Connecting Worlds

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Production and Circulation of Knowledge in the First Global Age

Edited by

Amélia Polónia, Fabiano Bracht and Gisele C. Conceição

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INTRODUCTION

AMÉLIA POLÓNIA
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While in the last ten years historiographical revisions have occurred both in colonial studies and the history of sciences, those tend to progress along two parallel lines, without effective communication or reciprocal understanding.

At present, studies on empire building are under revision. Previously, they were based on three main methodological premises: they usually focused on central power strategies and policies, excluding the perception of how individuals and groups contributed to historical dynamics. Secondly, their analysis, insisting on formal and institutionalized processes, tended to exclude those deriving from or performing within informal and non state-regulated contexts; and finally they disregarded the active influence of the agents, the societies and the civilizations of contact, in Africa, in Asia and in America, ignoring local inputs in colonial dynamics.

Currently, a new generation of scholars tends to conduct colonial studies from a more trans-national, trans-cultural and trans-imperial perspective. A good example is the output of post-colonial studies, developed since the 1980s. The more recent perspectives present as paramount an analysis centred on a connected history of the colonial empires. A highly prolific world or global history has contributed to a revision of the interpretations of colonial phenomena, investigating colonial dynamics by means of a broader, more complex and holistic approach, as reflected in recent publications and the organization of scientific panels and conferences on the subject.

Such a historiographical revision required the adoption of concepts and models of analysis stemming from self-organization and cooperation

theories[1]. Recent academic works dealing with overseas expansion and colonization also looked at the role of informal and self-organized mechanisms, and highlighted the role of traditionally marginalized agents of empire building, including women performing as brokers and go-betweens.

Simultaneously, historians of science have been discussing the parameters of what can be classified as scientific knowledge in the Early Modern Age, developing the concept of an "Iberian Science"[2] or even debating the mechanisms of production of a syncretic knowledge as the result of the inputs from local agents both in Asia[3] and the Americas[4].

In this context, debates on the role of the go-betweens, the intermediaries among European and local bearers of knowledge are taking on a central role. The cultural translation processes requiring both the comprehension of local practices of knowledge production and the mechanisms of a global circulation of persons, commodities, information and knowledge are also receiving attention, opening new avenues of research.

The parameters of research are currently being expanded by new analytical proposals according to which some aspects of modern science and the modern world are understood as global while being the result of intricate local processes. Circulation and locality became core concepts of these theoretical approaches[5]. The analysis of processes that combine polycentric and local production of knowledge with its global circulation turns out to be fruitful in historical analysis.

Connecting Worlds: Production and Circulation of knowledge in the First Global Age follows these trends. It aims at exploiting their implications for the actual production of knowledge in History. Since the connection between the local and the global within the framework of colonial contexts is at stake, it shows how fruitful a dialogue between

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[1] Amélia Polónia and Cátia Antunes, *Seaports in the First Global Age: Portuguese agents, networks and interactions (1500-1800)* (Porto: U. Porto Edições, 2016); Cátia Antunes and Amélia Polónia, ed., *Mechanisms of Global Empire Building* (Porto: CITCEM, 2017).

[2] Daniela Bleichmar, Paula De Vos, Kristin Huffine, and Kevin Sheeha, *Science in the Spanish and Portuguese Empires, 1500-1800* (Stanford: Stanford University Press, 2008).

[3] Kapil Raj, *Relocating Modern Science: circulation and the construction of knowledge in South Asia and Europe, 1650-1900* (Hampshire: Palgrave Macmillan, 2010); Kapil Raj, "Beyond Postcolonialism… and Postpositivism: Circulation and the Global History of Science", *Isis* 104, no. 2 (2013): 337-347.

[4] Bleichmar et. al, *Science*.

[5] David N. Livingstone, *Putting Science in Its Place* (Chicago: The University of Chicago Press, 2004); Raj, *Relocating*; Raj, "Beyond".

experts on the history of science and specialists on global and colonial studies can be, thus clarifying and reciprocally reinforcing the results of recent research in each one of the historiographical fields involved.

The early modern colonial empires had as one of their most important dimensions the gathering of a wide variety of geographies, peoples and cultural complexes connected by regular maritime routes at a worldwide scale. They became places of encounter between different natural and cultural complexes. Quite different theoretical frameworks have been proposed as analytical tools to apprehend, understand and explain the mechanisms and the outputs of such phenomenon.

These analyses depart from a substantial academic basis, as its topics have received the attention of a considerable number of scholars worldwide, not necessarily historians. George Basalla[6] is one of the main authors to be noticed, both for the number of his followers and his detractors. He perceived science and technology transfer as a unidirectional export from Europe to the non-European periphery, following a diffusionist approach. However, it was diluted in a three-step process which accompanied the building of modern science in the colonized worlds: the first phase was characterized by the exploring expeditions of European scientists, who applied their established scientific methods to a new environment and, in this way, generated new knowledge. The second phase of science transfer is labeled as "colonial science" and characterized by the subordination of the colonial peripheries to the European center, "colonial scientists" being seen as engaged and at the service of the European colonial powers. According to this view, colonial science was structurally subordinate to, and dependent on, European institutional frameworks and trends of technologic and scientific knowledge building. A third phase would see a separate and independent scientific tradition emerging in the colonial spaces, as a way of claiming their intellectual independence. At this stage, the peripheries themselves became centers which participated in reciprocal exchange with other centers. In any case, those are still seen as dependent and followers of the European model of science building.

Veronika Lipphardt and David Ludwig in "Knowledge Transfer and Science Transfer"[7] take George Basalla's model of knowledge transfer as a starting point. Yet, they rightly point out that more nuanced concepts of knowledge transfer are required to understand the complex phenomena

[6] George Basalla, "The Spread of Western Science", *Science* 156 (5 May 1967): 611-622.

[7] Veronika Lipphardt and David Ludwig, "Knowledge Transfer and Science Transfer", in *European History Online (EGO)* (Mainz: Institute of European History, 2011). URL: http://www.ieg-ego.eu/lipphardtvludwigd-2011-en.

observed. The two authors emphasize that a multiplicity of phenomena of knowledge transfer have to be considered, which go beyond the more limited concept of "science transfer".

Underlining the idea that knowledge transfer involves processes which can be identified in almost all temporal and spatial contexts, starting with the early phase of the Neolithic Revolution and continuing until the present day, the paper includes the use of indigenous knowledge in commercial and ethnopharmacological knowledge transfer during the period under analysis in this book (1400-1800). The Asiatic-European knowledge exchange, the pre-Columbian American circulation of knowledge trough the pre-European empires, as well as the "export" of the European sciences in the colonial context are presented as examples of the predominant focus of historical research on this time period. The direct connection of these contributions to colonialism can be seen from their emphasis on cartography, technology and medicine, as well as on botanical studies of medicinal plants and plants suitable for cultivation as cash crops[8]. They also stress the idea that early studies on knowledge transfer were predominantly limited to science transfer, which was understood as the export of the modern European sciences to "non-scientific cultures". A diffusion model is at stake, together with overviews of a hierarchy of knowledge that clearly differentiates "scientific knowledge" from "other kinds" of knowledge.

With the emergence of post-colonial studies, Lipphardt and Ludwig argue, it became clear that the history of science transfer could not be separated from a history of knowledge. Conceptual differentiations, e.g. between indigenous and European knowledge systems, went along with the definition of "science" and "scientific knowledge" and the questioning of theories which tended to place their analysis within a centre/periphery approach, according to which Europe would perform not only as the political and economic, but also as the epistemic centre of the world.

The paper concedes that in any of the proposed models, indigenous knowledge was not considered as part of the building of global systems of knowledge, less yet of science. While considered relevant for the survival of the first settlers and their adaptation to new environments and ecosystems, non-European knowledge systems still represented as having a "non-scientific character".

This is where Homi K. Bhabha's crucial inputs come in *The Location of Culture* [9]. He stresses that the traditional dichotomy between hegemonic

[8] Lipphardt and Ludwig, "Knowledge".

[9] Homi K. Bhabha, *The Location of Culture* (London/New York: Routledge, 1994).

and subaltern spaces fails to recognize the fundamental importance of the hybridization resulting from the influence knowledge systems exerted on one another in border zones. According to Bhabha, it is only possible to comprehend cultural systems by investigating mutual connections and influences. However, the concept of hybridity has itself been exposed to criticism, as reflecting the assumption of the existence of "pure" races (or categories of knowledge), the "crossing" of which resulted in hybrid products (genetic or other). Hierarchical and monolithically oriented visons are thus seen as underlying the concept of hybridity. In any case, the focus has shifted from a centre/periphery approach or from a diffusionist model to the acceptance of a variety of reciprocal influences between different knowledge systems. The recognition of different knowledge systems implies the assumption of different rationalities and criteria of scientific legitimation of knowledge. This results in a need for a clear definition of "science" and "knowledge". Restricting the analysis to "science transfer" not only excluded indigenous knowledge, but also prevented historians from seeing the processes of interaction between knowledge systems[10].

Additionally, it became necessary to differentiate colonized territories and cultural zones, since knowledge transfers in colonial setups implied significant differences between world zones. In many pre-colonial societies, there were institutions of education and sophisticated ways of knowledge transfer long before the European colonial powers arrived and attempted to implant their forms of knowledge and of knowledge transfer. This becomes particularly clear in the Indian world, but also in some cultural and political complexes of pre-Colombian America. Adding to this, constellations of knowledge transfer have to be understood within different patterns of symmetrical and asymmetrical power interactions, which are usually taken into consideration when bearing in mind the broader approach of cultural transfer, within which knowledge transfer should be conceived.

More recent approaches also stress the local nature of knowledge production, in particular because of the differences among various "localities", even when following a global approach. Fa-ti Han, in "The Global Turn in the History of Science"[11] addresses this issue by pointing out how, for example, the Atlantic history, the connected history, and the

[10] Lipphardt and Ludwig, "Knowledge".
[11] Fa-ti Han, "The Global Turn in the History of Science", *East Asian Science, Technology and Society, International Journal* 6, (2012): 249-258. DOI 10.1215/18752160-1626191.

global history of European empires[12] burst into the field of history of science. Historians of science have taken up some of its flags, themes, and problems. Scholars focused on the study of early modern science, of science and empire, and historians of science and technology have begun to discuss science in global contexts, by proposing new views for a global history of science. Simultaneously, the increasing interest in traditional, empirical or other kinds of practical knowledge led to a recognition of the extent to which European knowledge included in itself so many different layers of practices and knowledge – most of them recognized either by the official institutions or by their usefulness to the common people and the ordinary ways of running the daily life. As stressed by Fa-ti Han[13], following these perceptions, historians of science have become much more interested than before in "knowledge in motion", in global contexts or otherwise.

Kapil Raj, in his book *Relocating Modern Science*[14], gives an innovative input to these multiple, although increasingly convergent perceptions, by proposing an analysis based on processes that combine a polycentric production of knowledge with its global circulation. Local production and global circulation of knowledge is thus understood as part of the same process and both are understood as influential in the overall dynamics of European colonialism. The author argues that the construction of scientific knowledge in the colonized territories was a result of intercultural interactions, and not just the result of a straightforward transfer from the centre to the periphery, nor even based on the enlightened perception and collection of local knowledge by the "colonial scientist"[15]. Raj argues, e. g., that since South Asian and British colonial intellectuals possessed different tools and scientific knowledge, science in the colonial territories could not have developed without fruitful scientific interactions between European and the local agents. The same could be

[12] Bernard Bailyn, *Atlantic History: Concept and Contours* (Cambridge: Harvard University Press, 2005); and *The Barbarous Years: The Peopling of British North America*: *The Conflict of Civilizations, 1600-1675* (New York: Alfred A. Knopf, 2012); Sanjay Subrahmanyam, "Connected Histories: Notes towards a Reconfiguration of Early Modern Eurasia", *Modern Asian Studies – Special Issue: The Eurasian Context of the Early Modern History of Mainland South East Asia, 1400-1800* 31, no. 3 (1997): 735-762.

[13] Han, "The Global Turn", 249-258.

[14] Raj, *Relocating*.

[15] Kapil Raj, "Christian Confessions and Styles of Science in Nineteenth-Century Bengal: Their Role in the Emergence of Great Britain", in *Les sciences coloniales: figures et institutions*, ed. P. Petitjean (Paris: ORSTOM, 1996), 285-97.

applied to any other European colonial systems. Raj's study of the interaction between Europeans and Asians, and the way knowledge changed as a result of those interactions bluntly opposes the diffusionist models and proposes a model of analysis largely adopted by colonial historians and the historians of science today. Raj stresses that although these relationships and interactions were asymmetric due to the greater economic, political and military powers of the Europeans, this pattern did not impose a unidirectional transference of knowledge. According to Raj, scientific knowledge was practiced and applied in the colonies through the contributions of the local agents and communities. Kapil Raj thus also questions the concept of "colonial science". After studying the contributions of individual scientific practitioners, Raj can point out the complex interactions between colonizers and local experts, and the dynamic exchange of knowledge involved.

Translation processes and the performance of translators and other go-betweens are taken as crucial for decision-making processes in politics, and for the dissemination and communication of scientific knowledge[16].

This perspective goes along with some recent analytical frameworks arising in colonial history, which emphasize both the role of cooperation and the structural patterns created by self-organized networks built on an agent-based approach. Challenging traditional perspectives of empire building usually focused on central power strategies, imperial rivalries, and mechanisms of European imposition on colonial spaces, this approach seeks a perception of how individuals and groups of individuals contributed to those historical dynamics, at times to an even greater extent than the central power itself. By this means, it recovers the perception of how the active influence of the agents, societies and civilizations of contact, in Africa, Asia and America brought local inputs to colonial dynamics. Traditional perspectives have been questioned, through the lens of a dynamic historiography, both European and non-European. The expression "informal empires" has arisen, as a means of pointing out the informal ways in which the European overseas dominium was built in the First Global Age, the period from 1400 to 1800[17]. According to this

[16] Simon Schaffer, Lissa Roberts, Kapil Raj, and James Delbourgo, *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820* (Sagamore Beach, MA: Science History Publications/USA, 2009).

[17] Amélia Polónia and Amândio Barros, "Commercial flows and transference patterns between Iberian empires (16th-17th centuries)", in *Self-organizing Networks and GIS Tools Cases of Use for the Study of Trading Cooperation (1400-1800)*, coord. Ana Crespo Solana and David Alonso García, *Journal of Knowledge*

rationale, in the period between the 15th and 18th centuries, the world was increasingly characterized by widespread collaboration that went beyond the boundaries of countries and continents. This is assumed to have been made possible by new means of global communication and the building not only of formal but also of informal networks, which were frequently multinational. These connections, established at a global level, were supposed to be mainly sustained by informal and self-organized networks, rather than by the official operations of formal agents of empire building, whether monopolistic trade companies or state institutions and representatives.

Antunes and Polónia[18], among others, furthermore argue that to fully understand the mechanisms of cooperation it is important to acknowledge that cooperation does not take place only among individuals or informal networks. Cooperation between individuals and the formal powers is often a decisive means of empire building. However, cooperation patterns include different degrees of involvement. They range from positive to negative inputs, from active cooperation to simple forms of collaboration, from dialogue to deception, desertion and active competition. Collaboration, communication, as much as cheating and defection are, thus, forms of behaviour that can occur among the same agents in different circumstances.

Furthermore, there are situations in which cooperation is imposed; others in which cooperation is promoted and stimulated in order to achieve state-oriented goals, and still others in which cooperation results from self-organized mechanisms which go beyond the intentions and aims of the formal empire builders. Others yet in which cross-cultural and cross-imperial cooperation between individuals apparently belonging to different worlds go against the very same purposes of the "national" entities they were supposed to belong and serve. More often than not, individuals and groups blocked central power strategies or resisted them, changing the ways those policies were pursued in the field, or defeating them altogether[19]. Those would be the cheaters and defectors of a system in which notions such as loyalty or national belonging are expected to have a meaning, but did not always have. In times of the first contacts between European and autochthone people, to which this book is mainly devoted,

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Management, Economics and Information Technology (Scientific Papers, 2012); Polónia and Antunes, *Seaports*; Antunes and Polónia, *Mechanisms*.

[18] Antunes and Polónia, *Mechanisms*.

[19] Amélia Polónia, "Indivíduos e redes auto-organizadas na construção do império ultramarino português", in *Economia, Instituições e Império. Estudos em Homenagem a Joaquim Romero de Magalhães*, eds. Álvaro Garrido, Leonor Freire Costa, and Luís Miguel Duarte (Coimbra: Almedina, 2012), 349-372.

those are inappropriate concepts, both when applied to colonizers and colonized.

Summing up, cooperation is seen as a social process where individuals, groups and institutions act in a concerted way to reach common goals. These phenomena involve not only the expected economic outputs of cooperative relations (costs vs. benefits), but also the social attributes of partners and their relations[20]. This behaviour is driven by goals, expectations and motivations which imply a collective or dyadic interaction between individuals. Individual motives and beliefs are therefore seen as the basis of cooperation, even if the game established has inevitable social implications. The repercussion of this analysis when applied to colonial empires implies a focus on the relationships between colonists and colonized. Those are based both on the informal connections between individuals as well as on the regulating directions and mechanisms formally imposed by the state. This rationale implies that cooperation is a reciprocal process, as are transference patterns. It totally applies to the historical comprehension of the phenomena of knowledge transference, providing simultaneously a model of analysis based on local inputs to global dynamics, in which local circumstances and the profile both of local institutions and local agents are crucial. Furthermore, it gives leeway to the decisive performance of brokers and go-betweens in all the processes involved by the mechanisms of empire building and of globalization.

These perspectives do not contradict, but rather reinforce others, nowadays commonplace in historiographic production, related to colonial studies. The concepts and the rationale beyond the "trading zones" and "contact zones" approaches are among them. As for the first, proposed by Peter Galison[21], it arises as a very specific concept used for explaining the ways in which well-defined research communities in high-energy physics, with their distinctive cultures, coordinate their actions and beliefs for scientific research. However, it has been applied in a broader sense. The language of trade is not simply a metaphor, or a reductionist term applied to commerce, but rather a useful tool to understand the historical connections which involved exchanges by any kind of transaction. It also implies the notion of negotiation. Just like locality and circulation, the perspective of trade zones provides a useful approach to the history of knowledge transference.

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[20] Alison Ribeiro de Menezes, *Embodying Memory in Contemporary Spain* (Palgrave Macmillan US, 2014).

[21] Peter Galison, "Material Culture, Theoretical Culture, and Delocalization", in *Science in the Twentieth Century*, ed. John Krige and Dominique Pestre (Amsterdam: Harwood, 1997), 669-682.

Mary Louise Pratt's concept of "contact zone"[22] becomes equally useful. Widely used by scholars of postcolonial studies to discuss the contours of colonial encounters, it can be easily applied to the history of science in colonial contexts. The notion, concerned with power relations, provides a rich understanding of the transference flows implied by asymmetric power relations.

In fact, quite a few aspects of a global circulation of knowledge remain to be clarified. Kapil Raj in "Beyond Postcolonialism… and Postpositivism: Circulation and the Global History of Science" [23] points out crucial aspects to be questioned when accepting the notions of syncretism, as resulting from the circulation, globalization and sharing of knowledge. Firstly, it implies moving away from a conception of science as a system of formal propositions or discoveries, and towards understanding it "as the construction, maintenance, extension, and reconfiguration of knowledge, focusing equally on its material, instrumental, corporeal, practical, social, political, and cognitive aspects".

Secondly, as for the mobility and circulation of knowledge beyond its place of origin, Raj proposes that it disseminates through complex processes of accommodation and negotiation. Issues of reconfiguration of knowledge arise as inevitable in cross-cultural interactions, pointing to a transformative effect deriving from its circulation. This idea of circulation as a "locus" of knowledge production presents itself a major contribution to the understanding of effects of any process of circulation of knowledge (which usually equals reconfiguration).

Mobilized by some of these variables, some publications resulted that make these phenomena explicit both in the Portuguese and the Spanish worlds of influence, even though authors and editors do not make this understanding explicit and clear. In fact, some of the contributions are still lead by the overwhelming presence of the "colonial scientists", being them European naturalists, physicians or missionaries. The collective books edited by Daniela Bleichmar[24] and Helge Wendt[25] give evidence to that.

The authors participating in this volume sought to frame their contributions within the former theoretical lines, namely those proposed by

[22] Mary Louise Pratt, *Imperial eyes: studies in travel writing and transculturation* (London/New York: Routledge, 1992).
[23] Raj, "Beyond".
[24] Bleichmar et. al., *Science*.
[25] Helge Wendt, *The Globalization of Knowledge in the Iberian Colonial World* (Berlin: Max Planck Research Library for the History and Development of Knowledge, 2016).

the more recent publications of Kapil Raj, actually one of the contributors of the volume.

This book discusses flows of scientific knowledge and their effects on both Europe and the areas worldwide colonised by Europeans in the Early Modern period. It shows how the cross-cultural dynamics of knowledge circulation can be verified in the different regions under analysis. It deals also with concrete case studies of knowledge transference in the First Global Age (1440-1800) within the various contexts of European colonialism all over the world.

Aiming at answering to issues of locality, circulation and reconfiguration of knowledge, in a direct connection with the institutional and individual agents involved, this book is divided in three parts: "Geographies of Knowledge"; "Flows and Mechanisms of Cross-Cultural Exchanges" and "Agents of Cross-Cultural Exchanges" – all integrated variables of the same equation aiming at a better and holistic understanding of processes, mechanisms and agents of knowledge building in the First Global Age (1400-1800).

In Part I, "Geographies of Knowledge", Kapil Raj's essay "Localities and Spaces of Circulation: Mapping Humanity from Calcutta in the Late 18th Century" demonstrates, through an analysis of the work of William Jones, the role of cross-cultural interaction as condition for a sustained European presence in new and unfamiliar territories. The author stresses the importance of the local endeavours and agents as the locus of such production of knowledge. Locality and circulation of knowledge emerge as the core concepts in Raj's work, following previous contributions of the same author in variety of already consecrated publications.

Fabiano Bracht's "Syncretism, Shared Production and Circulation of Knowledge in 18th-Century Portuguese India: Evidence from the Jesuit Medical Books" helps to understand the processes of shared production of medical knowledge in the missionary contexts of South Asia. It is based on two important 18th century Jesuit manuscripts; the "Árvore da Vida" and "Collecção de Receitas", containing medical theory and the description of recipes and medicinal drugs used in the contact zone between Europeans and autochthone populations in Asia.

Onésimo Teotónio de Almeida takes a rather philosophical approach: "On Experience in 16th Century Western Europe: The Spreading of an Idea (Leonardo da Vinci, Andreas Vesalius, Paracelsus, and Montaigne) provides a comparative perspective on Portuguese and other renowned Renaissance authors, showing how their concept of "experience" also deals with the problem of circulation and diffusion of knowledge,

searching for connections which enables the understanding the circulation of ideas in such context.

Part II, "Flows and Mechanisms of Cross-Cultural Exchanges", provides four chapters which take the reader to Brazil, Mexico, India, and Paraguay. This section helps to understand the construction of medical knowledge within the Portuguese and Spanish Empires, as well as the processes of circulation of such knowledge.

The chapter "Enlightening the Brazilian Nature: Processes of Construction and Reconfiguration of Knowledge in the Late 18th Century", by Gisele C. Conceição, aims at demonstrating how agents not formally educated in European universities contributed to the construction of knowledge about colonial Brazil in the late 18th century, thus becoming central players in the universe of the scientific knowledge production within the Portuguese Empire.

Heloisa Meireles Gesteira provides further leeway to the theme of production and circulation of knowledge in colonial Brazil, by discussing "The Local and the Global: Medical Practices and the Circulation of Knowledge in Portuguese America – Reflections on a Notebook of Medicinal Prescriptions Attributed to the Jesuits". Through the analysis of the manuscript notebook entitled *Formulario Medico* she discloses important dimension of the cultural environment in which the production of medical knowledge was developed. Meireles' approaches this subject not only from the local perspective but also aiming at understanding its contributions in a more global context of circulation and diffusion of knowledge.

From the Portuguese America, the focus moves to the Spanish Americas with the contribution of José Pardo-Tomás "Hospitals in Mexico City in the 16th Century: Conversion Medicine and the Circulation of Medical Knowledge". This chapter proves that in those colonial territories the medical practices in hospitals were inseparable from ideological and religious control, which, in the case of indigenous peoples – as well as African descendants – were reinforced due to their coerced conversion into Christianity. His main argument is that during the colonial period, in Mexican hospitals curing souls took priority and became inseparable from the cure of bodies – a dyadic relation contributing for the reinforcement of a colonial project, while integrating local knowledge and the practice of local agents.

"Assimilation, Codification, and Dissemination of Indigenous Medical Knowledge within the Portuguese Maritime Empire: 16th-18th Century Ethno-Botanical Manuscripts", by Timothy Walker focuses on the transference of medical knowledge in a trans-imperial perspective. From

Brazil to India passing through Paraguay, Walker analyses ethno-botanical works in order to explore texts revealing the production of a multicultural medical knowledge, where European and Indian, African, Malaysian, Indonesian, Chinese and South American rationales and practices of healing ended up being hybridized.

Part III, entitled "Agents of Cross-Cultural Exchanges" puts together contributions aiming at emphasising the role of individuals and institutions in the knowledge-making encounters in the Asian colonial environments.

Thomás A. S. Haddad's contribution on "Global Infra-Connections? Science and Everyday Transactions in a Jesuit Early-Modern Missionary Setting" demonstrates the crucial role of science in the Jesuit missions in the East. Nonetheless, the author assumes that European colonial and imperial enterprises around the world contacted with very different realities concerning knowledge production and knowledge exchange. It argues that European "scientific domination" of overseas territories and populations was always due to other factors, such as theories and practices deriving from the fields of political theology, taxation and trade, legal practices and many other areas traditionally removed from the set-up included in the usual range of analysis of the history of science.

The intense Jesuit production of written sources and the well-preserved historical memory of the Society provides abundant information concerning their action and interaction in colonial contexts. Not surprisingly, studies on their activities and inter-cultural practices prevail, also in this volume. Within this setting, Oana Baboi's article on "Healing the Jesuit Body: Sharing Medical Knowledge in 17th-Century China" helps to understand the processes of translating and the mechanisms of sharing medical knowledge among the Jesuit missionaries in China by focusing on recently revealed manuscripts of Father François de Rougemont SJ (1624-1676) and his efforts to convey Chinese medical knowledge to European audiences.

"Women as Go-betweens in Processes of Cultural Encounters. The Portuguese Overseas Empire Case Study (1500-1700)" by Amélia Polónia and Rosa Capelão closes Part III. The chapter focuses on women performing as intermediaries between worlds in the Portuguese colonial orbit. It emphasis the roles of autochthone women, mostly in the East, in the 16th and 17th centuries, by showcasing their performance in a very specific domain: child birth, abortive practices and attitudes toward sexual diseases and risks. Assuming that women were partners crucial to the build-up and maintenance of colonial empires, acting as go-betweens, the chapter focuses on their role as agents of production and circulation of knowledge between colonisers and colonised people.

Altogether, the chapters that make up this book, while organised into three coherent parts, cannot in any way cover the entire field. Rather, they are designed as beacons which light up certain aspects and contexts, and thereby indicate the way forward for future research. As it is, this field promises more than ample opportunities for researchers interested in pursuing further some of the questions raised.

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PART I –

GEOGRAPHIES OF KNOWLEDGE

CHAPTER ONE

LOCALITIES AND SPACES OF CIRCULATION: MAPPING HUMANITY FROM CALCUTTA IN THE LATE 18TH CENTURY

KAPIL RAJ

On a cold and wet day in November 1766, the stagecoach from London came to a halt in Oxford's Market Square. This banal happening would have gone unnoticed, had it not been for that fact that there emerged from the coach a passenger not quite like the others. Sporting a long, dense black beard and draped in a long blue robe with a vermillion sash, a multi-colored turban and a fine Cashmere shawl, this man was Mirza Shaikh I'tesam ud-Din (c.1730-c.1800) envoy of the Mughal emperor, Shah Alam II (r.1759-1806). He had been sent to George III of Great Britain and Ireland to protest against the exactions of the employees of the English East India Company in the conquest of the erstwhile Mughal provinces of Bengal, Bihar and Orissa in 1757 (at the start of the Seven-Years' War) and to request that he send his troops in order to re-establish law and order.

This member of the Bengali literati had been selected for his diplomatic acumen acquired as an agent of the East India Company during negotiations with the kingdoms west of their newly acquired Indian territories. Having arrived in London in September 1766 after a seven-month sea voyage from Calcutta on an English East India Company ship, disembarking in Nantes and travelling to Calais overland, the Mirza expressed the desire to visit the "great *Madrassah*" of Oxford of which he had always heard so much. He was hosted, among others, by Thomas Hunt (1696-1774), Laudian Professor of Arabic, and Regius Professor of Hebrew. Hunt in turn introduced the Mughal dignitary to his student, William Jones (1746-1794), who gained fame later in life as the foremost orientalist of the 18th century, earning the sobriquet of "father of scientific linguistics and comparative philology".

During his month-long stay at Oxford, I'tesam ud-Din was shown the observatory, its collection of astrolabes, orreries, "and a large telescope [to] contemplate the seven heavens and twelve signs of the zodiac, and investigate the influences of the fixed stars and the planets, and of every sign". He also visited the "college of medicine, in which are suspended from the roof human bones, from the head to the foot, and the limbs and joints of the dead are connected with iron wires"[1]. In spite of his fascination with the minutiae of instrument-based practices – his travelogue contains one of the few detailed accounts of the use of instruments, tables and logbooks in European long-distance navigation – it was the university's numerous libraries that truly captured his attention, especially the oriental treasures they held. Since many of these writings were inaccessible to the local orientalists, the Mirza translated a number of Arabic, Turkish and particularly Persian texts (mainly diplomatic missives), as "[a]t that time there was nobody in England who could read [the latter language] fluently; for this reason the purport and meaning of these papers were not properly understood, and in every place there was the mark of doubt. They shewed them to me, and I read them with facility. They likewise, in order to examine me and try my abilities, put different books into my hand, and according to my capacity I explained their meaning and sense"[2].

At William Jones' request, he also translated the twelve rules of Persian grammar from the University's copy of the *Farhang-e Jahangiri*, a dictionary of classical Persian written by the renowned Mughal linguist, Hosayn Enju (d. 1626), at the turn of the 17th century[3]. For all his shrewdness, I'tesam ud-Din was nonetheless taken by surprise when Jones lost no time in transforming his translation into a Persian grammar book for the use of employees of the English East India Company – Persian being the principal language of the Mughal Empire and thus of the newly acquired territories in the Indian subcontinent, thus "ma[king] a good deal

[1] This description is based on I'tesam ud-Din's own account of his travels to Europe and Britain, written in Persian in 1784-85 and published for the first time 4 decades later in English translation: James Edward Alexander, [and Munshi Shumsher Khan], *Shigurf namah-i-velaët: or Excellent Intelligence Concerning Europe: Being the Travels of Mirza Itesa Modeen, translated from the original Persian manuscripts into Hindostanee, with an English version and notes* (London, 1827), Ch. 7 (63-71), 70-71.

[2] Alexander, *Shigurf*, 65.

[3] For Hosayn Enju, see Solomon Bayevsky, "Farang-e Jahangiri", *Encyclopædia Iranica*, accessed on 21 February 2016, http://www.iranicaonline.org/articles/farhang-e-jahangiri.

of money by it". "The Grammar", he added wryly, "is a very celebrated one"[4].

Although Jones for his part did not cite the Mirza by name, he did seemingly acknowledge his debt to the latter: "I take a singular pleasure in confessing", he stated in the Preface to the Grammar, "that I am indebted to a foreign nobleman for the little knowledge which I have happened to acquire of the Persian language; and that my zeal for the poetry and philology of the Asiaticks were owing to his conversation and to the agreeable correspondence with which he still honours me". This experience undoubtedly played a role in his recommendation to his readers to have a "native" speaker of the language by their side, from whose mouth they could "learn the true pronunciation of every letter", and "who will explain to him in common words the refined expressions that occur in reading, and will point out the beauties of learned allusions, and local images"[5].

This account quite neatly sums up a number of aspects of the relationship between the British and South Asians, especially concerning knowledge-related matters. Through the circumstances and material means that brought I'tesam ud-Din to Britain, and prompted William Jones's decision to write a Persian grammar for the East India Company, we see the close links between scholarship (or knowledge), trade, and empire. In addition, this account puts paid to the notion that Europe was the only producer of knowledge that was subsequently diffused to the rest of the world[6]. Instead, this anecdote brings out the complexity of knowledge flows, the nature of which can only be understood within a long-term

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[4] Alexander, *Shigurf*, 66. The book in question is William Jones, [alias Yūnus Ūksfurdī], *A Grammar of the Persian Language [Kitāb-i Shakaristān dar naḥvī-i zabān-i Pārsī]* (London, 1771).

[5] Jones, *A Grammar*, xvi-xvii and xix-xx respectively. Although Jones does not name I'tesam ud-Din, he is reported to have acknowledged his debt to another Mirza, a Syrian from Aleppo he purportedly met at around the same time, for teaching him Arabic: see John Shore and Lord Teignmouth, *Memoirs of the Life, Writings and Correspondence of Sir William Jones*, 2 vols (London, 1806), v. 1, 65 *et seq*. However, this is not attested by any written source from Jones himself.

[6] For one of the most eloquent formulations of the diffusionist model, see George Basalla, "The Spread of Western Science", *Science* 156, 3775 (1967): 611-622. For a critique of this schema, see Michael Adas, "Testing Paradigms with Comparative Perspectives: British India and Patterns of Scientific and Technology Transfer in the Age of European Global Hegemony", in *Modes of Comparison: Theory and Practice*, ed. Aram A. Yengoyan (Ann Arbor, MI: University of Michigan Press, 2006), 285-318; and "Introduction", in *Social History of Science in Colonial* India, eds, S. Irfan Habib and Dhruv Raina (New Delhi: Oxford University Press, 2007).

context: the Mughal aristocrat I'tesam ud-Din had already worked with, or for, the *Firangis*, like many other South Asians for over two centuries before him ever since they entered the Indian Ocean world[7]. They interacted as navigators, financiers, business partners, diplomats, negotiators, translators, jurists, and store- and account-keepers, building bridges between disparate ways of doing across diverse cultures of practice.

Indeed, cross-cultural interaction itself was a constitutive condition for the very possibility of sustained European presence in new and unfamiliar spaces. Having originally come into the Indian Ocean to participate in the lucrative spice and luxury-commodity trade, the Europeans initially represented no more than a few hundred civilians and a couple of thousand troops. In the case of the British, even at the apogee of their Empire in the twentieth century, their presence in India never exceeded some tens of thousand civilians, a number at all times too small not to rely heavily upon autochthonous populations for most commercial, administrative and technical tasks as well as those involving physical manpower[8].

The Indian Ocean was criss-crossed with dense trade networks long before the Portuguese (the first European nation) entered the region. The latter thus had to first find and then negotiate their way into these networks in a region that spanned from West Asia and East Africa to South East Asia and China – the Indian subcontinent being, both geographically and economically, an obligatory passage point[9]. In fact, ever since their arrival in the subcontinent, a collaboration was established between the Portuguese – and the other European nations that followed – and a section of the region's population. Over the centuries, this collaboration extended in scope to include *munshis* (interpreter-secretaries), *harkaras* (intelligence agents), and skilled workmen like weavers, jewellers, carpenters, shipbuilders, and sailors. In the face of inter-European rivalries in the mid eighteenth century, especially between the English and the French, this collaboration

[7] Of Persian origin, the word firangi literally means "Francs", and was used all over the Persian-speaking world (Iran and South Asia mainly) to refer to all Europeans.

[8] One estimate, for the Madras Presidency during the first half of the 19th century, puts the proportion of Britons to South Asians directly serving the Company's civil administration alone at 1 to 180. See Robert E. Frykenberg, *Guntur District, 1788-1848. A History of Local Influence and Central Authority in South India* (Oxford: Clarendon Press, 1965), 7.

[9] Sanjay Subrahmanyam, *The Portuguese Empire in Asia, 1500-1700: A Political and Economic History* (London: Longman, 1993); Denys Lombard, *Le carrefour javanais. Essai d'histoire globale*, 3 vols. (Paris: Éditions de l'EHESS, 1990).

extended to the establishment of armies that included indigenous troops, artificers and gunsmiths.

More significantly, however, than this rather straightforward mathematical asymmetry and than the term "collaboration" suggest, Jones's recommendation to his readers points to the inevitable condition of Europeans – and of all strangers, for that matter – of being *epistemologically* dependent on indigenous populations in order to accede to the knowledges and practices of the cultures they initially interacted with and progressively colonized, thus making the latter indispensible intermediaries, or "go-betweens"[10]. Indeed, the modernist dogma of European solipsism has by now taken such a substantial battering that only the most recalcitrant would argue that Europeans, or indeed any strangers, can acquire knowledge of the larger world without the active participation of, and negotiation with, local populations and their knowledges, skills, practices and symbolic and material culture.

In the circumstances under discussion here, this dependence was further compounded by the fact that the vast majority of British recruits arrived in India between the ages of fourteen and seventeen with the aim of making a quick fortune. The only prerequisite for recruitment to the Company, as shown by the surviving educational testimonials of aspiring candidates, was "the rule of three [cross-multiplication] and merchants' accounts"[11]. Few had been to university, a costly affair normally reserved for the eldest son or for those seeking academic or clerical careers. Their real training in the procedures and practices of colonial and commercial administration, as well as the ways and customs of the land, took place at the hands of local agents, bankers, business partners, or indigenous administrators from the erstwhile regimes (such as the Mughal and Maratha empires, or the smaller kingdoms) that the British were able to conquer – and significantly, thanks to their local "wives", or *búbús*. The latter are described with characteristic irony by the famous orientalist, geographer, poet and diplomat, Sir Richard Burton (1821-1890): "The 'walking dictionary' [the *búbú*] is all but indispensable to the Student, and she teaches him not only Hindostani grammar, but the syntaxes of native

[10] On the significance of intermediaries in the history of science, see Simon Schaffer, Lissa Roberts, Kapil Raj, and James Delbourgo, eds., *The Brokered World: Go-Betweens and Global Intelligence* (Sagamore Beach, MA: Science History Publications/USA, 2009); and Kapil Raj, "Go-Betweens, Travelers, and Cultural Translators", in *A Companion to the History of Science*, ed., Bernard Lightman (Chichester: Wiley-Blackwell, 2016), 39-57.

[11] Anthony J. Farrington, *The Records of the East India College Hayleybury and Other Institutions* (London: Her Majesty's Stationery Office, 1976), 4.