

**CULTIVATING SOILS AND SOULS: THE JESUIT  
GARDEN IN THE AMERICAS**

by

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## **ABSTRACT**

Within less than a decade of its founding in 1540, the Society of Jesus sent missionaries to evangelize in the Americas. For Jesuits in the New World, cultivating soils and souls were integrated projects. As a metaphor, the garden represented civilization and Christianity. As a physical space, the garden provided a means to control the natural world of the Indies. Once established, gardens often became critical sites in the transfer of botanical knowledge around the world. The Jesuit pharmaceutical gardens of San Pablo in Lima Peru and San Miguel in Santiago de Chile provide a window into the role Jesuit gardens played in the collecting and disseminating of biota and information throughout Spanish America and the early modern world. These gardens became sites of science and critical mechanisms in the global exchange of botanical, medical, and pharmaceutical knowledge.

To my parents, Mary Beck and John Sayre, for their continuing  
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## Introduction

In the early seventeenth century, the Jesuit Peter Biard mused that there was no nobler Christian task than to “make a Garden out of the wilderness.”<sup>1</sup> In Christian narratives nature has often been cast as a desolate and immoral wilderness in dynamic tension to the paradisiacal sanctuary of the garden. Genesis maintains that the earth was cursed along with Adam and Eve when they were exiled from the Garden of Eden.<sup>2</sup> This sharp division between the Garden of Eden and the postlapsarian wilderness influenced how early modern Europeans perceived the Americas. The slow absorption of the Americas into European consciousness was aided and shaped by the Biblical ideas of garden and wilderness. These concepts located the new geographies and landscapes encountered during the collision within European cosmography.<sup>3</sup> The Garden of Eden was the divine home of humanity, but for some it was also considered a historically real place.<sup>4</sup> The European landfall stimulated hope for locating the earthly paradise amongst the moral and physical wilderness that was the American landscape.

Missionaries who traveled to the Americas frequently described it through this Christian trope of wilderness.<sup>5</sup> For many Franciscans, Dominicans and other orders, the American landscape was as much in need of salvation as its savages. Likewise for the

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<sup>1</sup> R.G. Thwaites, ed., *The Jesuit Relations and Allied Documents: Travels and Explorations of the Jesuit Missionaries in New France 1610—1791* (Cleveland: Burrows Bros. Co. 1901), 3:35.

<sup>2</sup> Genesis, 3:17-19.

<sup>3</sup> John H. Elliot, *The Old World and the New 1492-1650* (Cambridge: Cambridge University Press, 1970), 24-25; John H. Elliot, “Final Reflections. The Old World and the New Revisited,” in *America in European consciousness, 1493-1750*, ed. Karen Ordahl Kupperman (Chapel Hill: University of North Carolina Press, 1995), 391-406.

<sup>4</sup> Jean Delumeau, *History of Paradise: The Garden of Eden in Myth and Tradition* (New York: Continuum, 1995), 39-70; John Prest, *The Garden of Eden: The Botanic Garden and the Re-Creation of Paradise* (New Haven: Yale University Press, 1981).

<sup>5</sup> Ramsay Cook, “1492 and All That: Making a Garden out of a Wilderness,” in *Foundations: Readings in Pre-Confederation Canadian History*, ed. Margaret Conrad and Alvin Finkel (Toronto: Pearson, 2004), 35-48; Monique Taylor, “‘This is our dwelling’: the landscape experience of the Jesuit missionaries to the Huron, 1626-1650,” *Journal of Canadian Studies* 33, no. 2 (1998):85.



Jesuits, members of the missionary order The Society of Jesus established in 1540, the garden was something to be created rather than found. For Jesuits the garden symbolized potential for the metaphorical Christian seeds, which they sowed, and the wild landscapes which they endeavored to civilize. As both concept and physical space, the garden remains an understudied aspect of the cultural and environmental history of the Society of Jesus.

Cultivating the soil and souls were wholly related. The garden provided the most basic needs of food and medicine, yet it also served as a critical metaphor for the Jesuit spiritual task in the Americas. Jesuits understood their missions to be symbolic gardens where the seeds of Christianity could grow. Physically, the garden was the ideal state for the American landscape, which the Jesuits hoped to establish. Once created, the garden's products nourished the survival of missionaries and provided the "green gold," valuable plant species, which financially supported the Jesuit enterprise and which was spread through the early modern world. The gardens of Jesuit pharmacies, specifically those of San Pablo in Lima, Peru and San Miguel in Santiago de Chile, provide a window into the role Jesuit gardens played in the collecting and disseminating of biota and information throughout Spanish America and the early modern world. These gardens became sites of science and critical mechanisms in the global exchange of botanical, medical, and pharmaceutical knowledge.

### **The Garden as a Conceptual Space**

As they labored in the New World missions, the Jesuits often framed their experiences in terms of an idealized Edenic garden versus the hostile wilderness that they then confronted. Surrounded by uncivilized and immoral peoples and places, taming the

wilderness required converting both people and nature. Jesuits brought the word, but they also introduced European agriculture methods to provide themselves with food and medicine. The garden was thus the spiritual and material expression of godly order and intrinsically connected to the Christianizing objective.

Nature has been viewed in numerous ways within the Christian faith. Although Christian attitudes toward nature vary across time and context, there are at least two fundamental ways nature has been viewed since the time of the early Church. The distinction between the spirit, and matter was central to Christian cosmology.<sup>6</sup> Made in God's image, humankind was distinct from nature, which was material. This dualism between humankind and the natural world meant humans bore the responsibility to dominate and refine nature. The oft-quoted command of Genesis reflects this position:

Be fruitful, multiply and fill the earth. Be the terror and dread of all the wild beasts and all the birds of heaven, of everything that crawls on the ground and all the fish of the sea; they are handed over to you. Every living and crawling thing shall provide food for you, no less than the foliage of plants.<sup>7</sup>

St. Thomas Aquinas reiterated this view when he remarked that “[a]ccording to the Divine ordinance the life of animals and plants is preserved not for themselves but for man.”<sup>8</sup> Of course, there are numerous interpretations of the Genesis command, but historically Latin Christianity has maintained that it is God's will for humanity to exploit nature.<sup>9</sup> Twentieth century English-speaking scholars have tended to interpret this passage as condoning a hierarchical world in which humans were divinely commanded to

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<sup>6</sup> Per Binde, “Nature in Roman Catholic Tradition,” *Anthropological Quarterly* 74, no. 1 (2001):16; Lynn White, Jr., “The Historical Roots of Our Ecologic Crisis,” *Science* 155, no. 3767 (March 1967), 1203-1207.

<sup>7</sup> Gen. 9: 1-2.

<sup>8</sup> Thomas Aquinas, *Summa Theologica*, trans. Fathers of the English Dominican Province (Christian Classics Ethereal Library, 2005), Art. 1, [http://www.ccel.org/ccel/aquinas/summa.SS\\_Q64\\_A1.html](http://www.ccel.org/ccel/aquinas/summa.SS_Q64_A1.html).

<sup>9</sup> White, 1205.

dominate.<sup>10</sup> Clarence Glacken argues against interpreting this passage from a modern standpoint.<sup>11</sup> The traditional pastoral and agricultural living in the ancient Middle East knew that humanity's control over nature is always tenuous.

Another major view of nature in early Christian thought, and still prevalent in contemporary Roman Catholic thinking, held that humans were stewards of the natural world. In this view, the Old Testament did not sanction despotism, but advocated that humankind should reign in a moral and respectful manner.<sup>12</sup> Humans' authority over the natural world was far more restricted and necessitated responsibility and cooperation.<sup>13</sup> Francis of Assisi was perhaps the best example of a Christian who advocated for stewardship. In fact, he went further, arguing that God's presence in nature required Christians to build a fellowship of humankind and nature.<sup>14</sup>

Christian beliefs regarding nature are complex, but despite nuances, a clear and unambiguous distinction between humankind and the natural world is often expressed and otherwise usually implicit. Humanity was accorded dominion over nature, but human control remained limited. Natural catastrophes and everyday agricultural experiences illustrated that nature did not always comply with human desires. This was underscored in the key Christian motifs of the garden and the wilderness. The garden was not only the original state of nature; the earthly landscape could assume this ideal shape through human transformation of the wilderness. The tensions between these landscapes

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<sup>10</sup> Jeanne Kay, "Human Dominion over Nature in the Hebrew Bible," *Annals of the Association of American Geographers*, 79, no. 2. (1989), 220-1.

<sup>11</sup> Clarence J. Glacken, *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (Berkeley: University of California Press, 1967), 166.

<sup>12</sup> Binde, 18; Robin Attfield, "Christian Attitudes to Nature," *Journal of the History of Ideas* 44, no. 3 (1983): 369-386.

<sup>13</sup> Attfield, 373-7.

<sup>14</sup> Binde, 25.

figured prominently in early Christian writing, and they provided insight into how human relationships with nature were interpreted.

This tension was in fact crucial to the central message of Judeo-Christian faith.<sup>15</sup> The Bible associated wilderness with the earthly world and constructed it in antithesis to Eden.<sup>16</sup> The wilderness was where Adam and Even were exiled for their sins and the Garden was, by implication, the state of perfection, bliss, and harmony.<sup>17</sup> Eden was the ideal state for the natural world where Adam needed only to tend the garden. Nature was compliant in the garden, but the fall left humankind in a far more recalcitrant landscape. Rooted in the physical landscape of the ancient Middle East, the wilderness of the Bible was the barren desert where the fertile potential of the garden was ominously lacking. The ancient Israelites did not irrigate, but depended on rainfall for agriculture in a dry climate; thus, “the great and terrible wilderness” was a place specifically associated with a lack of water where cultivation was unfeasible.<sup>18</sup> The realities of ancient Middle Eastern agriculture and geography shaped the definition of wilderness as a place bereft of civilization; wilderness was uncivilized because humanity could not cultivate it. The dual connotations of infertility and exile in the meaning of wilderness evoked images of corporeal and spiritual death.<sup>19</sup> The tension between wilderness and civilization apparent

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<sup>15</sup> George Hunston Williams, *Wilderness and Paradise in Christian Thought* (New York: Harper and Brothers, 1962); George Hunston Williams, “The Wilderness and Paradise in the History of the Church,” *Church History* 28 (1): 3-24.

<sup>16</sup> Roderick Nash, *Wilderness and the America Mind*, (New Haven: Yale University Press, 1973), 15.

<sup>17</sup> Gen. 3: 23.

<sup>18</sup> Kay, “Human Dominion over Nature in the Hebrew Bible,” 218; Deut. 8:15.

<sup>19</sup> Williams, *Wilderness and Paradise*, 12-15.

in the Christian notion of wilderness its highlights how definitions of nature are culturally constructed.<sup>20</sup>

Wilderness was a receptacle for sin and suffering; however, it was also integral to the concept of rebirth. Much like the modern backpacker, early Christians also viewed wilderness as a place of protection, testing, and possible redemption. In the Old Testament, the Rechabites renewed peace in their community by returning to a nomadic life in the desert.<sup>21</sup> Wilderness in Revelation 12 is the refuge of the Church, imbuing it with a protective quality.<sup>22</sup> There are also the many examples of people who enter the wilderness to become divinely inspired, including John the Baptist, Jesus, Job, and Moses. These examples illustrate that the dichotomy between garden and wilderness was not rigid. Wilderness was not eternally immoral, because it had the potential to become paradise.

The Biblical tropes of wilderness and garden provided Europeans with a framework for interpreting the New World. Scholars generally accept the argument that integrating the Americas into classical and biblical paradigms softened the impact of the “discovery” on the European consciousness.<sup>23</sup> The abundance of the Garden of Eden was associated with the east, and although opinions varied as to its exact location, some

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<sup>20</sup> William Cronon, “The Trouble with Wilderness, or Getting Back to the Wrong Nature” in *Uncommon Ground: Toward Reinventing Nature*, ed. William Cronon, (New York: W.W. Norton & Co., 1995), 69-90.

<sup>21</sup> Jer.35:6,7.

<sup>22</sup> The “true Church” is portrayed as woman who flees into the wilderness in Revelation 12:6: “And the woman fled into the wilderness, where she hath a place prepared of God, that they should feed her there a thousand two hundred [and] threescore days”

<sup>23</sup> Jorge Canizares-Esguerra, “New World, New Stars: Patriotic Astrology and the Invention of Indian and Creole Bodies in Colonial Spanish America, 1600-1650,” *The American Historical Review* 104, no. 1 (1999), 35; Karen Ordahl Kupperman, “Introduction: The Changing Definition of America,” in *America in European consciousness, 1493-1750*, ed. Karen Ordahl Kupperman (Chapel Hill : University of North Carolina Press, 1995), 1-29.

Europeans speculated that the garden would be found in the New World.<sup>24</sup> Many hypothesized that the earthly paradise would be located below or near the equator. Cardinal Pierre D'Ailly described the location of the earthly paradise "in certain regions of the east" in his *Imago Mundi*.<sup>25</sup> D'Ailly's book has been described as one of Christopher Columbus' favorites and the 1930 reprint includes hundreds of marginal notes made by Columbus. Although it is uncertain to what degree Columbus' cosmography was influenced by *Imago Mundi* or even when he obtained a copy, Columbus undoubtedly believed in the existence of paradise on earth.<sup>26</sup> In fact, he believed that he had located Eden. On his third voyage to the West Indies in 1498, he declared:

I believe that, if I pass below the Equator, on reaching the highest regions I shall find a much cooler climate and a greater difference in the stars and waters. Not that I believe it possible to sail to the extreme summit or that it is covered by water, or that it is even possible to go there. For I believe that the earthly Paradise lies here, which no one can enter except by God's leave...<sup>27</sup>

Columbus' contemporary, the Dominican priest Bartolomé de Las Casas also confirmed the probability of locating paradise in the New World.<sup>28</sup>

A century after Columbus' assertion, some Europeans were still engaged in a debate over whether earthly paradise was to be found in the Americas. In his *Historia natural y moral de las Indias* published in 1590, the Jesuit José de Acosta wrote:

If those that maintain that the Earthly Paradise lies below the equator were guided by what I have written, they would seem to be partially right, not because I

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<sup>24</sup> Stefan H. Smith, "The Mystification of Spices in the Western Tradition," *European Review of History* 8, no. 2, (2001): 126.

<sup>25</sup> Pierre d'Ailly, *Imago Mundi*, ed. Edmond Buron (Paris: Maisonneuve, 1930), 460-61.

<sup>26</sup> George E. Nunn, "The Imago Mundi and Columbus," *The American Historical Review* 40, no. 4 (1935), 646-661; Delumeau, 53-55.

<sup>27</sup> Christopher Columbus, "Narrative of the Third Voyage," in *The Four Voyages of Christopher Columbus*, trans. J.M. Cohen (New York: Penguin, 1969), 220-22.

<sup>28</sup> Bartolomé de las Casas, *Historia de las Indias*, ed. by Agustin Millares Carlo and Lewis Hanke (México : Fondo de Cultural Económica, 1951), 1:379.

believe that the Paradise of Delights described in Scripture is there, for it would be rash to affirm this as true. But I say it because, if we can speak of any paradise on earth, it would be a place where gentle and moderate weather can be enjoyed.<sup>29</sup>

Even though Eden was not located, many Europeans continued to hope for a recovery of paradise. All the elements from the Garden still existed, but they had been scattered after the Fall. Collecting the world's botanicals from the various regions on earth was an act of spiritual and scientific reclamation.<sup>30</sup> European landfall thus presented hope for the recovery of paradise and a recreation of the "antediluvian and prelapsarian past."<sup>31</sup> Carolyn Merchant has conceptualized New World colonization as a project to recover Eden. The labor-intensive cultivation and domestication of the American wilderness was, for her, an effort to redeem earthly nature and reunite humanity with paradise.<sup>32</sup> Certainly, this narrative could be applied to the efforts of Jesuits, such as Peter Biard in New France.

Europeans grasped the economic potential of America's abundant natural resources and the edenic potential of its supposedly pristine nature. It was a commonly held perception that the Americas of 1492 had not been cultivated or transformed by indigenous peoples. The "pristine myth" and the negative characterizations of wilderness reduced the hemisphere to a deficient status.<sup>33</sup> American nature needed to be improved and reshaped into the Euro-Christian ideal. Indigenous peoples were also seen as

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<sup>29</sup> José de Acosta, *Natural and Moral History of the Indies*, ed. Jane E. Mangnan, trans. Frances M. López-Morillas (Durham: Duke University Press, 2002), 97.

<sup>30</sup> Prest, 30.

<sup>31</sup> *Ibid.*, 17.

<sup>32</sup> Carolyn Merchant, "Reinventing Eden" in *Uncommon Ground: Toward Reinventing Nature*, ed. William Cronon, 132-159, (New York: W.W. Norton & Co., 1995); Merchant, *Reinventing Eden: The Fate of Nature in Western Culture* (New York: Routledge, 2003).

<sup>33</sup> William Denevan, "The Pristine Myth: The Landscape of the Americas in 1492," *Annals of the Association of American Geographers* 82, 3: 369-385; William Denevan, *The Native Population of the Americas in 1492* (Madison: University of Wisconsin Press, 1992).

wanting, malleable entities that could be possessed and transformed. America was a *tabula rasa* onto which Christian and European values could be inscribed.

Jesuit missionaries provide one example of how these assumptions shaped European interaction with the land and people. Taming the wilderness was not only a utilitarian project aimed at providing missionaries with immediate food and medicine; their gardens also represented godly order that redefined and restructured the unbounded wilderness. Throughout documents describing the New World, from New France to South America, Jesuits regularly used the metaphors of garden and wilderness. In his 1616 relation Father Peter Biard describes New France as “a horrible wilderness, scarcely less miserable on account of the scarcity of bodily comforts than for that which renders man absolutely miserable, the complete lack of the ornaments and riches of the soul.”<sup>34</sup> Despite Biard’s aversion to his new country, he remained resolute in his assignment, repeating: “A Garden of delight lies before him, behind him a solitary wilderness.”<sup>35</sup> The Biblical garden and wilderness were similarly evoked by Jesuits laboring below the equator. The German Jesuit Anton Sepp titled his description of his mission in Paraguay *Paraquarischer Blumengarten*, suggesting that his mission was a metaphorical flower garden.<sup>36</sup> José de Acosta utilized agricultural metaphors throughout his 1588 *De Procuranda Indorum Salute*, a guide for Christian priests in the Americas. Acosta effectively universalizes the missionary task in the Americas and connects his contemporaries’ accomplishments to those of the of Church’s early founders.<sup>37</sup> He

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<sup>34</sup> Thwaites, 3: 33.

<sup>35</sup> Ibid.

<sup>36</sup> Anton Sepp, *Jardín de flores paracuario*, trans. Werner Hoffmann, (Buenos Aires: Editorial Universitaria de Buenos Aires, 1974).

<sup>37</sup> Kenneth Mills and William B. Taylor, eds, “Jose de Acosta on the Salvation of the Indians (1588),” in *Colonial Spanish America. A Documentary History* (Wilmington, Del: Scholarly Resources, 1998), 118.



assures that through the work of missionaries the “barrenness” of the Americas “will come to an end and the most bountiful fields of grain will spring up and be harvested for eternal life.”<sup>38</sup> Jesuits metaphorically conceptualized themselves as gardeners who planted seeds of faith in a world that was barren because it lacked Christianity. Thus, the creation of gardens was as much a symbolic process as a physical one.

Although the wilderness was often a hostile and desolate place, its meaning was still more complicated. The woods of New France were “full of terrors” and the land beyond the mission was a dangerous and uninhabited place in which one would perish if unaccompanied.<sup>39</sup> The Jesuits’ evangelizing task was thus vulnerable to a variety of physical and spiritual insults. Father Biard described his landfall in eastern North America as “going into a dreary wilderness, without much hope of permanent help.”<sup>40</sup> But no matter how daunting the task, the wilderness also provided hope. There was always a potential for “the dreadful and pathless forests of the Canadian tribes of North America” to be transformed into a Christian garden.<sup>41</sup> Biard therefore persisted in trying to create a garden in New France by introducing “the order and discipline of heaven upon earth.”<sup>42</sup> This transformation was intrinsic to Biard’s 1616 relation:

Consider how truly and emphatically the Holy Spirit has spoken through the mouth of Isaiah about these poor scattered Savages, under the fitting and appropriate comparison of a great orchard or garden, wild and uncultivated.... For in truth this people, who, through the progress and experience of centuries, ought to have come to some perfection in the arts, sciences and philosophy, is like a great field of stunted and ill-begotten wild plants, a people which ought to have produced abundant fruits in philosophy, government, customs, and conveniences

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<sup>38</sup> José de Acosta, *De Procuranda Indorum Salute*, quoted in Kenneth Mills and William B. Taylor (eds), “Jose de Acosta on the Salvation of the Indians (1588),” *Colonial Spanish America. A Documentary History* (Wilmington, Del: Scholarly Resources, 1998), 115-24.

<sup>39</sup> Thwaites, 3: 187; 66:269.

<sup>40</sup> Thwaites, 1:135.

<sup>41</sup> Thwaites, 1:199.

<sup>42</sup> Thwaites, 3:35.

of life; which ought to be already prepared for the completeness of the Holy Gospel, to be received in the house of God.<sup>43</sup>

Like Biard, Father Bernabé Cobo likened his task to that of a gardener in his *Historia del Nuevo Mundo*. Conflating the land and indigenous peoples, Cobo's Spanish America was "a thick and uncultivated jungle, so covered with the weeds of ignorance and savage customs of these barbarians."<sup>44</sup> Cobo's duty was to bring holy order to this chaos in the same way an Andalusian farmer would employ a spade. Even more clearly, Father Le Jeune illustrated the metaphorical significance of the garden when he remarked that it was the missionary's objective "to cultivate these young plants, and to render them worthy of the garden of the Church, that they may be some day transplanted into the holy gardens of Paradise."<sup>45</sup>

On a practical level, Jesuits also incorporated the garden ideal into their descriptions of the physical environment. In early accounts from the Americas, Jesuits regularly considered the suitability of land for agriculture, the importance of immediately establishing gardens, and the need to reform subsistence practices among indigenous peoples. These practical tasks were necessary for the well-being of indigenous peoples because life without agriculture was by definition uncivilized and hazardous.

The fundamental connection between agriculture and civility was apparent in Jesuit descriptions of indigenous subsistence strategies. Hunting and gathering was

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<sup>43</sup> Ibid., 111.

<sup>44</sup> Bernabé Cobo, *History of the Inca Empire: An account of the Indian's customs and their origin together with a treatise on Inca legends, history, and social institutions*, trans. and ed. by Roland Hamilton (Austin: University of Texas Press, 1979), 21.

<sup>45</sup> Thwaites, 19:37.

considered a “miserable way of living,” in which the threat of eminent starvation constantly loomed.<sup>46</sup> For Paul le Jeune, such practices were proof of barbarity:

As it happens that these poor Barbarians have been for a long time accustomed to be idlers, it is hard for them to locate and cultivate the soil unless they are assisted....It would be a great blessing for their bodies, for their souls, and for the traffic of these Gentlemen, if those Tribes were stationary, and if they became docile to our direction, which they will do, I hope, in the course of time. If they are sedentary, and if they cultivate the land, they will not die of hunger, as often happens to them in their wanderings; we shall be able to instruct them easily, and Beavers will greatly multiply.<sup>47</sup>

More succinctly, Father De Smet commented in 1849 that agriculture was “considered as a means to civilization.”<sup>48</sup> Agriculture would not only greatly improve the lives of people by benefiting them physically, but the act of cultivation would have a sanctifying effect on their souls.

The garden structured the very way that Jesuits regarded native societies. Bernabé Cobo organized the indigenous peoples of the Kingdom of Peru into three categories: those who were not settled and “wander about in the open lands and deserts in bands like animals,” those who lived in small communities, and those who lived in large communities and republics.<sup>49</sup> Cobo’s main distinctions were socio-political, but agriculture was also a key determinate in this system. Those that “sustain themselves by gathering wild fruits and by hunting and fishing” and “do not cultivate or sow the land” were “the most crude and savage of them all.”<sup>50</sup> Andrés Pérez de Ribas, a Jesuit missionizing in Northern Mexico, made the same distinctions:

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<sup>46</sup> Thwaites, 22:50.

<sup>47</sup> Thwaites, , 8:57.

<sup>48</sup> Paul John de Smet, *Western Missions and Missionaries: A Series of Letters*, introd. William L. Davis (Shannon, Irish University Press, 1972), 55.

<sup>49</sup> Cobo, 26.

<sup>50</sup> *Ibid.*, 43-44.

There are nations that are among the most savage ever seen and encountered on earth. These nations do not sow crops like the others, nor do they live in houses or protect themselves from inclement weather. And the more different their way of life is from that of other peoples the more deserving it is of being understood. This knowledge is worth possessing so that one can understand the misery that has befallen humanity due to the sin that cost them the Garden of Paradise<sup>51</sup>

Ribas' call to understand indigenous life-ways was progressive, but this passage also recapitulates the persistent association between agriculture and civilization in Jesuit thought. Hunting and gathering in the wilderness, on the other hand, was implicitly associated with misery and linked to the original sin.

However, the perils of the vast and dangerous wilderness also presented opportunities for Jesuits. They were keenly aware that the New World geography could make martyrs of faithful missionaries. Ignatius de Loyola, the Society's founder, suggested a three-phase maturation through the purgative, illuminative, and unitive stages of spiritual growth.<sup>52</sup> The incivilities and threats that abounded in the wilderness were characteristics that made it a potential site for the kind of spiritual growth Loyola had encouraged. Jesuits in New France made frequent comparisons between their labors and those of the apostles, recognizing that their work to establish the Church in the Americas was not unlike the founding of the early Church in the first centuries of Christianity. Missionaries were at constant risk of becoming victims of torture, murder, or ritual cannibalism because the devil lurked everywhere.

The wilderness was in its own way also an intrinsic element of the missionary effort to cultivate Christianity and create a garden on earth. Part of what defined the Society was members' dedication to an active life in service of humanity and the glory of

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<sup>51</sup> Andrés Pérez de Ribas, *History of the Triumph of Our Holy Faith amongst the Most Barbarous and Fierce Peoples of the New World*, trans. Daniel T. Reff, Maureen Ahern, and Richard K. Danford (Tucson: University of Arizona Press, 1999), 89.

<sup>52</sup> John W. O'Malley, *The First Jesuits* (Cambridge: Harvard University Press, 1993), 48-49.

God. The apostolic spirituality of the missionaries created a tension between their commitment to worldly service and their abhorrence of worldly corruption. It was challenging to engage in an active life while maintaining the ideals of spiritual perfection, but the wilderness offered Jesuits a unique context in this struggle. The harsh and foreign environments of the Americas offered an opportunity to fully engage in evangelism, increase their own spiritual purification, and perhaps even die as a martyr. Father Le Jeune evoked Tertullian's maxim "the blood of [m]artyrs is the seed of Christians" when describing the impoverished state of Christianity in mid-seventeenth century New France.<sup>53</sup> For Le Jeune the challenges of establishing Christianity, such as "the severity of the seasons [and] the inconveniences of the roads", were directly linked to lack of civilization in New France.<sup>54</sup> He believed that such circumstances were ripe for producing martyrdom, thus enunciating the connection between physical and spiritual sacrifice through the metaphorical taming of the wilderness.

On his journeys through the "great America desert," Father Peter John De Smet's struggles offered salvation for both himself and those he converted:

A journey through the prairies may appear a sad realization of human misery and suffering; but to the man that elevates his thoughts above earthly and passing things, in order to devote himself to the many unfortunate souls who will love and serve the true God when they know him.... His sufferings finally teach him, that it is through tribulations and sacrifices that he can enter the kingdom of heaven<sup>55</sup>

As de Smet noted, a relationship with God was possible through both physical trial and mental discipline. Both were possible in the wilderness because, along with the devil, God was present. Despite the many negative descriptions of the American landscape, the

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<sup>53</sup> Thwaites, 17:11.

<sup>54</sup> Ibid.

<sup>55</sup> Smet, 30-31.

Jesuits also commented on the abundance of the new lands. Father Jean de Brebeuf remarked in 1636 that God had “shown his Providence very clearly” to the Jesuits of New France by insuring an abundant harvest of corn.<sup>56</sup> Thus as purveyors of a universal religion, the Jesuits did not see the American wilderness as exclusively immoral. Nature could also reveal evidence of God’s will, especially when tamed and cultivated.

There was not a unified Jesuit perspective on nature, but by and large the Jesuits did conceive of the Americas as an uncultivated wilderness populated by uncivilized and immoral peoples. Thus, the Jesuit mission to Christianize the Americas was essentially a spiritual and ecological recovery narrative. Redemption also applied to the physical environment. As anthropologist Carole Blackburn has noted, the Jesuits commonly viewed the wilderness as antagonistic and alien.<sup>57</sup> Despite great variation in the geography of Jesuit missionaries, whether in the forests of New France, the jungles of the Amazon, or the deserts of the North American west, the Old Testament wilderness seemed ubiquitous. As Williams precisely summarizes, the wilderness “through spiritual and moral subjugation and cultivation even more than physical conquest, tilling, and seeding, [became] a garden or Eden of the Lord.”<sup>58</sup>

### **The Garden as Physical Space**

The garden was conceptually central to the history of Christian colonization in the Americas, but the physical garden was also crucial. The tangible garden was a manifestation of tamed wilderness where hostile nature had been transformed through human labor into an orderly, even sacred space.

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<sup>56</sup> Thwaites, 10:101.

<sup>57</sup> Carole Blackburn, *Harvest of Souls* (Montréal: McGill-Queen's University Press, 2000), 44.

<sup>58</sup> Williams, “The Wilderness and Paradise in the History of the Church”, 5.

In addition to their agricultural utility, gardens were also essential to Jesuit botanical and medical-pharmaceutical research. Knowledge of the natural world was essential to the survival of missionaries and missions. Jesuits needed to know what foods and medicines were available, where potable water could be obtained, and what natural resources could be exploited for income. The scientific exploration of new environments was also encouraged when it proved useful to the objective of evangelization.<sup>59</sup> Steven J. Harris has noted, corporations such as the Jesuits “incorporated knowledge-gathering and knowledge-producing mechanisms into their social fabric.”<sup>60</sup> Gardens were thus crucial to missionary health and made missionaries central actors in the expansion of European medicines and traditions to the Americas.

Like the early modern botanical garden, the Jesuit garden in the Americas produced knowledge fundamental to the French and Spanish Empires. The early modern European botanical garden developed from the *hortus medicus*, or physic garden, of the sixteenth century.<sup>61</sup> These botanical gardens were often connected to universities and facilities of medical instruction. After the European encounter with the Americas, the botanical garden was re-imagined as a microcosm of the world’s plant biota; the collection of botanical species from the New World allowed all the world’s plants to be incorporated into the botanical garden.<sup>62</sup> The early modern botanical garden was divided into four sections representative of the world’s continents, thus also displaying an empire’s power

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<sup>59</sup> Steven J. Harris, “Transposing the Merton Thesis: Apostolic Spirituality and Jesuit Scientific Tradition,” *Science in Context*, 3. (1989): 48.

<sup>60</sup> Steven J. Harris, “Long-Distance Corporations, Big Sciences, and the Geography of Knowledge,” *Configurations* 6, no. 2 (1998): 271.

<sup>61</sup> Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the ‘Improvement’ of the World* (New Haven: Yale University Press, 2000); Donald P. McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire* (London: Leicester University Press, 1997).

<sup>62</sup> David N. Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge*, (Chicago: University of Chicago Press, 2003), 52.

to collect and assemble products from around the world.<sup>63</sup> Like expensive art, gardens represented an “aestheticization of power” in which exotic plants displayed wealth and worldly knowledge through visual display.<sup>64</sup>

Furthermore, as gardens became symbols of social and political power in early modern Europe, Jesuit gardens in the New World provided a material and intellectual means to gain elite favor. The Society of Jesus traditionally sought to advance their religious program through close relationships with the Catholic ruling elite. Thus they paid close attention to elite sensibilities and tastes, including the botanical garden.<sup>65</sup> As the botanical sciences became popular amongst Europe’s elite, Jesuit botanical inquiry became a means of gaining elite favor and furthering the cause. For example, Jesuit Father Francis Hall, also known as Francis Line, created a pyramidal sundial for Charles II of England’s garden at Whitehall. Hall’s sundial included an ingenious stain glass gnomon that reputedly allowed the blind to tell the time.<sup>66</sup> Halls’ sundial was also furnished with traditional royal symbols and portraits of the king, queen, and other nobles. This use of heraldic symbols established a constant royal presence within the Charles II’s garden, and it recapitulated the garden’s role as a symbol of social and political power.

The commissioning of a Jesuit to create a sundial for a King who later converted to Catholicism demonstrates the inter-connectedness of the garden, science, and the Jesuit mission. The sundial was often a central component of sixteenth and early seventeenth century European gardens. Sundials represented mortality and the ephemeral nature of

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<sup>63</sup> Ibid, 53.

<sup>64</sup> Drayton, 45.

<sup>65</sup> Harris, “Transposing the Merton Thesis,” 55.

<sup>66</sup> Connor Reilly, “Francis Line, Peripatetic (1595-1675),” *Osiris* 14 (1962):222-253.



life, especially within the context of gardens where plants and flowers grew and wilted with the passing seasons. The gardens of the Jesuit seminary of *Sant'Andrea al Quirinale* in Rome contained numerous sundials displaying the time of day at various missions throughout the world, demonstrating that the sun never set on the Jesuit Empire of God.<sup>67</sup>

Although the gardens of *Sant' Andrea al Quirinale* in Rome were also reputed to have a rich diversity of plants, the Jesuits did not build any formal botanicals gardens.<sup>68</sup>

However, their pharmaceutical gardens operated in a similar manner to early modern imperial botanical gardens. Jesuit pharmaceutical and ornamental gardens in the “peripheries” were planted with species from around the world, which had been collected via the Jesuit network. The pharmaceutical garden at the Jesuit College San Pablo in Lima, established in 1568, incorporated medicinal plants from countries throughout Asia, Europe, and North America.<sup>69</sup>

The garden also played a vital role in Jesuit life in the overseas missions. Utilitarian gardens were necessary to produce food and medicines. As part of the project to reshape the American landscape in the European ideal, the Jesuits introduced a number of Old World crops to their American gardens. The first thing that Father Le Jeune and his fellow Jesuits did after arriving in New France was “to work and dig the earth, to sow

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<sup>67</sup> David R. Coffin, *The English Garden: Meditation and Memorial* (Princeton: Princeton University Press, 1994), 15.

<sup>68</sup> *Ibid*, 91.

<sup>69</sup> Luis Martin, *The Intellectual Conquest of Peru. The Jesuit College of San Pablo, 1568-1767* (New York, Fordham University Press, 1968), 13; Enrique Laval, *Botica de los Jesuitas de Santiago* (Santiago, Chile: Association Chilena de Asistencia Social Santiago, 1953), 31-211.

purslane and turnips, and to plant lentils.”<sup>70</sup> Jesuits brought staples with them in order to provide food, but the introduction of Old World crops was not simply a practical matter, food was incredibly culturally significant. Initially Jesuits, like other European actors involved in the colonization of the Americas, were unsurprisingly reluctant to change their diet.<sup>71</sup> During the early-seventeenth century, after discussing numerous indigenous crops cultivated in the Sinaloa region of New Spain, Andrés Perez de Ribas remarked on the scarcity and difficulty of acquiring food in the region.<sup>72</sup> This seemingly contradictory statement stems from Ribas’ amazement that “[i]ncredible as it may seem to people of the nation of Europe, these people sustain themselves the greater part of the year without bread.”<sup>73</sup> Ribas simply could not fathom how people survived on foods that were so foreign to him. Overtime, however, diets slowly changed. Ribas indicates of how this process worked when discussing the practice of eating insects:

When I arrived in Sinaloa [1604], some years later, I was served a plate of these same locusts roasted, which were most revolting to my stomach, until I observed with what gusto my companion Padre ate them, after which, recalling their having been food of that great penitent, Saint John the Baptist, while in the desert, I too ate them, and came to relish them.<sup>74</sup>

Ribas’ description also reiterates the connection Jesuits felt between missionizing in the Americas and the establishment of the early Church.

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<sup>70</sup> Paul Le Jeune, “Brief Relation of the Journey to New France, Made in the Month of April Last By Father Paul Le Jeune, Of the Society of Jesus” in *Black Gown and Redskins: Adventures and Travels of the Early Jesuit Missionaries in North America 1610-1791*, ed. Edna Kenton (London: Longmans, Green and Co., 1956), 26. The crops mentioned by Le Jeune were important Old World domesticates. For a general discussion of the origins of agriculture and Old World crop domesticates, see: Jack R. Harlan, *Crops and Man* (Madison: University of Wisconsin Press, 1975); N.W. Simmonds, J. Smartt, *Evolution of crop plants* (London: Longman, 1995).

<sup>71</sup> For a discussion of the dynamics of diet and colonization in Spanish America, see: John C. Super, *Food, Conquest, and Colonization in Sixteenth-Century Spanish America* (Albuquerque: University of New Mexico Press, 1988).

<sup>72</sup> Ribas, 7.

<sup>73</sup> Ribas, 6.

<sup>74</sup> Ibid, 25-6.

The establishment of familiar crops was a central part of the cultural and spiritual remaking of the Americas. However, nature was not always as pliable as the missionaries had hoped. Old World plant species did not always thrive in American climates. Archaeological research has demonstrated that the Atlantic coastal plain, for example, was not a suitable environment for some Iberian foods. Research on mission and settlement subsistence strategies at Santa Elena and St. Augustine in Spanish Florida indicate that missionaries and colonists had to incorporate a significant amount of indigenous plant foods into their diets.<sup>75</sup>

Similarly, the Jesuit Eusebio Francisco Kino's attempts to establish agriculture at his missions in Baja California from 1683-1685 were also thwarted. The Gulf Coast was too arid to support Iberian crops and the missions were abandoned after a few short years. However, Kino learned from his mistakes and chose the more fertile Pimería Alta region of Sonora for the establishment of Nuestra Señora de los Dolores in 1687. Kino established a community garden to grow the principal native crops of corn and beans, in addition to wheat. This time his agricultural enterprise succeeded because Kino relied on the labor of the local O'odham who were skilled agriculturalists.<sup>76</sup>

Similarly, the Jesuits sometimes relied on native medicine for the treatment of unfamiliar illnesses. For example, during a 1637 influenza epidemic the infected Jesuit

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<sup>75</sup> Elizabeth J Reitz and C. Margaret Scarry, *Reconstructing Historic Subsistence with an Example from Sixteenth-Century Spanish Florida* (Ann Arbor: Society for Historical Archaeology, 1985); Margaret Scarry and Elizabeth Reitz, "Herbs, Fish, Scum, and Vermin: Subsistence Strategies in Sixteenth-Century Spanish Florida," in *Columbian Consequences: Archaeological and Historical Perspectives on the Spanish Borderlands East*, ed. David Thomas (Washington, D.C.: Smithsonian Press, 1990), 343-353.

<sup>76</sup> William W. Dunmire, *Gardens of New Spain. How Mediterranean Plants and Foods Changed America* (Austin: University of Texas Press, 2004), 200-1.

superior of New France accepted medicine and treatment from a Huron shaman.<sup>77</sup> José de Acosta included descriptions of a number of American medicinal plants in his *Historia del Nuevo Mundo*.<sup>78</sup> However, Acosta indicated that New World plant species were inferior until they received European approval. Balsam from the Indies was not the “true” variety described by Pliny, nevertheless, it had medicinal value since it was used to heal wounds. In addition, Acosta notes that it was only deemed suitable to make sacramental chrism after having been approved by the Apostolic See.<sup>79</sup> Jesuits were willing to integrate New World plants for a variety of purposes, but the process of incorporation was slow and cautious.

Gardens were also central to the Jesuit pursuit of botanical, medical, and pharmaceutical sciences. The mission pharmaceutical garden was directly linked to the Society’s objective of evangelization, since it was crucial to missionary health. Initially, Jesuits tried to rely on European medicines that they could grow in their gardens.<sup>80</sup> Stressful situations could elicit Jesuit engagement with indigenous ethnobotany and ethnomedicine, but the missionaries were also proactive. Like the Spanish crown, the Jesuits were eager to identify lucrative and useful botanical products through scientific exploration.<sup>81</sup> The Jesuits were keenly interested in Spanish American indigenous knowledge for their own benefit and to transmit it back to Europe. From the time of their arrival in the mid-sixteenth century until their expulsion in 1767, the Jesuits compiled

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<sup>77</sup> Allan Greer, “The Exchange of Medical Knowledge between Natives and Jesuits in New France,” in *El saber de los jesuitas, historias naturales y el Nuevo Mundo*, ed. Luis Millones-Figueroa and Domingo Ledezma (Frankfurt/Madrid: Vervuert-Iberoamericana, 2005), 135–146.

<sup>78</sup> See Acosta, *Natural and Moral History of the Indies*, 140, 210, 220–21, 223, 309.

<sup>79</sup> *Ibid.*, 220–1.

<sup>80</sup> Sabine Anagnostou, “Jesuits in Spanish America and Their Contribution to the American *Materia Medica*,” *Pharmacy in History* 47 (2005): 10.

<sup>81</sup> For a discussion of the Spanish Crown’s involvement in economic botany, see: Paula De Vos, “The Science of Spices: Empiricism and Economic Botany in the Early Spanish Empire,” *Journal of World History*, 14, no. 4 (2006): 399–427.

numerous works on the medicinal virtues of the Spanish American flora. Scholarly treatises, such as Cobo's *Historia del Nuevo Mundo* and Acosta's *Historia natural y moral de las Indias*, included descriptions of medicinal plants and medical practices. Acosta's discussion of plants native to the Americas documented the medicinal use of several significant species, such as maize (*Zea mays*), chilies (*Capsicum*), and chocolate (*Theobroma cacao*).<sup>82</sup> These works are occasionally cited by contemporary ethnobiologists and are considered to be some of the first written accounts of indigenous plant use. Cobo, for instance, was recently cited as the first to chronicle the use of Andean flicker (*Colaptes rupicola*), an agent that stimulates milk production in women.<sup>83</sup>

Other Jesuit works were explicit investigations into the Spanish American *materia medica*. Pharmacopeias were produced by Pedro Montenegro, Sigismund Aperger, Johann Steinhöffer, and Ignaz Pfefferkorn.<sup>84</sup> During the early eighteenth century, Steinhöffer ran the Jesuit pharmacy in Mexico City and wrote the *Florilegio Medicinal*. Intended to be circulated throughout the Jesuit network as a field manual, the *Florilegio* was a guide to general medicine, pharmacy, and surgery.<sup>85</sup> It is considered a fundamental source of information on colonial period Southwest indigenous plant medicine and was reportedly being used as late as the nineteen-seventies.<sup>86</sup>

Colonial botany, the study and collection of non-European plants for the economic benefit of empires, became a burgeoning enterprise that significantly

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<sup>82</sup> Anagnostou, "Jesuits in Spanish America and Their Contribution to the American Materia Medica," 7. Acosta, *Natural and Moral History of the Indies*, 140, 210, 220-21, 223, 309.

<sup>83</sup> Steve Froemming, "Traditional use of the Andean flicker (*Colaptes rupicola*) as a galactagogue in the Peruvian Andes," *Journal of Ethnobiology and Ethnomedicine* 2, no. 23 (2006), <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1484469&blobtype=pdf>, (accessed February 15, 2007).

<sup>84</sup> Anagnostou, "Jesuits in Spanish America," 10.

<sup>85</sup> Martin, 109.

<sup>86</sup> Margarita Artschwager Kay, "The *Florilegio Medicinal*: Source of Southwest Ethnomedicine," *Ethnohistory* 24, no. 3 (Summer, 1977), 251-259.

contributed to colonial economies.<sup>87</sup> As Paula De Vos notes: “the goals of botany coincided well with the goals of empire;” the identification, classification, and study of plants for nutritional, medical, and economic benefit were of value to both enterprises.<sup>88</sup> Imperialism was central to the development of botany, as the historical literature on Kew Garden has shown, but the importance of other actors in this history is less well-known.<sup>89</sup> The scope of the Jesuit global network facilitated the Society’s inclusion in this global business. Jesuits participated in a variety of botanical pursuits, such as identifying, classifying, and illustrating plants.<sup>90</sup>

As the publication of Steinhöffer’s guide indicates, Jesuits also needed to be familiar with the practice of medicine. The challenges of travel, new climates, and new diets created numerous health issues.<sup>91</sup> During and after marine voyages to overseas missions, Jesuits were responsible for the care of each other and often sick non-members.<sup>92</sup> This meant they were continually engaged in learning. Jesuits were never trained as doctors, but some were trained apothecaries who could prepare and administer medicines. The Society thus also actively recruited apothecaries in Europe to provide

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<sup>87</sup> Londa L., Schiebinger and Claudia Swan. *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2005); Londa L. Schiebinger, *Plants and Empire: Colonial Bioprospecting in the AtlanticWorld* (Cambridge, Mass.: Harvard University Press, 2004).

<sup>88</sup> De Vos, 402.

<sup>89</sup> The literature on Kew gardens and British imperialism is extensive, see for example: Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Garden* (New York: Academic Press, 1979); Drayton, *Nature’s Government*; McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British*; Ray Desmond, *Kew: The History of the Royal Botanic Gardens* (London: Harvill Press with the Royal Botanic Gardens, Kew, 1995). For a recent study that goes beyond Britain, see: Schiebinger and Swan, *Colonial Botany*.

<sup>90</sup> Anagnostou, “Jesuits in Spanish America,” 10; Harris, “Jesuit Scientific Activity in the Overseas Missions.”

<sup>91</sup> Harris, “Long-Distance Corporations,” 289.

<sup>92</sup> Anagnostou “Jesuits in Spanish America”, 10; Liam Brockey, ““Largos Caminhos E Vastos Mares’ Jesuit Missionaries and the Journey to China in the Sixteenth and Seventeenth Centuries,” *Bulletin of Portuguese/Japanese Studies* 1 (2000): 52-3; Steven J. Harris, “Jesuit Scientific Activities in the Overseas Missions, 1540-1773” *Isis*, 96 (2005): 78.

medical services in their overseas missions, especially in Spanish America where physicians were rare.<sup>93</sup> Because Germans were reputed to be the best apothecaries in Europe, many German Jesuits served in the Spanish American missions.<sup>94</sup> As a result, the mission garden became a site for the transatlantic merger of medical knowledge and materials.

Care of the sick was a normal activity for religious orders because medicine was considered a charitable and essential Christian responsibility.<sup>95</sup> In medieval Europe, the hospital had emerged from the Church's practice of establishing shelters for travelers and the poor.<sup>96</sup> Continuing in this tradition, medical infrastructure became the responsibility of the missionaries in Spanish America.<sup>97</sup> The Jesuits, along with other orders such as the Franciscans, the Brothers of the Charity of St. Hippolytus, and the Bethlehemites, established the continent's first hospitals and infirmaries.<sup>98</sup> Jesuit hospitals were often annexed to colleges or missions. Over a decade after Kino's original exploits in Baja California, for example, the Jesuits provided medicines and medical care for thousands of indigenous and Spanish parishioners through infirmaries and pharmacies associated with their re-established missions in the Baja area.<sup>99</sup>

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<sup>93</sup> Harris, "Long-Distance Corporations", 290; Nydia M. King, "Development of Pharmacy in Latin America" *Journal of the American Pharmaceutical Association* 9, no. 12 (1969): 619-21.

<sup>94</sup> Harris, "Long-Distance Corporations", 290; Renée Gicklhorn, *Missionapotheker: Deutsche Pharmazeuten in Latinamerika des 17. und 18. Jahrhunderts* (Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1973), 15-23.

<sup>95</sup> Linda A Newson, "Medical Practice in Early Colonial Spanish America: A Prospectus," *Bulletin of Latin American Research* 25, (2006): 372.

<sup>96</sup> Ibid.; Guenter B. Risse, *Mending Bodies, Saving Souls: A History of Hospitals* (Oxford: Oxford University Press, 1999), 106.

<sup>97</sup> Francisco Guerra, "The Role of Religion in Spanish American Medicine," in *Medicine and Culture*, ed. F.N.L. Poynter (London: Wellcome Institute of the History of Medicine, 1969), 179-80.

<sup>98</sup> Ibid, 184; King, 620.

<sup>99</sup> Francisco Guerra, *El Hospital en Hispanoamerica y Filipinas 1492-1898* (Madrid : Ministerio de Sanidad y Consumo, 1994), 204.

The Society also created many of Spanish America's first and finest pharmacies.<sup>100</sup> By the late sixteenth century, pharmacies were a standard part of Jesuit colleges and universities.<sup>101</sup> Initially, apothecaries had imported medicines from Spain, but this was slow and costly. On-site gardens were increasingly regarded as a more reliable supply of botanical medicines, and they made it possible for centralized pharmacies to produce and distribute botanical drugs throughout Spanish America and back to Europe.<sup>102</sup>

The garden and pharmacy were also important sites for the development of medical knowledge. Pharmacies at San Pablo and the Colegio Máximo de San Miguel in Santiago, established in 1594, emerged as New World centers for medicine.<sup>103</sup> Both pharmacies were originally intended to provide medicines for their colleges, but they began to administer to the public due to the need for medicine within their communities.<sup>104</sup> Within its first fifty years, San Pablo burgeoned as a wholesale center, supplying medicines for the entire viceroyalty of Peru, as well as missions and other pharmacies in Chile, Paraguay, Bolivia, Ecuador, and Panama.<sup>105</sup>

The production of medicines further layered the spatial complexity of the Jesuit garden. Medicinal ingredients were derived from chemical, mineral, animal, and plant sources. Although products from the garden often constituted the majority of the medicines administered by the facilities, some ingredients had to be ordered and shipped

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<sup>100</sup> King, 620.

<sup>101</sup> Gieklhorn, 15.

<sup>102</sup> Anagnostou, "Jesuit Missionaries in Spanish America," *Archives Internationales d'Histoire des Sciences* 52 (2002): 181; Newson, 377.

<sup>103</sup> Martín, 13; Sabine Anagnostou and Michael Müller, "Joseph Zeitler. Auf den Spuren eines bayerischen Apothekers in Chile," *Geschichte der Pharmazie* 56, no. 1, (2004): 16.

<sup>104</sup> Martín, 102; Anagnostou and Müller, 16.

<sup>105</sup> Martín, 102-105; Newson, 379.



to Spanish American pharmacies.<sup>106</sup> At Santiago opium imported from China was regularly used in pharmaceutical preparations; for instance, it was mixed with egg yolk, oil, and sugar to treat hemorrhoids.<sup>107</sup> Joseph Zeitler, a renowned German apothecary who ran the Jesuit pharmacy at Santiago de Chile, often had Father Albert Hofreither in Munich send him medicines and raw materials.<sup>108</sup> For example, Hofreither sent Zeitler Epsom salts, zinc carbonate, sulfuric acid, arsenic, and Hematite in 1755.<sup>109</sup> However, shipments from Europe took a long time to reach Chile, and some perishable items could not survive the journey. Therefore Jesuit apothecaries such as Zeitler were forced to identify local substitutes for key ingredients. An inventory of pharmaceuticals used at San Miguel's pharmacy lists a variety of medicinal plants from Chile and throughout the Americas, including Cachanlagüen (*Centaurium cachanlahuen* B.L. Rob) which gained high esteem amongst Jesuit apothecaries in the Americas who studied its therapeutic applications.<sup>110</sup> These exchanges illustrate that the Jesuit pharmaceutical was not only active in Spanish America, but extended to Europe and Asia.

As a site of science, the Jesuit pharmaceutical garden provided a space for acclimation experiments. Encouraging Old World species to grow was a precarious process, but producing key European medicinal plants was a worthwhile effort. A native of India, canafistula (*Cassia fistula*) was growing successfully in the Americas by the sixteenth century.<sup>111</sup> Augustino Salumbrino, one of the first directors of San Pablo's

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<sup>106</sup> Martin, 99-100.

<sup>107</sup> Enrique Laval, *Botica de los Jesuitas de Santiago* (Santiago, Chile: Asociación Chilena de Asistencia Social Santiago, 1953), 196.

<sup>108</sup> Anagnostou and Müller, 18.

<sup>109</sup> *Ibid.*

<sup>110</sup> Laval, 73-74.

<sup>111</sup> Garcia da Orta, *Coloquios dos simples e drogas da India* (Lisbon: Imprensa Nacional, 1891-95), 191.

pharmacy, grew and provided it to Jesuits at Arequipa in 1630.<sup>112</sup> Although the history of this plant is obscure, its transfer to the Americas was so successful that some scholars have described it as a Peruvian or American species.<sup>113</sup>

In addition to producing, supplying, and studying medicinal plants, apothecaries in Spanish America also participated in the globalizing processes of modernity. The Jesuits, like other missionary orders, were responsible for conveying much of the information about foreign lands to that flowed back to Europe.<sup>114</sup> For example, during the eighteenth century, a Jesuit description of the Chinese emperor's garden influenced garden aesthetics in Europe. The landscape movement was greatly influenced by descriptions of Chinese gardens, most fundamentally Jesuit Jean-Denis Attiret's 1743 description of the Qianlong emperor's garden.<sup>115</sup> Frequent correspondence throughout and beyond Spanish America was possible because of the global scope of the Jesuit mission. As Attiret's letter illustrates, the information which Jesuits transmitted to each other through letters benefited and influenced Europe.

Francis Bacon noted the linkage between global travel and the production of knowledge when he remarked, "[n]or must it go for nothing that by the distant voyages and travels which have become frequent in our times many things in nature have been laid open and discovered which may let in new light upon philosophy."<sup>116</sup> The connection

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<sup>112</sup> Martin, 100.

<sup>113</sup> I have come across at least two instances of canafistula being described as native to the Americas: Martin, 100; George M. Foster, "Relationships between Spanish and Spanish American Folk Medicine," *The Journal of American Folklore* 66, no. 261 (1953), 216.

<sup>114</sup> Luke Clossey, *Distant Souls: Global Religion and the Jesuit Missions of Germany, Mexico, and China, 1595-1705*, Ch. 10 (forthcoming).

<sup>115</sup> Peter Davidson, "The Jesuit Garden," in *The Jesuits II: Cultures, Sciences, and the Arts 1540-1773*, ed. John O'Malley, Gauvin Alexander Bailey, Steven J. Harris, and T. Frank Kennedy (Toronto: University of Toronto Press, 2006), 104.

<sup>116</sup> Francis Bacon, *The New Organon and Related Writings*, ed. Fulton H. Anderson (Indianapolis: Bobbs-Merrill, 1960), 81.

between missions, colonialisms, and modernity was intrinsic. Maritime exploration and the economic expansion of European imperial powers had opened the world for missionizing orders such as the Society of Jesus. Early modern Catholic missions were some of the most institutionally sophisticated global enterprises of the era, being both vertically and horizontally integrated with each other and with the state. The Jesuits were particularly widespread in the scope of their global mission. By the mid-eighteenth century, they had established hundreds of schools and missions around the world, all managed by a well-developed administration system.<sup>117</sup> This network enabled Jesuits at San Pablo to correspond with peers in Cusco, Quito, Santiago de Chile, Mexico, Munich and Rome.<sup>118</sup> The Society expected Jesuit superiors in foreign missions to send reports to Rome which contained edifying news, that is, accounts of successful missionary labor.<sup>119</sup> Through their extensive lines of communication, they were responsible for the spread of scientific information which was assembled and shared in a manner similar to early modern scientific societies.<sup>120</sup>

Among the information that Jesuit letters regularly transmitted were things such as the results of experiments and innovative remedies.<sup>121</sup> In the context of medicine and pharmacy, one of the most vigorous exchanges took place between Zeitler and José Rojo, a pharmacist at San Pablo. Since San Pablo was the receiving center for European medicines, one of Rojo's duties was to send Zeitler the Old World plant medicines he required in his practice. In 1760, for example, Zeitler requested galipot, a form of crude

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<sup>117</sup> Harris, "Jesuit Scientific Activities," 72.

<sup>118</sup> Martin, 112; Anagnostou, "Jesuits in Spanish America", 13

<sup>119</sup> Clossey, Ch. 10; Anya Mali, "Strange Encounters: Missionary Activity and Mystical Thought in Seventeenth Century New France," *History of European Ideas* 22 (1996): 78.

<sup>120</sup> Harris, "Transposing the Merton Thesis," 57.

<sup>121</sup> Martin, 114; Anagnostou, "Jesuits in Spanish America", 13.

turpentine extracted from the cluster pine of southern Europe. Galipot was used to treat a variety of afflictions, including ulcers and colic.<sup>122</sup> Zeitler also ordered ingredients to make theriac, a panacea made from viper flesh and opium.<sup>123</sup> Different varieties of this cure-all existed, but the Venetian type was especially popular.<sup>124</sup> Zeitler and Rojo's relationship was reciprocal and Zeitler also supplied his associate with a great deal of the medicines and botanical products.<sup>125</sup> In a 1764 letter, for example, Zeitler promised to send Rojo myrtle seeds for his garden.<sup>126</sup> The two men discussed effective treatments for illnesses and exchanged native medicines local to their respective regions.

Like other Jesuit apothecaries, Rojo and Zeitler were working in new environments and, thus, were required to improvise with unfamiliar illnesses and medicines. When Zeitler did not have Venetian theriac readily available; for example, he produced a version named "Brazilian theriac" from available ingredients.<sup>127</sup> By the mid-eighteenth century, Santiago's pharmacy inventoried a large variety of New World plant remedies, including cocoa (*Theobroma cacao*), jalape (*Ipomoea jalapa*), tobacco (*Nicotiana tabacum*), quinoa (*Chenopodium quinoa*), and Sarsaparilla (*Smilax* sp.).<sup>128</sup> Zeitler also took advantage of the Jesuit's global reach to import medicines from around the world, including rhubarb (*Rheum officinalis*) and "China fina," or China root (*Smilax china* L.).<sup>129</sup>

Rojo and Zeitler's willingness to learn from new lands was not unusual. Jesuits were expected to be adaptable, flexible, and tolerant in the face of new experiences.

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<sup>122</sup> Laval, 187; Martin, 112.

<sup>123</sup> Anagnostou and Müller, 16-23.

<sup>124</sup> Ibid, 16.

<sup>125</sup> Anagnostou and Müller, 19.

<sup>126</sup> Ibid.

<sup>127</sup> Ibid, 16.

<sup>128</sup> Laval, 31-211; Anagnostou and Müller, 17.

<sup>129</sup> Laval, 173,

Certainly they had strange and novel experiences in the Americas, a region that was a relatively recent addition to their cosmology. But Jesuit training emphasized the value of experience and observation.<sup>130</sup> The Society placed a heavy emphasis on a rigorous intellectual training that instilled values of diligence, industry, and efficiency.<sup>131</sup> The formation process that novices underwent was demanding. The goal was to prepare young men to engage in thorough and meticulous research in the service of God. The inculcation of the Society's core values was also essential to ensure Ignatius' desire of continuity and homogeneity in the works that Jesuit authors produced. Ignatius wished a consistency of thought and opinion within the order. Thus, published works were to be representative of the Society's ideas as a whole.<sup>132</sup> The Society's expectations, education, and global reach uniquely positioned the Jesuits to engage in scientific research on problems of a global nature.

The apostolic nature of the Society presented a special challenge. Spiritually, the call to engage in worldly service presented a risk of corruption which could threaten personal spiritual perfection. Physically, health complaints were widespread.<sup>133</sup> One of the most commonly experienced symptoms was severe fever. During the early modern period fever, commonly referred to as ague, was so common in Europe that it constituted its own category of disease.<sup>134</sup> Thus when Jesuits in Quito noticed local Quechua people using the bark of native trees to prevent fever, the potential value of this cure was

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<sup>130</sup> Thayne R. Ford, "Stranger in a foreign land: Jose de Acosta's scientific realizations in sixteenth-century Peru," *Sixteenth Century Journal* 29, no. 1 (1998): 19-33; Harris, "Transposing the Merton Thesis," 50.

<sup>131</sup> Steven J. Harris, "Jesuit Ideology and Jesuit Science," 102-3.

<sup>132</sup> *Ibid*, 108, 117.

<sup>133</sup> Harris, "Long-Distance Corporations", 285-86.

<sup>134</sup> William F. Bynum, and Vivan Nutton, eds, *Theories of Fever from Antiquity to the Enlightenment*, (London: Wellcome Institute for the History of Medicine, 1981), vii.

immediately recognized.<sup>135</sup> Missionaries collected samples of the bark, known as cinchona or quina, and sent them to San Pablo for testing.<sup>136</sup> An unknown Jesuit, perhaps either Alonso Venegas or his successor Bartolomé Tafur, took other samples to Rome sometime between 1632 and 1645.<sup>137</sup> Research at San Pablo and in Rome indicated that cinchona was indeed effective against fever. In 1649 the Society published instructions for the preparation and administration of cinchona as a fever treatment.<sup>138</sup> These instructions, described as “the most successful of all preparations produced by Jesuit apothecaries,” illustrate how Jesuit-apothecaries facilitated the global transfer of medical knowledge.<sup>139</sup>

The Society was aware of the tremendous value of cinchona, which was used as an effective treatment for its own missionaries and helped to win the favor of “feverish patrons and benefactors.”<sup>140</sup> The Society shrewdly secured a supply of cinchona and began to distribute it widely from San Pablo. The Jesuits’ near-monopoly on the drug led to it being called “Jesuit’s bark.” The name reaffirmed the Society’s close ties with the medicine, but it also generated suspicion, especially after some Jesuits became involved in Imperial politics. The order had gained a reputation as “promoters of tyrannicide and

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<sup>135</sup> Juan Jaramillo-Arango “A Critical Review of the Basic Facts in the History of Cinchona,” *Journal of Linnaean Botany* 53 (1949): 272-309; Saul Jarcho and Francesco Torti, *Quinine's Predecessor: Francesco Torti and the Early History of Cinchona* (Baltimore: Johns Hopkins University Press, 1993), 4-5.

<sup>136</sup> Martin, 111.

<sup>137</sup> Harris “Long-Distance Corporations”, 291; Jaramillo-Arango, 283-84.

<sup>138</sup> Martin, 112; Harris, “Long-Distance Corporations”, 291-92.

<sup>139</sup> Harris “Long-Distance Corporations”, 290. Jesuit apothecaries were temporal-conjugators and not ordained priest, thus they have received little historical attention compared to the numerous hagiographic histories of Jesuit priests. The handbooks produced by temporal-conjugators are deserving of greater historical consideration and could shed light onto the exchange of medical knowledge and botany.

<sup>140</sup> Harris “Long-Distance Corporations”, 291.

even murderers of princes.”<sup>141</sup> But, the dramatic curing of Louis XIV and the Kangxi emperor of China during the 1680s earned cinchona and the Jesuits greater legitimacy.<sup>142</sup>

The medical significance of cinchona was profound. The bark contained quinine, which proved to be an effective treatment for malaria. Because cinchona was the world’s only known tool against malaria until the twentieth century, its diffusion had both political and economic consequences. During World War II the Nazis took control of the world’s supply of the medicine, leaving the Allies with almost none. As a result, more US soldiers died from malaria during the war in the Pacific than from Japanese bullets.<sup>143</sup> The story of cinchona exemplifies how the Jesuits identified, collected, and distributed a valuable New World species, facilitated the global exchange of plants and medical-pharmaceutical knowledge, and contributed to world history.

The Jesuits were among the first groups to domesticate and commercialize New World plants. During the early seventeenth century, Jesuit missionaries domesticated *Ilex paraguariensis*, the caffeinated plant used to prepare *yerba maté*.<sup>144</sup> Prior to the colonial period the plant had been harvested from wild stands, but the Jesuits began cultivating the plant in the gardens of their Paraguay missions. Recognizing its economic value as an alternative to tea, they expanded cultivation into plantations and traded the plant along the Paraná-Paraguay river system into Peru, Chile, and Argentina.<sup>145</sup> Although

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<sup>141</sup> Eric Nelson, *The Jesuits and the Monarchy: Catholic Reform and Political Authority in France*, (Aldershot, UK: Ashgate, 2005), 101.

<sup>142</sup> Harris “Long-Distance Corporations”, 293.

<sup>143</sup> Michael J Balick and Paul Alan Cox. *Plants, people and culture: The science of Ethnobotany* (Oxford: W. H. Freeman, 1996), 29-30; Londa Schiebinger, “Feminist History of Colonial Science,” *Hypatia* 19, no. 1, (2004): 236-54.

<sup>144</sup> Ross W. Jamieson, “The Essence of Commodification: Caffeine Dependencies in the Early Modern World,” *Journal of Social History* 35, no. 2 (2001): 269-94; T.A. Joyce, “The Use and Origin of Yerba Mate,” *Man* 34 (1934): 161-62.; Vera Blinn Reber. “Commerce and Industry in Nineteenth Century Paraguay: The Example of Yerba Mate,” *The Americas* 42, no. 1 (1985): 29-53.

<sup>145</sup> Jamieson, 277.

principally motivated by economic interest, the Jesuits' involvement also shaped the history of medicine. Pedro Montenegro, a Jesuit stationed in Paraguay, was the first to write about the plant's medicinal properties.<sup>146</sup> Montenegro claimed that *maté* could be used to cure digestive troubles, treat sunstroke, heal wounds, cure poisoning from quicksilver, and prevent drunkenness.<sup>147</sup> Although several claims remain dubious, recent medical research has shown that *Ilex paraguariensis* has antioxidant properties that inhibit the progression of hardening arteries.<sup>148</sup> Thus the Jesuits not only domesticated and distributed *maté*, but were the first to document its medicinal properties. Cinchona and *maté* are but two examples of how the Jesuits influenced the early modern movement of biological and medicinal materials and knowledge around the world. They were instrumental in developing medical and pharmaceutical traditions. They cultivated scientific knowledge through their correspondences, publications, and institutions such as the college and pharmacy of San Pablo. The Jesuit garden was integral to the collection, cultivation, and study of plants that became part of the global exchange in cultural artifacts.

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<sup>146</sup> Anagnostou, "Jesuit Missionaries in Spanish America," 192.

<sup>147</sup> Ibid.

<sup>148</sup> A.L.P Mosimann, D. Wilhelm, E.L. da Silva, "Aqueous Extract of *Ilex Paraguariensis* Attenuates the Progression of Atherosclerosis in Cholesterol-Fed Rabbits," *Biofactors* 26, no. 1 (2006): 59-70; D.H.M. Bastos, E.Y. Ishimoto, M.O.M Marques, A.F. Ferri, and E.A.F.S Torres, "Essential Oil and Antioxidant Activity of Green Mate and Mate Tea (*Ilex Paraguariensis*) Infusions," *Journal of Food Composition and Analysis* 19, no. 6-7 (2006 ): 538-43.



## Conclusion

In his 1789 map, Juan de Velasco called the north-western region of Quito “*paises bárbaros poco conocidos*.”<sup>149</sup> Valesco, an American-born Jesuit, was describing an area of the Amazon basin that had not been brought under Spanish control or Christianized. Even for a native of New Granada living well after the Jesuit arrival in the Americas, wilderness regions retained their uncivilized characterization. Velasco came to view the Amazon as wanting of religious order. By contrast, the Kingdom of Quito was an earthly paradise. Written from exile, his *Historia del Reino de Quito en la América meridional* laments the loss of a potential utopia within the Amazon basin which is destined to remain as wilderness without the spiritual and physical toil of the Jesuits. His depiction of the Amazonian jungle as barbarous and “little known” illustrates that the connection between civilization, Christianity, and agriculture remained central to Jesuit thought in the late eighteenth century.

Nearly two centuries apart and in different hemispheres, both Biard’s 1616 vow to “make a Garden out of the wilderness” and Valesco’s characterization of the Amazon, express the same desire to reform the social and environmental landscape of the Americas.<sup>150</sup> For the Jesuits, cultivating soils and souls were integrated projects. As a metaphor, the garden represented civilization and Christianity. As a physical space, the garden provided a means to control the natural world of the Indies. Once established, Jesuit gardens often became critical sites in the transfer of botanical knowledge around

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<sup>149</sup> Juan de Valesco, *Historia del Reino de Quito en la América meridional* (Quito: Casa de la Cultura Ecuatoriana), quoted in Eileen Willinham “Locating Utopia: Promise and Patria in Juan de Velasco’s *Historia del Reino de Quito*” in *El Saber De Los Jesuitas, Historias Naturales Y El Nuevo Mundo*, ed. Luis Millones Figueroa and Domingo Ledezma, 250-277 (Madrid/Frankfurt: Iberoamericana/Vervuert, 2005), 250.

<sup>150</sup> Thwaites, 3:35.

the world. The Jesuit pharmaceutical gardens at San Pablo and San Miguel were instrumental in developing European medical and pharmaceutical traditions in Spanish America.

The spiritual and agricultural cultivation of the New World contributed to massive social and environmental transformations during the colonial period. There is a large and growing literature on how regions of the American landscape looked prior to the European landfall.<sup>151</sup> However, scholarly attention to the relationship between colonialism and landscape transformation has only begun to emerge.<sup>152</sup> Concepts such as the Biblical garden played a significant role in legitimizing and informing the reshaping of the Americas. As the application of the garden metaphor to both practices indicates, the Jesuits' aim to transform spiritual practices and the environment were highly connected. However, there has been little scholarly examination into this relationship or into the larger-scale process of missionary landscape transformation.<sup>153</sup>

Diminishing in scale from the broad environmental implications of the Jesuit mission, the history of the Society would also benefit from analysis on explicit venues of Jesuit activity. An examination of how local sites influenced the order's scientific inquiries would be valuable. Besides its conceptual and practical significance, the Jesuit

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<sup>151</sup> The body of work on pre-Columbian landscapes is too large to cite, but a few major works include: William Denevan, "The Pristine Myth"; Denevan (ed), *The Native Population of the Americas in 1492*; David L. Lentz (ed), *Imperfect Balance: Landscape Transformation in the Precolumbian Americas* (New York: Columbia University Press, 2000); Joseph McCann, "Before 1492: The Making of the Pre-Columbian Landscape," pts. 1 and 2, *Ecological Restoration* 17, no. 1 and 2 (1999): 15-30; 17, no. 3 (1999): 3-15.

<sup>152</sup> Andrew Sluyter, "Colonialism and Landscape in the Americas: Material/Conceptual Transformations and Continuing Consequences," *Annals of the Association of American Geographers*, 91, no. 2. (2001): 410-428.

<sup>153</sup> Examples of scholarly work that considers missionaries in the transformation of landscapes during the colonial period in the Americas include: Elinor G. K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico*, (Cambridge and New York: Cambridge University Press, 1994); M.T Bravo, "Mission Gardens: Natural History and Global Expansion, 1720-1820," in *Colonial Botany: Science, Commerce, and Politics*, ed Londa Schiebinger and Claudia Swan (Philadelphia: University of Pennsylvania Press, 2004), 49-65.

garden often functioned as a site of science. Early modern botanical sciences were structured around global networks of gardens. The Jesuits created knowledge and products, which they circulated across regions, classes, and cultures via their network centred at San Pablo; but the bearing of the Society's geographical range and network of gardens on the worldwide exchange of plants and knowledge has yet to be fully explored. Their involvement with the spread of cinchona constitutes the only well-documented historiographical example of Jesuit plant exploitation. In addition, the Jesuit involvement in botany, medicine, and pharmacy at the local level constitutes a historical lacuna. For example, the extent to which Jesuits relied on the expertise of local peoples and how Amerindians received European practices and medicines administered through Jesuit facilities remain poorly understood.

The Jesuits enthusiastically participated in reforming the Americas into the garden while simultaneously appropriating New World knowledge and incorporating its biota into their global network. A further examination of the Jesuit garden, both conceptually and physically, in Spanish America will seek to clarify its role in the Columbia Exchange and implication in colonial landscape negotiation.

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