Imperial Plants: Modern Science, Plant Classification and European Voyages of Discovery

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This review essay considers Linnaeus's system of botanical nomenclature and the eighteenth-century 'voyages of discovery' to the Americas within the framework offered by contemporary feminist science studies. The author uses a feminist methodological approach toward concepts of natural knowledge and knowledge production and summarizes here basic ideas that are part of a larger project that looks at knowledges of particular plants from the Americas and their properties, focusing on one plant still used for fertility in the Guatemalan highlands. In this essay, the author investigates the centrality of natural knowledge to the development of differing historical perspectives on nature as well as the relationship between the development of European botanical sciences and 'voyages of discovery' to the Americas.

Key Words: empire, post-colonial, bioprospecting, Linneaus, botany, feminist science studies, history of science

Botany became an important science during three centuries of European empire-building from the sixteenth to the nineteenth centuries. Ships from England, France, the Netherlands, and Spain sailed to their colonies to make discoveries in the service of the state and for profit. These profits did not arise from precious metals as much as they did from other natural resources: tropical plants, fruits, trees, and flowers from the Americas and the East and West Indies[1]. Great fortunes awaited those who grew and handled colonial luxuries and valuable plants such as cinnamon, cloves, coffee, maize, nutmeg, pepper, rubber, sugar, tea, and tobacco. Europeans wanted to know what plants looked like and where they grew; they needed to know they found the plants they were looking for and had 'discovered' the most valuable ones.

Botany grew and promoted European voyages. Trade and capital, more than science, drove collecting, classifying, and naming plants in the late seventeenth and eighteenth centuries. As it became more profitable to extract botani-

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cal knowledge from native peoples, Europeans created a modern history of cultural exchange and colonial bioprospecting, i.e. Western endeavors to capitalize on indigenous knowledge of natural resources. Science and the development of capitalism converged on the discipline of botany as ornaments in European gardens, sought-after medicaments, and profitable plants became the most important materials in the building of empire, but only after a new 'objective' science had taken ideological hold[2].

This review essay takes an interdisciplinary approach to the relationships among science, nature, and gender in Europe in the early modern period and explores the role of Carl Linnaeus as one of the key developers of modern science, placing his role in the context of political, economic and cultural changes in Europe in the sixteenth and seventeenth centuries. Beginning from the central historical analyses in the field of feminist science studies, the first section of this essay will outline historical associations of nature and science in order to put in context the second part of my essay and the bulk of my argument. In order to fully understand the historical and ideological justifications for plant classification and European voyages of botanical discovery, it is imperative to begin with a discussion of early feminist science studies works, such as Carolyn Merchant's work on the history of the origins of science, noting the relevance of botanical classification to a gendered history of science and the origins of such 'science' into account. While some science historians argue that "historians of science take an almost universally negative tone… seeing modern science' as all-too ready to assist the powers-that-were, whether domestic or imperial," (Drayton 2000, 128) feminist science studies often considers the political implications of the production of particular historical scientific knowledges. We can only look at these specific material events in light of their ideological context since, as Merchant articulates, "Descriptive statements about the world can presuppose the normative; they are then ethic-laden" (Merchant 1990, 4). Linnaeus's classification system and its connection to the voyages of exploration by botanists both prompted and expanded much of this classification. Indeed, constructions of gender are relevant to all this history. As Ruth Watts (2005, 89) argues, not only were scientific impulses of women restrained by gendered notions of science from the origins of modern science, but the position of women was in line with conflicting modern principles that underlay a contested terrain in science for the centuries that followed.

It is in this light that I attempt to illustrate the centrality of narratives of empire to the production of recognizable and legitimate narratives of science. I focus on the construc-

tions of 'exploration' and 'science,' examining not only the ways in which ideologies are created and perpetuated, but also the ways in which they make certain responses, actions and attitudes permissible and censor others. Scientific narratives are understood here as systems of meaning-production, rather than simply statements or language, encompassing texts and images and systems that 'fix' meaning, however temporarily, and enable us to make sense of the world. Keeping in mind the particular histories that shape our knowledge, feminist science studies allows us to demonstrate how the actions and priorities of a few dominant decision-makers (in many of these cases, European scientists such as Carl Linnaeus) have had repercussions historically and in our contemporary lives for what we understand of the natural world. This paper takes science to be both part of culture and humanistic knowledge, since part of the history of science is the formation of disciplines; that is, what is known as 'science' was specifically constructed in a particular time and for particular individuals, to be elaborated in the following essay. In its essence, then, this paper moves toward a central question about the politics of knowledge: how is it that some theories become dominant over others?

A Mechanized Marketplace: The Origins of Modern Science

Feminist writing has helped to re-evaluate the Western scientific revolution as an essentially masculine enterprise that served to classify and dominate nature. Carolyn Merchant played an early role in elaborating this history, focusing on the early modern era in her 1990 text *The Death of Nature*. Merchant's efforts were to "show how, in the context of commercial and technological change, the elements of the organic framework—its assumptions and values about nature—could be either absorbed into the emerging mechanical framework or objected as irrelevant" (Merchant 1990, 5). Feminist science studies as a field has become a valuable source of information for those who challenge the hegemonic epistemology of value-free research, and an asset for all scholars, especially feminist scholars, who deeply value the kind of scientific inquiry that breaks the power of gender.

Londa Schiebinger is one of these scholars, and as she has correctly articulated, what is partially at stake in reconceptualizing the history of science is access to the missing world of knowledge, missing as a result of science's disciplining of knowledge as well as a lack of consideration of 'science' as a set of ideologies produced at particular times in history when European knowledge was considered superior and non-European cultures inferior. Knowledge from Europe was preserved and knowledge from other

cultures purposefully ignored, particular knowledge about the properties of plants was systematically removed from Western public understandings throughout the modern period. Colonial powers persisted from the sixteenth century onward, the natural resources of the Americas were transferred to Europe while the bulk of plant knowledge was not. Decision-making about science, therefore, must be analyzed as it was guided by a certain set of assumptions made by scientists about people, lands, and traditions of knowledge and served to reinforce some and ignore others[3].

Also fundamental to feminist scholarship has been a historical approach to theorizing the body, one that understands bodies as the sites of dynamic social processes, and brings presumed medical and scientific conceptions of human bodies more closely into view. Only an historical approach to the body will enable us to truly understand the strategies and violence by means of which Western science has disciplined and appropriated women's bodies, and has done so in light of ignorance of the medicinal properties of plants. As Karen Harvey (2002, 204) writes in her history of gendered science, "Bodies were thus reassessed by scientists in the context of political imperatives." Some feminists correctly posit a relationship between the participation of women in science and the historical scientific conclusions about women's bodies and minds, as well as the nature of scientific work and the language of science (Kohlstedt 1995, 41-42). As Daniel Sherman (2000, 712) writes, the study of colonialism's deployment of various kinds of knowledges and their construction as 'scientific' has led to a related area of investigation: "the ways in which the colonial enterprise has fostered, nurtured, and decisively shaped disciplines, institutions, and practices in the metropole" and new analyses of how these dominant understandings developed. Other scholars have noted how colonial historians of science often wrote larger social and intellectual histories of Europe, not only histories of the colonies (Chambers and Gillespie 2001, 222), consciously or subconsciously detailing "how societies are structured so that certain knowledges become reviled and their development blocked" (Schiebinger 1989, 232).

What are these dominant formations of science that developed and blocked others? In modern scientific study, patterns of order and laws of nature are of utmost value. Sixteenth-century Europeans, however, considered nature without such stringent patterns within the prevailing ideological framework as an "organismic" understanding, where the "subordination of individual to communal purposes in family, community, and state, and vital life permeating the cosmos to the lowli-

est stone" (Merchant 1990, 1) was of highest importance. Such understandings of the world involved identifying nature and the earth with a nurturing mother, which gradually disappeared with the mechanization and rationalization of prevailing ideologies during the seventeenth century, what would later be called the scientific revolution. Nature as female earth and spirit was subsumed by the development of the machines of capitalism; the image of a natural earth had previously severely constrained what could be done to nature. With the disintegration of feudalism and the expansion of European colonialism and capitalism, commerce and profit became more ideologically important to the development of science than anything else.

Nature that was once seen as alive, fertile, independent and holistic devolved into a mechanized science during the sixteenth and seventeenth centuries that created new attitudes toward land. Such intellectualized science lead to the domination of both nature and the female: mechanistic approaches to nature brought about the creation of objective knowledge developed by experiment and the "active subject/passive object" we know today as the modern sciences. Merchant calls our voyeuristic approach to nature "ocularcentric," (Merchant 1990, 2) describing the way in which Western sciences look 'out' at nature as separate from us in order to uncover its secrets. Both nature and women began to be represented as subordinate and passive. The Aristotelian and Platonic conception of the passivity of matter could be incorporated into the new mechanical philosophy in the form of inert "dead" atoms, constituents of a new machine-like world in which change came about through external forces, a scheme that readily sanctioned the manipulation of nature. The Neoplatonic female world soul, the internal source of activity in nature, would disappear, in order to be replaced by a carefully contrived mechanism of subtle particles in motion. Indigenous conceptions of the land and a previous ethic of restraint disappeared as the ongoing exploitation of resources available for any nation's use was justified by the new science.

During the scientific revolution, a grand narrative emerged of the earth not as center of the universe but as something available for industrial science. Tools were now used in which to uncover this "natural philosophy" with empirical and experimental methods and mechanical law. It was only in very recent history that science has come to represent a field of study much more specific than its original general meaning or "knowledge that one has of things." Science lost such a broad understanding by the nineteenth century and acquired specific meaning based on mathematics and controlled observational experi-

ment: "Scientific method came to mean particular techniques requiring particular training, while mathematical descriptions of the universe came to be acknowledged as more exact models of the observed world" (Zinsser 2005, 4). How did "natural philosophy" become "science" and move toward classification and scientific exploration?

Francis Bacon (1561-1626), the celebrated "father of modern science," developed an interest in industrial science and an inductive method to reveal 'true' science: "Female imagery… permeated his description of nature and his metaphorical style and were instrumental in his transformation of the earth as a nurturing mother and womb of life into a source of secrets to be extracted for economic advance." Bacon saw dominating nature as part of ensuring the good of the entire human race:

> "She [nature] is either free and follows her ordinary course of development as in the heavens, in the animal and vegetable creation, and in the general array of the universe; or she is driven out of her ordinary course by the pervasiveness, insolence, and forwardness of matter and violence of impediments, as in the case of monsters; or lastly, she is put in constraint, molded, and made as it were new by art and the hand of man; as in things artificial (cited in Merchant 1990, 165)."

By the time Bacon wrote his *New Atlantis* in 1624, significant class divisions motivated by capitalism and perpetuated by the industrial revolution were common throughout Europe. Changing relationships between local and large manufacturers prompted a doctrine of "scientific progress" associated with the rise of technology in support of capitalism. Further, as scientists became guardians of 'scientific' knowledge and technical language, valuing the objective over the subjective (in which the philosophical disappears) became the dominant European ideology. Bacon's efforts to define experimental method in these terms found the bodies of animals and humans secondary to developing 'true' understandings of nature.

From the 1650's onward, Bacon worked in developing a methodology for the manipulation of nature, including a tendency to charge women with medical knowledge with witchcraft and celebrate particular constructions of femininity that were not knowledge-based. Sciences that women traditionally operated in, such as midwifery and alchemy, were soon considered subjects that could be relegated to the periphery in search of 'true' and 'objective' science: an experimental and objective new science served the needs of capital and its accompanying ideology, the "privileged first-born twins of modern science: the myth of the natural body and the myth of value-neutral knowledge" (Schiebinger

2000, 4). Nature became "feminine" as it developed along the lines of European ideologies that reinforced a connection between masculine and objective. Such an analysis suggests a new model for politically-oriented historical analysis of science, as Bacon's model allowed for particular constructions of knowledge—which included the classification of plants and the colonial exploration in search for these valued plants—that would, in turn, come to reinforce a masculine and objective construction of science.

Kingdoms and Classes: Linnaeus's System of Plant Classification, Natural History and European Voyages of Discovery

The need to look for "pure" systems of classification came about during seventeenth century colonial expansion in Europe and was prompted by the desire to collect plants for their economic and medicinal value, amid the general interest among naturalist explorers to uncover the botanical secrets of the world[4]. Mary Louise Pratt suggests in *Imperial Eyes* that the key moment in the development of a Western classification system for plants came when in 1720 Carl Linnaeus, a Swedish natural historian, elaborated his system for classifying and naming species. This system helped trigger a rapid increase in natural history exploration and stimulate "syntheses" of the botanical knowledge it produced (Beinart 1998, 778). Scientific findings and literature, as a result, served to naturalize an 'objective' and scientific approach to travel for plant exploration and took little consideration of the human encounters that came with it. Pratt describes the writings of these botanical explorers:

> "The landscape is written as uninhabited, unpossessed, unhistoricized, unoccupied even by the travelers themselves. The activity of describing geography and identifying flora and fauna structures as an asocial narrative in which the human presence … is absolutely marginal, though it was, of course, a constant and essential aspect of the traveling itself" (Pratt 1992, 51).

In addition, the traveling naturalist had the ability to "walk around as he pleases and name things after himself and his friends" making "European authority and legitimacy uncontested" where "indigenous voices are almost never quoted, reproduced or even invented" (Pratt 1992, 63-4). Indeed, feminists have long contemplated the particularly gendered nature of the way in which colonial plants were named[5]. These "heroic narratives" explorers sent home to describe their findings and adventures went about naming plants, so each plant name became a celebration of European men, many of whom were upper-

class physicians. The heroic narratives they wrote "served to heighten a new version of heroic masculinity" (Terrall 1998, 225-7) and highlight the adventures of naturalists who encountered the dangers of the natural world. One German naturalist explorer who dramatized the difficulty of his passage: "the weather was severe, the rain continual, the mud thick and stagnant. Food was scarce along the long road and places to lodge nonexistent. Few people of means go by foot in these conditions," he concluded, "they arrange instead to be carried in a chair tied to a man's back" (Schiebinger 2004, 67).

European respect for traditional knowledges lessened over the eighteenth and nineteenth centuries. Interest in indigenous knowledge degenerated to "superstition" that coincided with the development of commercial crops and botany's goal of charting commerce and state politics from the sixteenth through the eighteenth centuries[6]. Such understandings of plants as primarily profitable derive from early conceptions of the nature of science itself, where claims of objectivity coincide with little question of how findings are evaluated, who has access and authority to the knowledge, or to whom scientific findings are presented[7]. A consistent botanical language was crucial to the success of the expeditions of European empires to investigate the flora of the colonies: "Linnaeus's system was efficient since among its merits was its ability to disregard local circumstances, such as climate and soil conditions, without renouncing its claim to be describing a natural, or universal, order (Lafuente and Valverde 2005, 137). 'Kingdoms' of plant species, which Linnaeus imagined were ruled by laws similar to those that governed empires, were further divided into Classes and then into Orders, which were then broken into Genera and Species. Global expansion, as much as it served to shape the science of plants, included certain forms of knowledge accompanying global botanical exchange, and depended on local negotiation and cultural encounters, and dealt with the failures of transportation, disease, and adaptations. Still, what remained most important were plants that could easily be transported and turned into profit, such as coffee and opium. As Lafuente and Valverde conclude, "Linnaean botany was a form of biopolitics, what we might call 'imperial biopower' devoted to turning diversity, local variation, and qualia into data" (2005, 46). Indeed, as others have argued, "Empire requires that scientists and their patrons share the belief that the stuff of nature can be captured in words, figures, lines, shading, gradients, or flows" (Lafuente and Valverde 2005, 141). In fact, national identities among European empires often became centered around precise natural knowledge of New World regions they colonized:

"European naturalists, of whom Linnaeus was only one, tended to collect only specimens and specific facts about those specimens rather than worldviews, schemas of usage, or alternative ways of ordering and understanding the world. They stockpiled specimens in cabinets, put them behind glass in museums and accumulated them in botanical gardens…They collected the bounty of the natural world, but sent 'narratively stripped' specimens into Europe to be classified by a Linnaeus… supporting once again the notion that 'travelers never leave home, but merely extend the limits of their world by taking their concerns and apparatus for interpreting their world along with them'" (Schiebinger 2004, 87).

Linnaeus taught that the purpose of natural history was to render service to the state. He was among many scientists in the service of the colonial empires to desire, first and foremost, to grow plants that could yield high profits like coffee and opium. The science of botany itself was defined as "expertise in bioprospecting, plant identification, transport and acclimation" that mirrored colonial expansion (Schiebinger 2004, 7). Botanical exploration followed trade routes, and naturalists and physicians worked to improve commerce and served empire in three ways: cheap supplies of drugs, food and luxury items for domestic markets, as colonial substitutes for such luxury goods, and the growth of plants for profit within the empire itself (Schiebinger 2004, 7-8). These "biopirates" often named such items and operated within "a narrative of imperial nomenclature[8]."

It is important to recall that Linnaeus's naming practices came about at a point in history in which naturalists had the ability to regulate who could and could not do science and the restriction that scientific knowledge is only that generated by scientists. Such "professionalization" of knowledge of the natural world also developed as European science was establishing its power vis-à-vis other knowledge traditions. As a result, Linnaeus closely guarded the power to name and wrote, accordingly, "no one ought to name a plant unless he is a botanist." Linnaeus admonished that "he who establishes a new genus should give it a name," strengthening the priority of discovery as a chief scientific virtue. Further, he saw it as his "religious duty to engrave the names of men on plants, and so secure for them immortal renown" (Schiebinger 2004, 201-3).

Linnaeus' system of naming that excluded native names proved instrumental for colonial conquest: "It was precisely this type of information—medicinal usages, biogeographical distribution, and cultural valence—that was to be stripped from plants in Linnaean binomial nomenclature as it has come down to us" (Schiebinger 2004,

197). What should be clear is that Linnaeus's system of plant classification and its repercussions never would have been accepted had it not been already clear what constituted scientific knowledge and who was responsible for its production, but what should be elaborated further are the definite links between Linnaeus's system and the voyages of exploration. Seventeenth and eighteenth century voyages of discovery brought European culture into contact with a variety of world cultures, but it is important to recall that European sciences were then being developed to enable the expansion of European empires at the expense of those Europeans encountered[9]. Certainly, European expansionism changed the "topography" of global scientific knowledge (Harding 1991, 29), and the underdevelopment or decline of scientific traditions in other cultures:

> "Those aspects of nature about which the beneficiaries of expansionism have not needed or wanted to know have remained uncharted. Thus, culturally distinctive patterns of both knowledge and systematic ignorance in modern sciences' pictures of nature's regularities and their underlying causal tendencies can be detected from the perspectives of cultures with different preoccupations. For example, modern sciences answered questions about how to improve European land and sea travel; mine ores; identify the economically useful minerals, plants, and animals of other parts of the world; manufacture and farm for the benefit of Europeans living in Europe, the Americas, Africa and India; improve their health and occasionally that of the workers who produced profits for them; protect settlers in the colonies from settlers of other nationalities, gain access to the labor of indigenous residents…" (Harding 1991, 43-4).

Epic scientific voyages sponsored by colonial powers explored the natural riches of the 'new' world. Political economic thinkers of the day who touted Western European expansion found that amassing great wealth and power relied on exact knowledge of nature and celebrated the resources could be obtained for European powers through conquest and colonization. Indeed, in the eighteenth century, there was a close alliance between medicine and colonial botany or, "the study, naming, cultivation, and marketing of plants in colonial contexts—was born of and supported European voyages, conquests, global trade, and scientific exploration" (Schiebinger and Swan 2005, 2). Plants were important all kinds of New World travel, even missionary work—as a food source, in order to combat disease, and for building materials (Bravo 2005, 63). Botanists were

active in colonial politics, so "natural historical observation must therefore be viewed as a form of colonial government, in which cataloging existing resources and acquiring new ones served the ends of European imperialism" (Spary 2005, 193). As a result of the new ideologies of science that took hold during the centuries of empire, however, and centered on its noble search for 'truth' and 'objectivity' based in empirical method, historians of science often construed Europeans as the producers of knowledge and indigenous peoples as mere suppliers of the material artifacts from which that knowledge was born.

Conclusions: Toward a Political History of Plants

European sciences were developed to enable the expansion of European empires at the expense of those Europeans encountered, and the continued expansion of empires justified the continuing exploitation of nature's resources. Naturalists who were able to bear witness to flora "in the field," provided a certain authority to travelers' observations, allowing them to represent the plants they 'found' and claim scientific authority over them. Consistent botanical language was necessary in these endeavors, and Linnaeus' classification system was regarded as most efficient since it enabled scientists to disregard local culture and use and claim botany's natural and universal order (Schiebinger 2004, 36). As Carolyn Merchant articulates, natural history and nature had been previously represented to conform to particular gendered notions of colonizing social and economic systems. Technologies such as instruments, books, maps and tables, now continue to mediate between people (as subject) and nature (as object). Linnaeus' system of classification and the botanical exploration that both prompted and follow from it, proved instrumental for colonial conquest and served to reinforce science and botany along particular gendered lines.

Such research into classification systems and scientific exploration remains historiographically significant because it indicates that the history of science and botany in particular, has moved from the margins of a historical field to take center stage in critical historical processes such as capitalist expansion, globalization, and colonization. Botanical exchange, therefore, was a highly contested and complex procedure previously taken for granted in political analysis and provides a possibility for demonstrating insights into indigenous understandings of nature and worldviews before Western disciplinary specialization took hold, especially in light of the contemporary focus that incorporates these plants from the colonial world and their applications into pharmaceutical research as well as biotechnology and international development ef-

forts. The commodification of crops and plant life continues as those once imported to the West from the rest of the world are exported again today to those former colonies in expensive, genetically modified forms. The question of bioprospecting and the status of indigenous knowledge and intellectual property rights is also very much a present-day and relevant question, and a complete analysis of the gendered history of these plants, as detailed by those in the field of feminist science studies, allows us to reaffirm the need for gendered understandings of natural history and explore new possibilities for conceptualizing the natural world and the political history that surrounds it.

The colonial world still remains marginalized by an overriding focus on European naming and colonization, and international botany is still regulated by politics, not science. Certainly, botany "both facilitated and profited from colonialism and long-distance trade" (Schiebinger 2004), but we must further analyze the links among botany, science history and classification, and European commercial and territorial expansion in light of contemporary biotechnological efforts and international development practice. Such research provides us new possibilities for understanding the natural and theoretical world, and science's perpetuation of certain ideologies of gender, race, empire and science that we often take for granted.

Endnotes

[1] In 1494, when Columbus brought sugarcane cuttings into the West Indies, he provided the Spanish empire with what would become one of the world's most successful cash crops.

[2] For more on specific historical instances of scientific sexism and racism, see Londa Schiebinger's *Feminism and the Body*.

[3] See Schiebinger's "Feminist History of Colonial Science" (2004), in which she looks at the "culturally induced ignorances" of the peacock flower, as the plant itself traveled to Europe but pre-colonial knowledge of the plant's aborifacient properties did not, one example of many Schiebinger cites in her work of the ways "bodies of scientific and medical ignorance…molded the very flesh and blood of real bodies."

[4] Many scholars have provided readings of European botanical gardens based in their incorporation of plants from the colonized world. During the time of empire, Jill Casid argues, even the presentation of nature became imbedded with ideologies of empire and gender: "Landscaping… was the primary means by which particular formations of family, nation, and colonial empire were engendered and naturalized." Casid, pg. xxii.

[5] The search for female amazons was part of the imperial inquest into South America as were the "heroic narratives" or the botanical explorers themselves. Schiebinger, *Plants and Empire*, pgs. 62, 65.

[6] New ideas of agricultural "improvement" developing in the seventeenth century provided the right conditions for appeals to transform Kew Gardens in London from a royal pleasure garden for a garden with "use beyond beauty" (Drayton, 92). An account of this history uses specific details of Kew's development as links to a wider

range of more specific historical and cultural shifts in the global and local economies of horticulture. If we consider this within the development of science and the gendered ideologies shaped by the broader social and political context, we see that economic botany was, in part, dependent on gender norms and sexual divisions.

[7] Schiebinger makes a point to explore the hierarchical system of sex difference that Linnaeus's practice of plant classification actually represented, which I do not explore here, in *Nature's Body* (2004).

[8] In *Plants and Empire*, Schiebinger explores the politics of early colonial bioprospecting in the West Indies, employing the metaphor of "biocontact zones" to look at the theoretical frameworks of local indigenous botanical worldviews in contrast to those of Europeans. In similar ways, but dealing with Creole elites, Antonio Lafuente and Nuria Valverde (2005) have shown how the Linnaean system was contested outside of Europe.

[9] Sandra Harding (1991) concludes that modern forms of racism developed precisely as remnants of colonialism that justified the conquests: "It is impossible to separate racism from colonialism and imperialism and the development of modern science in Europe," In addition, she argues, the standards for objectivity, rationality, and "good" method have been constituted in relation to qualities and practices associated with non-European cultures. Harding, pg. 29.

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