trying to place myself at the point of encounter, of negotiation, in the space of negotiation where knowledge is being constructed, to try and make sense of that, render it intelligible.

*Political history is always very spread. It has a very important production. For some time, everything in history was related to politics. And even historians, they have to assume they have a political position. Eduardo Flores Clair,<sup>31</sup> in a research he has made recently, has found that even when you are trying to make science, there is always some political power above you. The Spanish Crown brought German scientists to Spain to work at their projects, and they sent them to America, to try to increase mining*

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<sup>31</sup> Eduardo Flores Clair, *Práctica ciega y teoría luminosa en la minería regional novohispana. La expedición de los mineralogistas alemanes, espionaje, innovación tecnológica y ciencia aplicada, 1780-1820*, México, INAH, in press.

production. They were all under the tutelage of a certain crown. For example, a Spaniard scientist went to Russia to work for Catherine the Great<sup>32</sup> and helped her build new weapons for her army. So maybe you have found some examples of this communication with power and science?

Of course, as a matter of fact, in all my work I have tried to show the organic and inextricable links between early modern science and wider economic and political -and, sorry for the anachronism, geopolitical- interests. My case studies always concern men, simply because I have found no women, because there were very few in the world of science until very recently -and this itself is a political statement. Now, there is a big focus in the history of science on the role of the voyager who travels across the globe making significant discoveries; it's a very important aspect of the discipline.<sup>33</sup> They are overwhelmingly European, and white, and are portrayed by historians of science as independent, boundlessly curious and exceptionally perceptive. They are seen as belonging to the “Republic of Letters”, lovers of knowledge for its own sake, and are often associated with the Royal Society,<sup>34</sup> or L'Académie des Sciences,<sup>35</sup> etc. It's there that their discoveries are certified, and that science is thus made, supposedly independently of political or economic interests. Now, in my own research I have focused on a number of European “voyager-savants” who travelled to and lived in South Asia.<sup>36</sup> Of course, each of these men made major contributions to science: for instance, the Portuguese physician Garcia de Orta, whose *Colóquios dos simples e Drogas da Índia*,<sup>37</sup> was to become a landmark text for the knowledge of Asian herbal remedies, thus influencing medical practice in Europe as

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<sup>32</sup> Catherine II (born Sophie of Anhalt-Zerbst 1729-1796), reigning empress of Russia from 1762 to 1796. She “became a patron of literature, science, the arts, and education. [...] Russian scholars and artists were sent abroad to learn from Western examples, and foreign scientists, architects, and artists were attracted to Petersburg in order to enrich the city's appearance and cultural life.” <<http://www.saint-petersburg.com/royal-family/catherine-the-great/>> [Accessed: february 13th, 2024].

<sup>33</sup> Kapil Raj, “Eighteenth-Century Pacific Voyages of Discovery, ‘Big Science’, and the Shaping of an European Scientific and Technological Culture”, *History and Technology*, 17, 2, 2000, pp. 79-98.

<sup>34</sup> Royal Society of London for Improving Natural Knowledge is the oldest national scientific society in the world and the leading national organization for the promotion of scientific research in Britain. It originated in 1660. <<https://www.britannica.com/topic/Royal-Society>> [Accessed: february 13th, 2024].

<sup>35</sup> In 1666, Jean-Baptiste Colbert, minister of King Louis XIV of France, “created an Academy dedicated to the development of science and advising the government in this field. He chose scientists, mathematicians, physicists, anatomists, botanists, zoologists and chemists, who held their first meeting on 22 December 1666 in the king's library in Paris”. <<https://www.academie-sciences.fr/fr/Histoire-de-l-Academie-des-sciences/histoire-de-l-academie-des-sciences.html>> [Accessed: february 13th, 2024].

<sup>36</sup> Kapil Raj, “When Human Travelers become Instruments: the Indo-British Exploration of Central Asia in the 19th Century” en Marie-Noelle Bourguet, Christian Licoppe, H. Otto Sibum (eds.), *Science, Scientific Instruments and Travel*, London, Routledge, 2001, pp. 156-188.

<sup>37</sup> Garcia de Orta, (1501-1568), Portuguese physician who traveled to India in the 16th century. He explored the region collecting specimens, trading and exchanging ideas with Arab and Hindu physicians. His work entitled *Coloquios dos simples e drogas da India*, was originally published in Goa in 1563. See the Garcia da Orta edition, *Coloquios dos simples e drogas da India*, Edição publicada por deliberação da Academia Real das Sciencias de Lisboa dirigida e anotada pelo Conde de Ficalho Socio effectivo da mesma academia, Lisboa, Imprensa Nacional, 1891 <<https://bibdigital.rjb.csic.es/viewer/15528/?offset=#page=1&viewer=picture&o=bookmark&n=0&q=>> [Accessed: february 13th, 2024].

well as Asia. Or the writings of Sir William Jones<sup>38</sup> on the striking similarities between Sanskrit, Greek and Latin which were to incite the founding of modern comparative philology and also indirectly contribute to the birth of the notion of an Indo-European race. I have similarly worked on mapping and map making.<sup>39</sup> But in each case, I have also brought to light their deep links either with the European trading companies (the English East India Company,<sup>40</sup> of the Dutch East India Company and so on. . .) or states, notably Portugal and France. They ride on the power of these transnational trading companies, or the state, and are almost invariably in their pay roll. The fact that they were paid employees who also owed their voyages to state or commercial infrastructures (ships, material means) is however almost never portrayed as in any way influencing their thought and knowledge contributions which are always presented in the pure interest of advancing Science. My research shows, on the other hand, that the state and global trading corporations were not just a space within which aspiring Europeans could realize their private ambitions; these ambitions were inspired by the explicit or imagined demands of their employers or of other often geo-political interests in Europe. It is these articulations, between knowledge and economic and political -and geopolitical- power, that are constitutive of Science, and I try to bring their complex interactions to light in my research. Knowledge, as they say, is power, and power as you know is political, is politics.<sup>41</sup> So, to understand Science, we have to understand its articulation with politics and also the multiple accountabilities it is at all times subject to.

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<sup>38</sup> Sir William Jones (1746-1794), British philologist, founder of the Asiatick Society, appointed as court judge in Calcutta. <<https://www.amazon.com.mx/Sir-William-Jones-1746-1794-Commemoration/dp/1584776889>> [Accessed: february 13th, 2024]. His works were published as *The works of Sir William Jones: In six volumes*, ed. by A[nn]a M[arie] J[ones], 6 vols., London, G. G. and J. Robinson, and R. H. Evans, 1799. Jorge Álvarez, “William Jones, el filólogo que estableció el tronco común de las lenguas indoeuropeas”, en *La Brújula Verde, Magazine Cultural Independiente* 11 Dic, 2020. Kapil Raj, “Refashioning Civilities, Engineering Trust: William Jones, Indian Intermediaries and the Production of Reliable Legal Knowledge in Late 18th-Century Bengal”, *Studies in History*, XVII, 2, julio- diciembre, 2001, pp. 175- 209. Kapil Raj, “William Jones and Intercultural Knowledge Production”, *Global Intellectual History*, online, 2023: <<https://www.tandfonline.com/doi/abs/10.1080/23801883.2023.2184405>> [Accessed: february 13th, 2024].

<sup>39</sup> See for example, Kapil Raj, “Circulation and the Emergence of Modern Mapping: Great Britain and Early Colonial India, 1764-1820” in Claude Markovits, Jacques Pouchepadass, Sanjay Subrahmanyam (eds.), *Society and Circulation: Mobile People and Itinerant Cultures 1750-1950*, Delhi, Permanent Black, 2003, pp. 23-54. “Locality Matters: Mapping Humanity from Calcutta in the late 18th Century” in Amélia Polónia, Fabiano Bracht, Gisele C. Conceição (eds.), *Connecting Worlds: Production and Circulation of Knowledge in the First Global Age*, Newcastle-Upon-Tyne, Cambridge Scholars Publishing, 2017, and “Mapping Knowledge Go-Betweens in Calcutta, 1770-1820”, in Simon Schaffer, Lissa Roberts, Kapil Raj, James Delbourgo (eds.), *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820*, 2009, Sagamore Beach, MA, Science History Publications, pp. 105-150.

<sup>40</sup> Kapil Raj, “From Rent-Farming Merchants to Imperial Bureaucrats? The Evolution of the English East India Company’s Administration in India, 17th-19th Centuries” in Juan-Carlos Garavaglia, Michael J. Braddick, Christian Lamouroux (ed.), *Serve the Power(s), Serve the State: America and Eurasia*, Newcastle-Upon-Tyne, Cambridge Scholars Publishing, 2016, pp. 244-274.

<sup>41</sup> Kapil Raj, “Knowledge, Power and Modern Science; or the Brahmins Strike Back” in D. Kumar (ed.), *Science and Empire. Essays in Indian Context*, Delhi, Anamika Prakashan, 1990, pp. 115-125.

The other aspect of the relationship between science and politics which we often ignore is its articulation with diplomacy and its place in the construction of intercultural relations. So, in all the examples that I've just mentioned, I bring to light this complex relationship. For example, Garcia de Orta's work was a description of 58 mainly plant-based drugs which he reckoned the Portuguese crown had to access in order to dominate global trade and thus become master of Europe and Asia. For this he identified the plants by their local names, described them, provided the region or country of origin and their medicinal and therapeutic uses of their different parts and their commercial routes to Goa. This of course implied negotiating with different Asian powers, through trade agreements, contracts, treaties, and this implied diplomatic negotiation.

And you also asked about my political position as a historian. Well, I think first of all, my historical questions are an expression of my politics, in other words, my choice of questions. Of course, one then has to be very careful in not abusing one's politics to interpret one's findings in the sources to make them say what you would like them to say. On the contrary, one then has to make the archival and other sources speak so as to make the past intelligible.

*When you make history or when you make science, or when you make history of science, your work is dedicated to your colleagues or to a broader public.*

Of course, I use the tools and references of the historian of science and also of history and sometimes anthropology, but I make a special effort to make my writing first and foremost accessible to a non-specialist public, the broad public.

*How? You write in a very specialized language, you are published in specialized editorial houses. The number of your books printed is very limited and they do not get to the general public. You have to go through other medias. You have to go to television, to newspapers to museums. How do you spread the knowledge that you have?*

The first thing is that I refuse to use jargon. Even if my work is published by specialized publishers and specialized journals, I write as simply as I possibly can, using the vernacular so that anyone, whether they have a science background, whether they have a history background or not, can read my work. Of course, I have to go through specialized publishing houses, so there's a limit to what I can do, but on the other hand, because I write without jargon, my work is read by a number of students who don't come from the history of science, or from history either. They come from science, many of them, but many of them from anthropology, from sociology, etc. And then there's the lay reading public. I've received many messages from lay readers who have discovered my writings in bookshops or through word of mouth. Also, I've tried to translate my work into as many languages as possible.

Not Spanish yet.

In fact, one of my articles has appeared in the Argentinian science studies journal *Redes*,<sup>42</sup> and a few others have been translated from the French in the Spanish journal *Mundo Científico*. Other than Spanish, some have also appeared in Portuguese,<sup>43</sup> and in German. And my book *Relocating Modern Science*<sup>44</sup> was translated into Japanese in 2016,<sup>45</sup> and into French in 2021.<sup>46</sup> It's true, however, that my main works have not been translated into Spanish, or Portuguese for that matter.

But to come back to what I was saying, one way of disseminating my work is through translation into different languages, another way is by publishing in popular history and popular science journals, with glossy paper, with pictures, short articles, in journals such as *La Recherche*<sup>47</sup> and *Science et Vie*<sup>48</sup> in French, or *Mundo Científico*.<sup>49</sup>

Good titles.

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<sup>42</sup> Kapil Raj, “Una nueva visita a *La estructura de las revoluciones científicas*: la transición de la ciencia tradicional a la ciencia moderna en la India”, in *Redes*, vol. V, n. 11, junio, 1998, pp. 15-36, Universidad Nacional de Quilmes Buenos Aires, Argentina.

<sup>43</sup> Kapil Raj, “Conexoes, cruzamentos, circulações”, in *Cultura* Vol. 24, 2007, <<http://cultura.revues.org/877>> [Accessed: february 13th, 2024] and “Além do Pós-colonialismo... e Pós-positivismo Circulação e a História Global da Ciência”, in *Revista Maracanan*, n. 13, dezembro 2015, pp. 164-175. <[https://www.researchgate.net/publication/291042326\\_ALEM\\_DO\\_POS-COLONIALISMO\\_E\\_POS-POSITIVISMO\\_Circulacao\\_e\\_a\\_Historia\\_Global\\_da\\_Ciencia/fulltext/569db63808ae950bd7a6ada8/ALEM-DO-POS-COLONIALISMO-E-POS-POSITIVISMO-Circulacao-e-a-Historia-Global-da-Ciencia.pdf](https://www.researchgate.net/publication/291042326_ALEM_DO_POS-COLONIALISMO_E_POS-POSITIVISMO_Circulacao_e_a_Historia_Global_da_Ciencia/fulltext/569db63808ae950bd7a6ada8/ALEM-DO-POS-COLONIALISMO-E-POS-POSITIVISMO-Circulacao-e-a-Historia-Global-da-Ciencia.pdf)> [Accessed: february 13th, 2024].

<sup>44</sup> Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Scientific Knowledge in South Asia and Europe Seventeenth to Nineteenth Centuries*, Delhi, Permanent Black, 2006; *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650- 1900*, Basingstoke, New York, Palgrave/Macmillan, 2007.

<sup>45</sup> 近代科のリロケーション, Nagoya, University of Nagoya Press, 2016.

<sup>46</sup> Kapil Raj, *Science moderne, science globale. Circulation et construction des savoirs entre Asie du Sud et Europe, 1650-1900*, Turnhout, Brepols, 2021.

<sup>47</sup> *La Recherche*, Monthly magazine created in 1946 (under the name *Atomes*), published by Les Éditions Croque Futur, Paris, <<https://www.larecherche.fr/>> [Accessed: february 13th, 2024]. Kapil Raj, « Les hommes-instruments de Sa Majesté », *La Recherche*, N° 298, mayo, 1997, pp. 74-80. « La Compagnie des Indes. Du commerce à la linguistique », *La Recherche*, N° 300 (July-August 1997), pp. 46-49. « Les grands voyages de découvertes », *La Recherche*, N° 324 (October 1999), pp. 80-84. « Histoire d'un inventaire oublié », *La Recherche*, N° 333 (July-August 2000), pp. 78-83

<sup>48</sup> *Science & Vie: premier magazine européen de l'actualité scientifique* <<https://www.science-et-vie.com/>> [Accessed: february 13th, 2024]. Kapil Raj, « L'alliance des cultures », *Les cahiers de science et vie*, N° 50, 1999 (abril) pp. 42-46. (Thematic issue: « Mille ans de science », 8: le XIXe siècle).

<sup>49</sup> *Mundo Científico*, Spanish version of *La Recherche*, a monthly publication of Editorial Fontalba (Barcelona), between 1981 and 2003. <<https://dialnet.unirioja.es/servlet/revista?codigo=967>> [Accessed: february 13th, 2024]. Kapil Raj, “Los hombres-instrumentos de su majestad”, *Mundo Científico*, N° 181 (Aug. 1997), pp. 668-674. “La Compañía de Indias: del comercio a la lingüística”, *Mundo Científico*, N° 183, octubre, 1997, pp. 816-19. “La Historia de un inventario olvidado”, *Mundo Científico*, N° 216 (Oct. 2000), pp. 64-69.



Yes, catchy titles. The other way is through short films, like an 8-minute one I did recently for the French embassy in India on the history of an illustrated herbal made in the early 18<sup>th</sup> century by a French surgeon in collaboration with Indian medics and painters.<sup>50</sup> And radio programs: we have a station in France called France Culture<sup>51</sup> which broadcasts a broad spectrum of interviews on varied subjects ranging from current affairs to national and international politics, various aspects of culture and the social sciences, including history and the history of science.

*How about teaching.*

Yes, teaching has been crucial not only in communicating my research and ideas, but also for the development and inflections in my own thinking. As I said, I started my adult life teaching, and it was through communication with the people of the village that my first questions arose. Teaching and interaction have thus stayed essential for my own evolution ever since. And I must say that the unique environment of interdisciplinarity at the École des Hautes Études en Sciences Sociales (EHESS), which was the hallmark of the institution, was invaluable for the development of my own research agenda. Apart from my own seminar in the history of science where I had students from a number of specialties and regions of the world, I also participated in collective seminars. The first one was with Serge Gruzinski, Sanjay Subrahmanyam, Carmen Salazar,<sup>52</sup> and Nathan Wachtel,<sup>53</sup> which was called “From Asia to America and from America to Asia”,<sup>54</sup> precisely about circulations and the changes they brought about. So that was another place where I could develop some of my ideas and see differences with the others, all these questions of connected history, of *metisage* and so on, because they are very close to my questions; we share the same general vision. Nevertheless, our fundamental questions were different. And that's where I also began to get a better idea of my own problematics while negotiating with everyone else, forming my own specificity with respect to the others and also by recognizing our similarities and differences. And collective seminars were another place where I was able to contribute to a wider public because it was through collective seminars that I encountered many Portuguese and Brazilian colleagues, including you, and eventually another country -Peru- as Carmen later organized an international conference to which I was invited. It also opened me, through Sanjay, to the world of Indian history. This seminar provided a new and refreshing

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<sup>50</sup> “L'Empereur's Garden”, with Kapil Raj, with image, sound and editing by Mukesh Kumaravel, © French Embassy in India, New Delhi, 2022.

<sup>51</sup> <<https://www.radiofrance.fr/franceculture>> [Accessed: february 13th, 2024].

<sup>52</sup> Carmen Salazar-Soler, Peruvian born ethnologist and researcher at the CNRS (Director of Research, CNRS). Her research focuses on the anthropology and history of mines and miners in the Andes, on socio-environmental conflicts and ethnicity in Peru, and on the history of knowledge in colonial Peru. <<http://cerma.ehess.fr/index.php?188>> [Accessed: february 13th, 2024]. Author, among others, of *Anthropologie des mineurs des Andes. Dans les entrailles de la terre*, Paris, L'Harmattan, 2002.

<sup>53</sup> Nathan Wachtel (b. 1935) French Historian and anthropologist, specialist in Latin America. He held the chair of History and Anthropology of Meso and South American Societies at the Collège de France from 1992 to 2005. <<http://cerma.ehess.fr/index.php?216>> [Accessed: february 13th, 2024]. Author, among others, of *La vision des vaincus. Les Indiens du Pérou devant la conquête espagnole (1530-1570)*, Paris, Gallimard, 1971.

<sup>54</sup> Seminar at the EHESS, from 1996 to 2005, although Kapil Raj joined it in 2000.

space where I could for once discuss my work with other colleagues because my topics were very far removed from those of my own milieu of history of science. And political, social and cultural historians did not easily engage with me since I was branded as a historian of science. History of science is traditionally considered to be close to philosophy, to epistemological history; it focuses on knowledge divorced from all other considerations, especially power as I said earlier. And so it was in this new space that I was able to forge my own work through discussions and debates. This process then also reached a wider audience. This also resulted in a set of new questions concerning the practice of transnational history and I then initiated another collective seminar with colleagues from history who also worked on spaces which went beyond the nation, like cultural transfer, migration studies and communism (in the Soviet context).<sup>55</sup> But since seminars at the EHESS are quite specialized and exclusive (after all, it is a doctoral school), I have continued all through to give classes in schools, to talk about India or about my own research. The students there who are 16 or 17 or 18 years old, get very interested in all these questions because they don't yet have very fixed notions. And lately, ever since I retired in 2018, I have been going regularly to India to teach at the university level to share my vision with students there as history of science is not usually taught in India, especially not the kind that I work on. But not only -also, as you know, to Mexico, at UNAM, where I have been regularly invited by the Department of Evolutionary Biology, which runs a graduate program in the history of science.

*Does America, the whole continent, have a place in your history of science?*

Well, North America -Canada, the US- have so far found very little place in my work, apart from one major recent essay.<sup>56</sup> But with Brazil I have a deeper interaction because I have developed close relationships with many scholars there, partly because I have had the opportunity to give talks there and also because some of my work has already appeared there in Portuguese. I have thus had the opportunity of supervising Brazilian students for their doctoral research and in fact I am co-editing a book with one of my ex-students as well as a colleague from São Paulo.<sup>57</sup> Also, I've co-written the introduction to another recent book on the history of medicine and the life sciences in Latin America with Ana Barahona,<sup>58</sup> my colleague from UNAM.<sup>59</sup> There again, it's based on the notion of global interaction, the idea that global history is not just a question of the diffusion of Western history, its spread, nor is it a concatenation of

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<sup>55</sup> “Histoires et historiographies transnationales”, EHESS seminar with Yves Cohen, Cecilia D'Ercole, Nancy Green and Michael Werner, from 2005 to 2020.

<sup>56</sup> “Quand l'Amérique inventa la science européenne” en Étienne François, Thomas Serrier (eds.), *Europa, notre histoire*, Paris, Éditions des Arènes, 2017, pp. 1089-1102

<sup>57</sup> Matheus Alves Duarte da Silva, Thomás Haddad and Kapil Raj, eds., *Beyond Science and Empire: Circulation of Knowledge in an Age of Global Empires, 1750-1945*, London, Routledge, 2023.

<sup>58</sup> Ana Barahona, B.Sc. in Biology, M.Sc. and Ph.D. in Biological Sciences, Faculty of Sciences, UNAM. Professor at the Department of Evolutionary Biology, Faculty of Sciences. Author, among others, of *Genetics: The Continuity of Life*, Mexico, Fondo de Cultura Económica, 1994.

<sup>59</sup> Ana Barahona and Kapil Raj, “A Historiography of the Life Sciences and Medicine in Latin America in Global Perspective”, in Ana Barahona, Editor, *Handbook of the Historiography of Latin American Studies on the Life Sciences and Medicine*, Cham, Switzerland, Springer Nature, 2022, (Historiographies of Science), pp. 1-15.

individual national histories. Global history of science is not adding the history of Mexico to that of Colombia, of Ecuador, of Brazil. . . along with the history of Western science. Instead, it is to examine the dynamics of the circulation and interaction between the various currents, and the way it is being transformed and finally how it affects the global picture. For example, there was groundbreaking research in Mexico in the 1930s and 40s into new varieties of plants, especially maize. And this research is the basis of the green revolution in India to counter the famines. So, you have new seeds, but the techniques come from Mexican research of course funded by US foundations like Ford and Rockefeller and coordinated by the Food and Agriculture Organization. This becomes known as the Green Revolution, focused on maize in Mexico and wheat and rice in India. But there were problems in the introduction of these new wheat varieties because they didn't have the same color as traditional Indian wheat and people didn't want to buy them, they were too white. The techniques then used to transform the color back to a darker one was based on an analysis of how the Mexicans changed maize varieties and made the new maize varieties acceptable here. So you see, it's not diffusion, but a large transnational circulation<sup>60</sup> with different actors -state, non-state and international- with the Cold War in the background, where the US is interested in keeping the so-called Third World countries from Soviet influence by funding various food and development projects. However, one of the key players in this story is an Indian settled in Mexico, a man called Pandurang Khankhoje.<sup>61</sup> As a young man growing up with nationalist revolutionary aspirations in turn-of-the-century India, he decided to travel to Japan and the US in order to pursue education in agriculture. While graduating in Oregon, he did his practical training in Mexico in 1910, exactly at the time of the Mexican revolution. He was thus able also to build a lasting relationship with some of its leaders and militants. And even though he later traveled to Europe and West Asia, he finally decided to settle in Mexico in the 1920s. After a short time as a worker on a vegetable farm in Xochimilco, he finally found employment in the Agricultural Institute, in, in. . . .

### *Chapingo*

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<sup>60</sup> Kapil Raj, "Networks of Knowledge, or Spaces of Circulation? Conceptualizing Early Modern Knowledge-Making and Exchange", *Global Intellectual History*, 1, 2, September, 2017, pp. 49-66

<sup>61</sup> Pandurang Khankhoje (1884-1967) Indian geneticist and agronomist scientist who, between 1924 and 1954, taught at the National School of Agriculture in Mexico. Daniel Kent Carrasco, "De Chapingo a Sonora: Pandurang Khankhoje en México y el tránsito del agrarismo a la agroindustria", *Historia Mexicana*, vol. 70, n. 1 (277), Julio-Septiembre 2020, pp. 375-421. In September 2022, a statue in his honor was unveiled at Chapingo University. <<https://theprint.in/world/lok-sabha-speaker-unveils-bust-of-pandurang-khankhoje-inaugurates-india-mexico-friendship-garden/1114248/>> [Accessed: february 13th, 2024].

Yes, yes, that's it. He became a good friend of Diego Rivera who helped him start the Escuelas Libres de Agricultura de México for Mexican peasants.<sup>62</sup> In fact, Rivera has done a huge fresco of him.<sup>63</sup> Khankhoje was one of the foremost people at the heart of the green revolution in Mexico while still actively supporting his revolutionary friends in India and elsewhere. So, then you begin to see how even what we call modern science doesn't necessarily flow from US and European universities, new and exciting things are happening right here! through the movement of people, ideas, ideologies, practices, and so on. In a similar vein, Matheus Duarte, a Brazilian student from Rio de Janeiro did his doctoral research in Paris under my supervision on the bubonic plague pandemic at the turn of the 20<sup>th</sup> century.<sup>64</sup> Brazil was severely affected by it, and there is a standard widely accepted story about the way it was overcome: that is, the implantation in Brazil of the model of the Institut Pasteur in Paris and its methods, which ultimately provided a Brazilian antidote to the plague, so it's a classic diffusion-and-reception story resulting in the creation of a national scientific community in the image of the European original. But Matheus uncovered a very different story, one of a global circulation of serums and vaccines between Rio, São Paulo, Bombay, Italy, Britain and, of course, France. Each of these places had its own versions of serums and vaccines, with lively tensions and controversies between them. Indeed, it was by entering and reconfiguring these circulatory networks that Brazil was able to develop its own remedies and research dynamics, that is within global circulatory spaces, and not purely through an appropriation of established methods and techniques with national boundaries.

*Okay, we could go on forever. Just one final reflection. Did history help you find answers, or it gave you the opportunity to create new questions to keep on going.*

On the one hand, yes, of course it gives me new questions all the time. It's a never-ending process, but I don't think history provides definitive answers to anything. The challenge of history is to identify relevant sources and then make them speak in order to elucidate these questions and provide an intelligible response. It's much like what a detective or a lawyer does in striving to follow leads based on solid evidence, finally presenting a picture that is credible, one that makes sense. Whether it is the definitive answer is another issue, but it definitely does throw up new questions and leads for a better understanding of past processes.

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<sup>62</sup> Artemio Cruz León y Marcelino Ramírez Castro, “Escuelas Libres de Agricultura de México: proyecto de la Liga de Comunidades Agrarias y antecedentes de las Escuelas Campesinas”, en *Revista de Geografía Agrícola*, n. 57, diciembre 2016, pp. 233-237, <<https://revistas.chapingo.mx/geografia/issue/view/33>> [Accessed: february 13th, 2024].

<sup>63</sup> Diego Rivera painted Khankhoje in his mural in the Ministry of Education as a central figure distributing bread to the lowliest and the poor. <<https://scroll.in/roving/675432/rare-photos-of-pandurang-khankhoje-an-indian-revolutionary-in-1920s-mexico>> [Accessed: february 13th, 2024].

<sup>64</sup> Matheus Alves Duarte Da Silva, «Quand la peste connectait le monde: production et circulation de savoirs microbiologiques entre Brésil, Inde et France (1894-1922)», Thèse de doctorat en Histoire (option: Histoire des sciences), EHESS, 2020.

*Thank you very much, Kapil.*  
Thank you Veronica!

Transcripción y traducción por Verónica Zárate Toscano



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