

NATION AND NATURE: NATURAL HISTORY AND THE FASHIONING OF CREOLE NATIONAL IDENTITY IN LATE COLONIAL SPANISH AMERICA

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ABSTRACT:

This study explores the role that natural history had in fashioning a Creole national identity on the eve of the Wars of Independence. It explores how these discourses allowed the Creole elites to imagine separate and distinct proto-national spaces, and how these trends persisted into the early Republican period. Creole naturalists offered utopian discourses that confirmed Creole patriots on the belief that the new nations were viable economic-political units, they also promoted the hope that each proto-national space was poised to become a major commercial emporium. Although America at large was presented as continent of natural wonders, Creole naturalists emphasized the singularity of each proto-national space, each different from the rest and exceptional. The very singularity of each colonial space allowed Creole naturalists to call for the development of localized and distinct sciences, which in turn, reinforced the senses of distinctiveness and difference. Finally, natural history was used to fashion rhetorically territories continuous, homogenous, and fully integrated.

INTRODUCTION

Since Benedict Anderson's path-breaking analysis of the way in which modern nations have concealed their historicity behind a carefully crafted facade of naturalness and eternity, scholars are now prompted to speak of nations as cultural artifacts. Anderson has traced the origins of this new form of political community to the rise of print capitalism and of new cultural forms of apprehending time. According to Anderson, the spread of literacy, newspapers, and novels helped constitute markets of readers sharing common print vernaculars and common conceptions of simultaneous and homogeneous time. This process, at first unconscious and unintended but later replicated modularly from above by forms of official nationalism, created, in turn, new literary publics who began to conceive of themselves as 'imagined communities' able to communicate vicariously across time and space.¹

Disagreeing with scholars who locate the origin of nations and nationalism in nineteenth-century Europe, Anderson has further argued that Spanish American Creoles created the first modular form of a nation. Anderson contends that Creoles were able to imagine the soon-to-be emancipated colonies as all embracing communities even despite the fact their economic policies and racial views excluded the majority of the population made up of Blacks and Indians. Anderson discards a number of hypotheses that historians have offered to explain the fragmentation of the Spanish empire into several smaller sovereign political units in the aftermath of the wars of independence. He finds fault with those who argue that the administrative territorial divisions introduced in the colonies by the Spanish Crown (which became separate economic zones when the Bourbon reforms dismantled inter-colonial trade in the late colonial period) help explain the origin of the

new form of community. Although important in order to elucidate the logic of the future fragmentation and territorialization of Latin America, administrative and geographic divisions in and of themselves do not account for the emotional attachment and quotas of self-sacrifice and martyrdom that the creation of the new Latin American nations often demanded. He also dismisses those who have argued that the new imagined communities emerged as a result of Creoles' resentment toward the Spanish Crown whose late colonial reforms sought to terminate secular patterns of Creole economic and political autonomy. According to Anderson what did the trick of creating these new forms of political community were colonial provincial newspapers and tightly restricted forms of Creole bureaucratic 'pilgrimages' to the metropolis. Limited vertical and horizontal mobility within the bureaucracy of the empire led to a Creole awareness of belonging to distinct political nations; newspapers, on the other hand, brought about a transformation of Creole perception of time that made it possible for them to see themselves as part of a larger homogenous public sphere. Anderson argues that Brazil did not fragment into smaller nations because it did not have colonial newspapers and because Brazilian Creoles moved freely laterally and vertically within the Portuguese imperial administration.²

Anderson, to be sure, has offered a powerful model, but one that has some limitations when applied to the Latin American case. Anderson, for one, explicitly denies the role of a Creole intelligentsia in the imagining of the new communities. Unlike the European nineteenth century intellectuals who by tracing and crafting linguistic and ethnic traditions invented nations, Spanish Americans, he argues, shared only one language and had no intelligentsia of which to speak. Anderson's model is somewhat mechanical: Had more provincial newspapers been founded and had the pilgrimage of Creoles to the colonial capitals been more cramped more nations would have emerged. A second problem in Anderson's model is that it does not explore the role played by new cultural apprehensions of space in constituting the nation as a new forms of political community.³ In this paper I restore the role of the late colonial Creole intelligentsia in the invention of Latin American nations. Moreover I explore the way in which new forms of apprehending space contributed to the development of national identities during the pre-political, cultural phase of Latin American nationalism.⁴ Using late colonial Latin America as example, I argue that subordinate elites in colonial settings have not only been preoccupied with crafting autonomous spiritual-cultural spaces of difference but also with marking differences by inventing altogether separate physical spaces.

I focus my study on the writings of numerous Creole naturalists. Many historians of Latin American science have already noticed the connections between the development of communities of Creole scientists and the rise of a discourse of national identity in the late colonial period. Thomas F. Glick, for example, has shown that Creole scientists spearheaded the patriotic wars of independence against Spain (1810-1824) and developed separate national identities much earlier than other sectors of the population. These naturalists participated in the wars in a number disproportionate to their small population. Glick has shown that as several Creole savants became integrated into new academic institutions around botanical expeditions to New Granada, New Spain, and Peru, they paradoxically became more aware of their status as colonized subjects. Seeking to develop separate identities from Spain they also created "patriotic" sciences. Glick argues that Creole naturalists articulated national sciences around the defense of Andean and Nahua

taxonomies (threatened by the expansion of new Linnean botanical classifications that arrived in the colonies along with tactless Spanish imperial scientists), the identification and development of local materia medica distinct from European ones, and resistance to European negative characterizations of the American climate. Yet Glick does not spend much time teasing out the content of these sciences and exploring how they could have contributed to creating the sort of emotional attachments and personal commitments that the new forms of political communities described by Anderson seemed to have demanded. Glick is more interested in tracing the dynamics and fate of these proto-national Creole scientific communities before, during, and after the wars.⁵ Other historians of ideas and science in Latin America such as Luis Arboleda, Jeanne Chenu, Eduardo Estrella, Antonello Gerbi, Roberto Moreno, Jose Luis Peset, and Jose Luis Saldaña have like Glick explored the connection between late colonial science and nationalism.⁶ But for all its insights, this scholarship does not offer broad historical syntheses but limited case studies.

This paper offers such synthesis and explores how the late Creole naturalists by creating new conceptions of space through the manipulation of representations of American nature helped to create the emotional attachments demanded by the new nations. The paper describes the inner architecture of late eighteenth-century Creole patriotic scientific traditions; it explores how these discourses allowed the Creole elites to imagine separate and distinct proto-national spaces, and how these trends persisted into the early republican period. It explores three different forms of representing and studying nature and how they framed, limited, or encouraged the imaginary constitution of Latin America pre-political national communities.

NATURE AS PATRIOTIC SPACE

In the second half of the eighteenth century profound transformations in Creole consciousness took place throughout colonial Spanish America. The Bourbon ‘reconquest’ of the New World alienated the Creole elites who began to seek in earnest identities separate from Spain.⁷ Creole patriots, scholars have argued, turned to religion and history to invent images of spiritually privileged, autonomous kingdoms rooted in a rich indigenous past and thus endowed with a classical antiquity of their own.⁸ Less attention has however been paid to the role that representations of nature played in the articulation of new forms of patriotic Creole consciousness.

Creoles had long imagined the New World as a nourishing mother from whose breasts the world had drawn sustenance not in the form of milk but of silver and gold.⁹ In the eyes of Creoles, tropical America was also an idealized Eden of temperate and bountiful lands that enjoyed perpetual Spring.¹⁰ By the second half of the eighteenth century however this old topos underwent changes; Creoles started to praise more the untapped economic potential of their botanical resources than their mineral treasures.

Many events help explain this reorientation of Creole consciousness. Attuned to criticisms that presented Spain’s colonial economic model based on silver mining as wasteful and unproductive, Creole intellectuals became interested in the agricultural potential of the colonies and thus began to praise their botanical resources.¹¹ Similarly the series of scientific expeditions that arrived in the Indies in the second half of the eighteenth century as part of a plan for economic renewal initiated by the new Bourbon dynasty “had the effect of pointing out the geographic peculiarity of the region...[producing] convincing

evidence for the inhabitants of the Spanish colonies that there was something special about the natural world which surrounded them.”¹² Furthermore, Spanish imperial expeditionary policies were organized on the assumption that plants in the colonies were magical silver bullets that would create wind-fall profits for the crown. Hoping to establish profitable monopolies over American drugs and spices (including cinnamon, clove, and quinine), the designers of Spanish botanical policies presented the Indies as a store of marvelous yet untapped botanical resources. In 1777 Casimiro Gómez Ortega, the architect of Spanish scientific expeditions to the New World, promised José Gálvez, secretary of the Indies, that “twelve naturalists...spread over our possessions will produce in their expeditionary pilgrimages a profit incomparably greater than could an army of 100,000 strong fighting to add a few provinces to the Spanish empire.”¹³ Whereas the rest of the European countries concentrated their botanical research to increase agricultural productivity at home, Spain put most of its efforts to find “a panacea for the diseases of the century” through botanical research in its tropical colonies.¹⁴

Another reason that made Creoles aware of the uniqueness of the organic environment in which they lived was the so-called “dispute of the New World.” In the 1750s the French naturalist Buffon argued that the New World was a humid, degenerating environment. Buffon, to be sure, was not the first European to represent the Indies as humid degenerate lands, but he and his followers were certainly the first to use this trope of tropical nature to explain a significant number of ‘mysteries’ that had long puzzled European audiences (i.e. why upon the arrival of the European had America been scarcely populated and Amerindian’s social development arrested in ‘the state of nature’; why had lands with multiple climates not originated more racially diverse groups, including black Amerindians; and why were American quadrupeds smaller and less numerous than those of the Old World). By arguing that America had recently emerged from the waters and that dangerous humid miasmas had caused all organic life in the continent to degenerate, Buffon solved these puzzles. He maintained that humidity had feminized the natives, and had shrunk all quadrupeds and taken their vigor away. Buffon’s view sparked a debate in Europe and in the colonies that forced Creoles to articulate patriotic natural histories to defend their homelands.¹⁵

Spanish expeditionary policies, revisionist views of colonial political economy, and the dispute of the New World created the conditions for the development of a Creole patriotic discourse of natural history. This new discourse permeated even Creole aesthetics. Paintings of “castas” during the late colonial period reveal not only the ability of subalterns to flaunt colonial policies bent on keeping them separate and distinct racial estates but also the new Creole taste of exalting the natural and botanical wonders of their lands(see figure 1).¹⁶

Among the first to turn natural history into patriotic scholarship were Creole Jesuits in exile in Italy. Juan de Velasco, Felipe Gómez de Vidaurre, Francisco Clavijero, and Ignacio Molina wrote in Italy treatises of natural history containing rather exhaustive inventories of the bountiful and unique fauna and flora of their ‘fatherlands’. The Jesuit used their natural histories to undermine Buffon’s representations of the colonies as a humid, feminine, degenerating environments. Each Jesuit went to great lengths to deny the existence of feminine quadrupeds¹⁷ and of emasculated, degenerate natives.¹⁸ Also these natural histories sought to present each colony as uniquely endowed by Providence with unlimited natural wonders and

resources. The Chilean Gómez de Vidaurre opened his natural history by arguing that “the Kingdom of Chile...is one of the countries Nature has benefited the most.”¹⁹ Juan de Velasco, on the other hand, presented his ‘fatherland’, the Kingdom of Quito, as the one that nature had most favored. “It would be impossible to understand the structure and configuration of this land without first admiring the effort made by nature to privilege it with its greatest works.” The Kingdom of Quito, Velasco insisted, “can glory itself of having features that no other part of America or any other part of the globe can equal” Quito was unique because Nature had elected it to have the highest mountain, be the source of the largest river, and enjoy the most temperate climate on earth.²⁰

The Jesuits also contested European histories of the origin of some of the most valuable dyes, spices, and fruits in international markets, thereby creating new histories exaggerated colonial economic potential. Velasco’s natural history typifies such a revisionist approach. According to Velasco indigo, pepper, and coconut palms had not originated in the East Indies as it had traditionally been assumed but in America’s equatorial areas; nor had the bananas and plantain of Quito come from Africa.²¹ Velasco seemed to have embraced the postulate of many Spanish and Creole botanists that since the East and West Indies had the same tropical climates they therefore had similar flora. This mistaken assumption led the Spanish crown to waste many resources trying to find East Indian cinnamon and clove in America in order to break the profitable monopolies of the Dutch.²²

Like the Jesuits in exile, Creoles in the colonies also highlighted the natural wonders and economic agricultural potential of their lands. Around 1790 the Creole lawyer Pedro Fermín de Vargas, who along Fray Eloy Valenzuela and Fray Diego García de Cartagena had worked for eight years (1783-1791) in the first phase of the Botanical Expedition of Nueva Granada (1783-1810) led by the Spanish physician-botanist José Celestino Mutis, presented Nueva Granada as a land of unparalleled commercial potential.²³ According to Vargas, Nueva Granada enjoyed a privileged geographical location where it was possible “to find almost all the temperaments of the globe.” Colombia was a microcosm of the globe due to the multitude of ecological niches created by the Andes and to the endless agricultural cycle of its equatorial climate. It was also a potential economic leader of the world. If an enlightened ruler were to build roads and protect and increase the population to accelerate the ‘circulatory rhythms’ of the country, Colombia, according to Vargas, would be poised to supply the world with local cinnamon, clove, tea, Chinese ‘betete’ (coca), and indigo of even better quality than those that came from Asia. The coastal plains of Cartagena and Santa Marta alone would provide the cotton needed by all factories of the world.²⁴

In 1808 the naturalist Francisco José de Caldas offered a similar providential, utopian, and patriotic view of Colombia’s commercial destiny based on the uniqueness of Colombia’s space. Caldas, who first spent some twelve years roaming around the Andes without any institutional support on a lonely attempt to study the region’s nature and heavens, and who a few year later became one of the most prestigious scientists of the Viceroyalty of Nueva Granada, the director of the only astronomical observatory ever created by the Spaniards in the colonies, also thought that “Nueva Granada appear[ed] destined by its geographical position for universal commerce.”²⁵ According to Caldas, Colombia was uniquely situated “in the center of the New World. To its right it ha[d] all the riches of the north, to its left all the natural productions of the south, it ha[d] ports both in the Pacific and the Atlantic and [was] in the middle of these vast oceans, far away

from the hurricanes and “cámbanos”(?) of the continental poles.” But Colombia was not only “better situated than Tiro and Alexandria” to become a commercial emporium, it also enjoyed all the climates of the world. As a microcosm of the earth, Colombia was capable of supplying the world with all it needed. “From the bosom of Nueva Granada,” Caldas insisted, “all the perfumes of Asia, African ivory, European industrial commodities, northern furs, whales from the southern seas, [in short], everything produced on the surface of our world [can be obtained].” Since Caldas was not willing to extend such generous views of nature to the rest of Spanish America, his was clearly an exercise on national identity. “Let’s agree that there is nothing better situated in the Old and New World than Nueva Granada... Can Peru, cornered in a sterile zone of the Pacific coast, or Mexico, [somewhat] better located in the confines of the torrid and temperate zones, count as we do with the prodigious number of rivers that will someday carry our riches from the center to the extremities [of the body politics]?”²⁶

Caldas also viewed the Andes as a microcosm of the globe, a place around which all the racial varieties of the world had developed, thus, a privileged space to study plants and peoples. In an article on the influence of the climate on human bodies, Caldas argued that Colombian scientists need not abandon Nueva Granada to study the impact of climate on different races. “I have then been correct in saying,” Caldas concluded, “that there are few points in the surface of the world where it is more advantageous to observe, and would even argue, to **touch** the influence of climate and food on the physical constitution of man, on his character, virtues, and vices [than Colombia].”²⁷

Nowhere did the trope of the Andes as microcosm of the globe resonate more loudly than in Peru. Hipólito Unanue, editor of *El Mercurio Peruano* (1791-1795) and a physician committed to reform, typifies the exaggerated hopes of the Peruvian intelligentsia; his work also shows the way in which nature became a space for patriotic affirmation. For Unanue Peru was “the most magnificent work Nature has ever created over the earth.”²⁸ Nature’s predilection for Peru was according to Unanue multifaceted. Nature, for example, had chosen Peru to keep the balance of the planet. The massive weight of the Andean mountains had been responsible for tilting the earth’s axis and thus for the very existence of Europe which otherwise would have remained under water. Nature had also chosen Peru to become a commercial emporium because it was a land ideally suited for trade. Peru had rivers that, draining either in the Atlantic or the Pacific, linked the two oceans; the richest botanical resources of the world;²⁹ multiple ecological niches produced by the Andes;³⁰ and an endless agricultural cycle due to its equatorial location. It was a microcosm able to supply the world with all it needed. “It seemed” Unanue argued, “that after having created the deserts of Africa, the fragrant and lush forests of Asia, and the temperate and cold climates of Europe, God made an effort to bring together in Peru all the productions he had dispersed in the other three continents. In this manner God has sought to create [in Peru] a temple for himself worthy of his immensity, [a temple] majestically surrounded by all the treasures hidden in this kingdom.”³¹ Among the products that Unanue thought could be used to fulfill this prophecy was coca. According to Unanue, coca was the “architónico” of the vegetable kingdom a product whose sharp, acrid particles stimulated circulation and digestion creating unlimited physical resistance. Only Peru had this vegetable and if properly marketed it could replace tea and/or coffee in the international markets.³² For other contributors to *Mercurio Peruano* such as Pedro Nolasco

Crespo, accountant of the Royal Treasury in Upper Peru, quinine was the real treasure of Peru, “one even more useful for humanity than its silver mines.”³³

Alongside the idea that the colonies were microcosms poised to become commercial emporiums, Creole naturalists also emphasized God’s providential design of the distribution of plants. Like many other physicians trained in classical Greek medicine, Creole physicians thought that regional herbs and human diseases tended to match because the fauna, flora, and human bodies of a region shared similar complexions, temperaments, and humoral balances; for every local disease there was a local plants to cure it.³⁴ Beginning with the conquest, this view encouraged many Spanish and Creole physicians to avidly collect indigenous herbal lore while holding very negative views of the Amerindian physiology and physiopathology.³⁵ It also encouraged them to articulate providential views of nature according to which this purported match of plants and diseases was attributed to God’s omnipotence and design.³⁶

In the late eighteenth century this tradition took on clear proto-national dimensions. Again, it was in Peru that this form of patriotism found its most fertile ground. Francisco González Laguna, a priest of the order of *Los Agonizantes* and a renowned naturalist who created the first botanical garden in Lima, set the tone when in 1794 he used the pages of *Mercurio Peruano* to describe God’s special generosity with Peru. González Laguna (who thought that God “spoke through the book of nature” to teach his charges humility, for the contemplation of the natural order revealed God’s omnipotence, knowledge, and charity) thought that God had been particularly generous with Peru, giving each and every one its regions the plants to satisfy the needs of its inhabitants.³⁷ “In our Andes,” Laguna explained, “where poisons (ponsoñas) swarm, antidotes abound; where tertian fevers are endemic, febrifuge quinine (cinchona) prevails. Our coasts that are affected by dysentery teem with tonic herbs...[T]he deserts of Guayaquil that have no water overflow with plants that supply it in abundance.”³⁸ Hipólito Unanue drew from González Laguna to elaborate further the point that God had created Peru as his temple. Thus according to Unanue, God had given Peru the world’s store of quinine because its peculiar tropical climate made the population one of the most susceptible to suffer from fevers. “We cannot do less than to thank the generous and careful hand of the Providence,” Unanue eloquently argued, “who in order to impede the depopulation of this country located the remedy next to the evil with such exactitude that in along the line that follows tertian fevers there is a parallel one in the Andes that produces quinine.”³⁹

This tradition of patriotic natural history and of exaggerated expectations culminated with Andres Bello’s *Alocución a la Poesia* (1823) and *Agricultura de la Zona Tórrida* (1826), both published in exile in England when the wars of independence had finally come to an end.⁴⁰ In his *Allocation*, Bello invited “Poetry,” a beautiful and virtuous woman, to abandon overly rational and corrupt Europe for lush, virgin, and untainted torrid America where she would exercise her imagination at last. According to Bello, Poetry would find in America new themes to which to sing her praises: new pagan Amerindian mythologies, majestic landscapes, and unparalleled agricultural botanical resources, including coffee, cotton, pineapples, palms, indigo, bananas, and cacao. In *Agriculture of Torrid America*, Bello explored some of these same themes in greater detail describing the beauty and wonders of cacao, cochinitilla, indigo, pulque, tobacco, coffee, palms, pineapple, yucca, potatoes, cotton, corn, bananas, and “parcha” (?), all of which Bello suggested had

originated in the New World. Finally, Bello called on the new nations to become republics of virtuous farmers. Drawing on Jefferson, Bello prompted the “youthful nations..[to] pay homage to the country, [to] pay homage to the plain life of the farmer and his frugal simplicity.” The new republics to prosper, be in peace, and remain virtuous should be made up of “farmers” who would not indulge in the vices and corruption associated with urban, courtly environments. The systematic exploitation of the new nations’ unmatched botanical resources, on the other hand, held for them the promise of unparalleled commercial prosperity, perpetual freedom, the end of civil wars and personal ambitions, and the beginnings of the empire of law.⁴¹

Such exaggerated views of the economic potential of the new nations through the orderly exploitation of its wondrous botanical resources proved unfounded when in the aftermath of the wars of independence the new republics plunged into each and every one of the conditions Bello had most feared: civil wars, disorganization of trade, and centrifugal regionalism. Yet, these unfulfilled views played significant ideological roles; they worked as motivating utopias for Creole patriots seeking to articulate visions of viable nations. These discourses also appear to have limited the options of Creole leaving them to follow a pattern of dependent economic development in which agricultural and mining exports took precedence over home-grown industrial development.⁴²

NATURE AND NATIONAL KNOWLEDGE:

The creation of a “patriotic” science based on the assumption that America’s natural laws were different from those of Europe and thus that American phenomena could only be studied by Creole scientists was another important way in which nature as spatial category helped subordinate colonial elites to forge proto-national and national identities on the eve of the wars of independence.

John Harley Warner has shown that the pursuit of locally grounded forms of knowledge in the southern United States contributed to the development of the idea of a southern nation in the years leading to the Civil War. Southern states developed a secessionist national ideology that presented the South as intellectually and economically dependent on the North. On the grounds that southern medicine had long been a passive recipient of northern knowledge and that tropical climates were distinct and different from those of the north, southern physicians, the focus of Warner’s investigation, strove to create a “decolonized” medical science. Physicians founded southern journals, hospitals, and medical schools and developed a proto-national medical knowledge to assert their intellectual autonomy.⁴³ Something similar occurred in Latin America in the late colonial and early republican periods. Creole naturalists and intellectuals assumed that tropical nature, bodies, and diseases responded to radically different natural laws from those of Europe and that only local scientists were able to identify, study, and understand local natural phenomena.

The search for separate natural laws for the tropics had its origins in a tradition that identified the New World with a land of wondrous and curious phenomena. From the beginning of Spanish colonization in the New World, bureaucrats and naturalists became particularly interested in the wonders of the New World.⁴⁴ New World “exotica,” including fauna, flora, and indigenous artifacts, dazzled Renaissance European audiences and fetched considerable value in courtly cabinets of curiosities.⁴⁵ Royal instructions to

collect information in the New World frequently contained sections requesting colonial bureaucrats to identify “the curiosities and oddities of the land.”⁴⁶ This search for the “the strange, the unique, the exotic” later came to characterize the aesthetics of Spanish American Baroque.⁴⁷ Clearly this tradition created the intellectual condition that allowed Creoles to think of the natural laws of the Indies as different from those European naturalists had established for the rest of the world.

The naturalist that best articulated the Creole propensity to create this peculiar form of ‘national’ science was the Mexican José Antonio de Alzate, editor of several periodicals and an expert astronomer and naturalist who came to dominate New Spain’s intellectual life in the late eighteenth century. Alzate, who was convinced that Mexico was “the closest copy to [paradise] that one can ever hope to get from corrupted nature” and that Mexico was a land where physicians hardly made a living because it did not have cripples, insane, and lepers and because people never got ill, lent his considerable prestige and periodicals to a form of ‘patriotic’ science.⁴⁸ To be sure his version of national science included a defense of locally developed knowledge that European tended to belittle. Alzate opposed new mining techniques, European experts brought by the Crown to stimulate silver mining, and new botanical taxonomies introduced by Spanish naturalists to reform medical education on the grounds that Mexicans knew better. Alzate, for example, was convinced that Mexican miners, despite being “considered idiots by Europeans,” had developed local technologies that were vastly superior to anything German textbooks and mineralogists (reportedly the leading authorities in the field) had to offer.⁴⁹ By the same token, he dismissed Linnean taxonomies and encouraged the use of Nahua botanical names.⁵⁰

But more important from the perspective of inventing national identity grounded on the perception of a unique Mexican space was his insistence that Mexican nature could never be understood by European scholars whose laws had been devised to explain their own natural phenomena. New Spain, he argued, was full of botanical marvels that would always contradict the laws of nature devised by Europeans. “[If great European naturalists] would ever come to New Spain,” Alzate lectured his nemesis Vicente Cervantes, a Spanish naturalist who had come to Mexico to teach the Creoles modern Linnean botany and reform medical education, “how dumbfounded (absortos) would they be having to face so many and so rare [natural] productions.” “New Spain,” he concluded, “has natural phenomena that completely undermine and upset all [scientific] hypothesis.”⁵¹

This view of Mexican nature led Alzate to collect curiosities to challenge the natural laws devised by Europeans. Upon arrival to Mexico City in 1791, the Spanish naturalists Antonio Pineda, one of many scientists who accompanied Alejandro Malaspina in his expedition to the Spanish possessions in the West and East Indies (1789-1794), received from Alzate a gift consisting of fishes that were viviparous and thus did not lay eggs, “a singularity to this day ignored and explicitly denied (contradicha) by the observers of nature.” “This finding” the astonished Pineda concluded, “is so new ...that this animals will shatter the laws devised by some naturalists who deny this property to all perfect fishes.” Whereas for Pineda this curiosity proved the “unlimited power of Nature,” for Alzate it was evidence to sustain his larger project of a science that only Mexicans could foster and interpret.⁵²

A second intellectual tradition that prompted the late colonial Creole intelligentsia to see their land as one responding to unique laws which they alone could identify and understand was that established by classical medicine. The theory of humors, temperaments, and complexions had long argued that bodily physiology and thus diseases depended on the climate of each region.⁵³ Peruvian Creole physicians in particular took advantage of this theory to create a form of medical nationalism that maintained that their climate, bodies and diseases were singular and, thus, that only Peruvian physicians could identify and cure Peruvian diseases. Archibald Smith a British physician who worked in Lima for ten years (1826-1836) rebuked Limeño doctors, most of them trained in the new School of Medicine and Surgery of San Fernando by Hipólito Unanue, the doctor convinced that God had found its temple in Peru. Smith criticized Limeño doctors for their refusal to embrace universal theories of disease and therapeutics. According to Smith “ [they think] that there is something occult in the climate of Lima, which only Creole physicians can sufficiently comprehend. Hence the prejudiced objection, ‘No conoce nuestro clima’--that is, he knows not our climate--is sanctioned by high professional authority.”⁵⁴ This was the result, Smith argued, of Creole doctors’ reluctance to accept that “the laws of physiology...like those of gravitation, are the same in Peru as in other parts of the world.”⁵⁵

Colombia also witnessed the development of similar efforts to constitute a national science built around the singularities of Colombia’s nature. In 1812, two years after the citizens of Nueva Granada had taken advantage of Napoleon’s invasion of Spain to declare independence from Spain, Francisco José de Caldas called on his Creole compatriots to create at last a national science. “If we have shaken off the political yoke of Europe,” Caldas admonished them, “let us also shake off the scientific dependence that degrades us and that maintains us in a literary infancy more ignominious than slavery.”⁵⁶ But Caldas had been seeking to create a national science long before 1812. Caldas, the Creole naturalist who dreamt of Colombia as a future leading commercial power of the world based on its purported wondrous microcosmic design, had long expressed his skepticism that European scientists would ever be capable of understanding American nature, for their prejudices and their rush to explore made them overlook phenomena and commit mistakes.⁵⁷ Not even Humboldt, whom Caldas greatly admired, could be trusted; Humboldt had “mixe[ed] the certain with the doubtful” in his reports about Colombia.⁵⁸

Caldas sought to create a patriotic science based on the particularities of Colombia’s nature. Since Colombia was a microcosm of the globe, Caldas encouraged local scientists to benefit from such comparative advantage and study the causes of human racial variations without having to leave Nueva Granada. Colombia was also a favored space for the study plant distribution, so Caldas made the study of Andean bio-geography and of the Andes’ multiple and distinct ecological niches the centerpiece of his own research agenda.⁵⁹ Finally, Caldas thought that Colombia’s central location made it a privileged space in which to study the heavens. This comparative advantage of Colombia’s skies would according to Caldas allow Colombian scientists to offset their technological deficiencies and produce astronomical knowledge as good as that of the Europeans.⁶⁰

Just as with the tradition of utopian, providential and patriotic descriptions of America’s nature and of its economic potential, the search for a national science based on the Creole ability to identify and study the unique laws of America found its culmination in

Andres Bello. After having spent most of the years of the wars of independence in exile in England, Bello, the Venezuelan patriot who invited Poetry to come to America to praise its natural wonders, returned to become one of the leading intellectuals of Chile and the founder of Chile's new university. Bello was a "neo-Bourbon" who thought that letters and sciences should bolster the nation-state politically and morally: politically because knowledge encouraged rationality and liberty, and morally because science kept the citizenry close to religion by demonstrating the power of God who had designed and given laws to the world; science would also keep the potentially politically active youth away from their most dangerous and wasteful sensuous passions.⁶¹ But Bello also sought to reform Chile's higher education to produce Chilean science and thus to reinforce Chile's national identity. In 1843 in the inaugural address celebrating the opening of Chile's new university, Bello admonished his audience that "the program of the university [should] be entirely Chilean. If we borrow from Europe the deductions of science is only for them to be applied to Chile[an things]. All the proposed paths that the research of its faculty and the study of its students take [should] converge only in one center: the motherland."⁶²

For Bello the development of "national" knowledge became an obsession. He thought that a national grammar was just as important as the codification of laws to strengthen the nation, for a codified language would thwart the development of centrifugal identities that emerge with separate dialects and languages.⁶³ Bello's search for nationally grounded forms of knowledge prompted him to create a new Castilian grammar that for the first time was not to be modeled on Latin. "The first goal of a national grammar," Bello insisted, "is to make known the mother tongue by presenting it on its natural character and features and not under foreign forms."⁶⁴ As he himself had done with Chile's grammar, Bello called on Chilean physicians to depart from foreign models and to create an autonomous, decolonized science. He urged Chilean physicians to take advantage of the fact that bodies and diseases of Chile were unique because Chile's climate was also unique. Addressing the members of the new university in 1848 in a lecture commemorating its fifth anniversary, Bello asked his audience rhetorically: "Shall we look for the hygiene and pathology of the Chilean people in European books, and not study the degree to which the organization of the human body is modified by the accidents of the Chilean climate and customs? Can such a necessary study be made elsewhere than in Chile?"⁶⁵

In the late colonial and early republican periods, Creole awareness of the singularity of natural phenomena in the Indies led to a distinct form of proto-nationalism. Creole naturalists argued that the laws of nature in America were different from those in Europe; furthermore they saw each of the soon-to-be independent republics as having their own natural laws. Therefore, Creole naturalists insisted, only those living in the land were able to identify and explain local natural phenomena. These views contributed to creating proto-national and national sentiments among the literate elites in two different but related ways. On the one hand, they stimulated 'national' perceptions of colonial spaces creating, reinforcing, and naturalizing differences and boundaries among different geo-political units. On the other hand they encouraged the creation of distinct scientific communities whose very founding helped reinforce separate national identities.

NATURE AS A SPACE WHERE THE NATION IS RHETORICALLY CONSTITUTED

The very way in which late colonial natural histories were written helped to consolidate proto-national discourses. Naturalists constituted the nation rhetorically in their writings by presenting each colony as homogenous and continuous spaces.

In exchange for a reality of poorly integrated economic spaces and of regional, provincial geographical isolation, Creole naturalists offered in their writings fully integrated, continuous, and homogenous proto-national spaces. Juan de Velasco's natural history of the kingdom of Quito is a case in point. Despite the fact that in the late colonial period the Audiencia de Quito was a loosely integrated economic and geographical space, Velasco offered in his work a rather different image of it. As he described the local fauna and flora, Velasco spent some time enumerating the small and hitherto unnoticed trades that had flourished around the exploitation of particular plants, minerals, and animals. Velasco thus presented Quito's colonial space as a quilt made up of endlessly overlapping local commercial circuits. But perhaps more important from our perspective, Velasco fashioned a continuous, homogenous version of proto-national space. Velasco offered endless lists of rivers, lakes, mountains, trees, plants, quadrupeds, birds, reptiles, and insects without classifying them according to their places of origin; he thus joined the disjointed areas of Quito rhetorically. That this was a conscious choice can be seen from Velasco's description of local fishes. In a sudden and late switch in his cataloging strategy (he described fishes last), Velasco offered an inventory of fishes organized according to their places of origin (i.e., coast, mountains, and tropical forests). Regional lists of fishes notwithstanding, Velasco sought to present Quito as a single, homogenous, and continuous space.

Like Velasco, the Jesuit Francisco Clavijero organized his natural history survey of Mexico by doing away with the regional origins of fauna and flora, thus constituting Mexico into a homogenous and continuous space. Clavijero and Velasco's strategy contrasts somewhat with the one pursued by the Jesuit Felipe Gómez de Vidaurre's natural history of Chile. Unlike Clavijero and Velasco, Vidaurre introduced a radical spatial discontinuity in his natural history by cataloging natural resources according to their regional origins. Vidaurre catalogued separately the lakes, rivers, minerals, quadrupeds, reptiles, fishes, insects, and amphibians of the provinces of Cuyo and of Chile proper, fragmenting Chile's colonial space. Yet Vidaurre did present the resources of each of these two provinces without further emphasizing regional distinctions.

Another form Creole naturalists used to invent proto-national spaces rhetorically was their attempt to present their discipline as a trope of the nation. They offered their small communities as examples of what unified national polities could accomplish and encouraged the practice of natural history to create and consolidate proto-national communities.

Francisco José de Caldas best typifies this rhetorical strategy. As a project that could only be carried out through collective endeavors, the practice and discourse of natural history was, according to Caldas, a laboratory in civic participation, an exercise in patriotic unity. In the process of cataloging the colonial space, all social estates would leave aside their differences, collaborating to chart and map all the resources of the land. All social sectors would in turn see their interests reflected in the final outcome one which

would give them information to satisfy their particular needs. The very act of mapping, cataloging, and surveying the land would bring all provinces together into a unified nation. The teaching of geography in public schools would create citizens whose interests would no longer be narrowly provincial and who would be aware of the potential economic benefits for the nation of integrating and complementing the diverse and different natural resources of their locales.⁶⁶ Finally, the recording in each town's public spaces of their geographical location would constantly and eternally remind their citizens of their situation relative to others in the homogenous space of the nation. Caldas dreamt of having a stone carved with data about Popayán, his birth place, including its elevation above sea level, latitude, longitude, temperature, atmospheric pressure, and magnetic dip so as "to make each individual in the city conscious of his spatial relation relative to the country and his own neighbors."⁶⁷

CONCLUSIONS

The Creole views of nature that I have sketched contributed significantly to the development of Creole nationalism. They provided a deeply emotional language, sometimes difficult to separate from the religious, that helped Creoles imagine and define distinct, separate national spaces. The language Creole naturalists used to refer to their own colonies as microcosms, areas providentially designed by God, or even temples of the deity created strong emotional attachment to spaces, not only imagined political communities. Creole naturalists offered utopian discourses that confirmed Creole patriots' belief that the new nations were viable economic-political units; they also promoted hopes that each proto-national space was poised to become a major commercial emporium. These deeply religious, utopian views were not merely linked to the development of a rather vague sense of American exceptionalism and identity. Rather these views hinged upon clearly national, territorialized perceptions of space. Although America at large was presented as continent of natural wonders, Creole naturalists described and crafted singular local territories, proto-national spaces each one different from the rest and exceptional. The very singularity of each colonial space allowed them to call for the development of localized and distinct sciences, which in turn, reinforced the senses of distinctiveness and difference. Finally, each one of these spaces were imagined as continuous, homogenous, and fully integrated.

¹ Benedict Anderson, Imagined Communities: Reflections on the Origin and Spread of Nationalism (revised edition, London: Verso, 1991).

² Ibid, ch. 4.

³ In all fairness to Anderson, in the revised edition of his book he has argued as an afterthought that the rise of new cultural forms of apprehending space (through the mass reproduction and consumption of 'logo-maps') played an equally significant role in the emergence of the modern nation, particularly in post-colonial societies.

⁴ I borrow from Partha Chatterjee the idea that the colonial "others" have imagined their nations in a contested dialogue with the "West" passing through two distinct and chronologically ordered phases, one pre-political in which the nation is already imagined without participants having to engage in a struggle over control of state power, and the other, political. Using the case of nineteenth-century India, Chatterjee has argued that the pre-political phase of Indian nationalism took on the form of cultural resistance in which the Hindu elites divided the world between the domain of the private (that craved "Indian-ness" and manufactured "tradition") and the domain of the public (that craved assimilation to the universalizing and normalizing discourse of European modernity). See Partha Chatterjee The Nation and its Fragments: Colonial and Postcolonial Histories (Princeton: Princeton University Press, 1993).

E.J. Hobsbawm would most probably argue that Chatterjee's pre-political forms of cultural nationalism are merely forms of the "proto-national". For Hobsbawm proto-nationalism creates a sense of community through ethnic or religious or linguistic markers, but unlike nationalism the political community to which it caters is explicitly hierarchical and exclusionary. Nations, on the other hand, are imagined as brotherhoods (since nations have all at first disenfranchised women), political communities of citizens with natural rights standing equal before the law. See his Nations and Nationalism Since 1780: Programme, Myth, Reality (second edition, Cambridge: Cambridge University press, 1992).

⁵ "Science and Independence in Latin America (with Special Reference to New Granada)," Hispanic American Historical Review 71 (1991) 307-334.

⁶Luis Carlos Arboleda, "Science and Nationalism in New Granada on the Eve of the Revolution of Independence," Science and Empires. Historical Studies about Scientific Development and European Expansion, P. Petitjean and C. Jani eds. (Dordrecht: Kluwer Academic Publishers, 1992); J. Chenu, "Desde la tierra hacia las estrellas: Búsqueda científica e identidad cultural en Nueva Granada," in La America española en la época de las luces (Madrid: Ediciones de Cultura Hispánica, 1988); Eduardo Estrella, "La noción de identidad nacional en el pensamiento científico de Juan de Velasco," Boletín de Informaciones Científicas Nacionales (Quito), (1983) 361: 226-58; "El Padre Juan de Velasco: Historia Natural y Defensa del Indígena

Americano," Quipu (México), 6(1989): 135-150; Antonello Gerbi, The Dispute of the New World: The History of a Polemic, 1750-1900, translated by Jeremy Moyle (revised and enlarged edition, University of Pittsburgh Press, 1973), 245-273; 364-409; Roberto Moreno, Linneo en Mexico: Las controversias sobre el sistema binario sexual 1788-1798 (Mexico: Universidad Nacional Autónoma de México, 1989); José Luis Peset, Ciencia y libertad: El papel del científico ante la Independencia americana (Madrid: Consejo Superior de Investigaciones Científicas, 1987), and "Ciencia e independencia en la América española," in A. Lafuente, A. Elena, and M.L. Ortgega eds., Mundialización de la ciencia y cultura nacional, (Madrid: Doce Calles, 1993), 195-217; Juan José Saldaña, "Nacionalismo y ciencia Ilustrada en América," Joaquín Fernández Pérez and Ignacio González Tascón eds., Ciencia, técnica y estado en la España Ilustrada (Madrid: Ministerio de Educación y Ciencia, 1990).

Historians and literary critics of Latin America have also turned their attention to study nations and national discourses as cultural artifacts. By and large, this scholarship has paid little or no attention to the ways those charged with inventing the nation have used representations of nature (and thus space) to do so. See, for example, Doris Sommer, Foundational Fictions: The National Romances of Latin America (Berkeley: University of California Press, 1991); Nicolas Shumway, The Invention of Argentina (Berkeley: University of California Press, 1991); Julie Skurski and Fernando Coronil, "Dismembering and Remembering the Nation: The Semantics of Political Violence in

Venezuela, " Comparative Studies in Society and History, 33 (1991): 288-337; Joanne Rappaport, "Fictive Foundations: National Romances and Subaltern Ethnicity in Latin America, History Workshop Journal, 34 (1992): 119-31; Stacie G. Widdifield, The Embodiment of the National in Late Nineteenth-Century Mexican Painting (Tucson: The University of Arizona Press, 1996).

⁷ For a brief yet lucid summary of the Bourbon 'second conquest', see Jon Lynch, The Spanish American Revolutions 1808-1826 (second edition, New York: Norton, 1986), ch.1.

⁸ David Brading, The First America, the Spanish Monarchy, Creole Patriots, and the Liberal State 1492-1867 (New York: Cambridge University press, 1991), Jacques Lafaye, Quetzalcóatl et Guadalupe: la formation de la conscience nationale au Mexique (Paris: editions Gallimard, 1974), Anthony Pagden, Spanish Imperialism and the Political Imagination (New Haven: Yale University Press, 1990), chs. 4-5; Edmundo O'Gorman, La supervivencia política Novo-Hispana (México, 1969); John Leddy Phelan, "Neo-Aztecism in the Eighteenth Century and the Genesis of Mexican Nationalism," Culture in History: Essays in Honor of Paul Rodin, Stanley Diamon ed. (New York, 1960).

⁹ Keen, A History of Latin America, (fifth edition, Boston: Houghton Mifflin, 1996), 152.

¹⁰ Spanish writers first articulated this topos, see for example José de Acosta, Historia natural y moral de las Indias , José Alcina Franch ed. (Madrid: Historia 16, 1987), boo 2, ch. 14 (pp.150-51). Acosta argues that if there is one land in the

world that deserves to be called Paradise it is the New World.

¹¹ Pedro Fermín de Vargas' "Memoria sobre la población del reino de Nueva Granada" (ca. 1790), in Pensamientos políticos y memoria sobre la población del Nuevo Reino de Granada (Bogota:

Biblioteca Popular de Cultura Colombiana, 1944) typifies this new critical attitude towards mining. "If we pay attention to the fact that the commerce, population, and wealth of the French and the British have grown threefold solely on the strength of their colonial crops,, and that we with our gold and silver have done nothing but get poorer, it will become clear the advantages of agriculture over mining"(p.96). See also Felipe Gómez de Vidaurre, Historia geográfica, natural y civil del Reino de Chile, J.T. Medina ed., 2 v. (circa 1787, Santiago de Chile: Imprenta Ercilla, 1889), 1:6.

¹² John Wilton Appel, Francisco José de Caldas: A Scientist at Work in Nueva Granada (Philadelphia: The American Philosophical Society, 1994), 5-6. Appel limits his statement to the equatorial expedition to the Andes of Godin, La Condamine, Ulloa, and Jorge Juan between 1736 and 1744; it could however be expanded to embrace all Spanish expeditions to the New World as well. On eighteenth-century Spanish botanical expeditions, see Antonio Lafuente y Antonio Mazuecos, Los Caballeros del Punto Fijo: Ciencia, política y aventura en la expedición geodésica hispanofrancesa al virreinato del Perú en el siglo XVIII (Madrid: Ediciones Serbal, 1987; reprinted edition, Quito: Abya-Yala, 1992); Arthur Steele, Flowers to the King (Durham, North Carolina: Duke University Press, 1964); Antonio González Bueno

ed., Expedición Botánica al Virreinato del Peru (1777-1788), 2 v. (Barcelona : Lunweg Editores, 1988); Francisco Javier Puerto Sarmiento, La ilusión quebrada: Botánica, sanidad y política (Barcelona: Serbal, 1988); and Xavier Lozoya, Plantas y Luces en México (Barcelona: Serbal, 1984).

¹³quoted in Francisco Javier Puerto Sarmiento, Ciencia de cámara: Casimiro Gómez Ortega (1741-1818) el científico cortesano (Madrid: C.S.I.C., 1992), 155-56

¹⁴ F.J. Puerto Sarmiento, Ciencia de cámara, 174.

¹⁵ This European representations of America's feminized, humid nature had consequences for Creole apprehensions of national space. To be sure, a Creole defense of tropical America implied its 'masculinization.' Yet Creoles worked within a cultural matrix that always feminized the land. Moreover, some Creoles needed medical paradigms of heat and humidity to explain gender, class, and race differences within their own colonial communities. Currently I am writing a paper on this topic. On the dispute see Gerbi's classical account, The Dispute of the New World. For an account of the dispute that focuses on historiographical aspects, see Jorge Canizares Esguerra, Historical criticism and the 'Dispute of the New World': The Reconstruction of the Amerindian Past in Europe and Spanish America 1750-1800 (Stanford University Press, forthcoming).

¹⁶ For samples of Mexican casta paintings portraying local fauna and flora see Maria Concepción García Saiz, Las castas mexicanas. Un genero pictórico americano (Mexico: Olivetti, 1989). The paintings of the Cuzco school of the second half of

the eighteenth century also reveal a heightened awareness of the local fauna and flora; see for example Carol Damian, The Virgin of the Andes : Art and Ritual in Colonial Cuzco (Miami Beach: Grassfield Press, 1995).

¹⁷ 'See for example Juan de Velasco, Historia del Reino de Quito en la America Meridional, 3 v. (completed in 1789, Quito: El Comercio, 1946), vol 1, 109 (European animals have not lost strength and size in the Indies); 112 (there are beasts more ferocious than in African), 113 (puma is not a lion without mane); 117 (climate has not caused a species of goat to lost his beard). Francisco Clavijero was the only Jesuit that did not seek to establish the existence of big ferocious beasts in the Indies. Turning Buffon's discourse on its head, Clavijero insisted that the smallness and lack of ferocity of American quadrupeds were not indicative of degeneration but of sweetness and gentleness. According to this rather typical Enlightenment discourse, feminization was a sign of civilization not barbarism. See Francisco Javier Clavijero, Historia Antigua de Mexico (Mexico: Editorial Porrúa, 1987), 461.

¹⁸ Velasco, Historia del reino de Quito, 1: 219 (Amazons do exist but they are not males without beard as the Abbe Raynal pretends); 236 (beards are not sign of masculine vigor, they are simply bodily excrement, surplus humors).

¹⁹ Gomez de Vidaurre, Historia geográfica, 1:3.

²⁰ Velasco, Historia del Reino de Quito, 1:11-12.

²¹ Velasco, Historia del Reino de Quito, 1: 58, 73, 75, 89.

²² Puerto Sarmiento, Ciencia de cámara, 148-209.

²³ On Nueva Granada's Botanical Expedition, see Tras el dorado vegetal: José Celestino Mutis y la Real Expedición Botánica del Nuevo Reino de Granada (Sevilla, 1994), and Appel, Caldas a Scientist at Work.

²⁴ Pensamientos políticos y memoria sobre la población del Nuevo Reino de Granada, 6 (quote), 85-86 (on privileged geographical location), 43- 44(on indigo and tea,), 42(on cotton). On similar projects to outcompete Chinese tea using Bogota's 'tea', see Marcelo Frías Núñez, "El té de Bogotá: un intento de alternativa al té de China," in Nouveau Monde et renouveau de l'histoire naturelle, Marie-Cécile Bénassy, Jean-Pierre Clément, Francisco Pelayo, and Miguel Angel Puig-Samper eds., volume III (Paris: Presses de la Sorbonne Nouvelle, 1994), 201-219.

²⁵ "Estado de la geografia en el Virreino de Santa Fe de Bogotá con relacion a la economía y al comercio," (1808), in Francisco José de Caldas: Un peregrino de las ciencias, Jeanne Chenu ed. (Madrid: historia 16, 1992), 276. On Caldas' scientific career, see Appel, Caldas Scientist at Work.

²⁶ "Estado de la geografia en el virreinato," 276-77.

²⁷ "Influjo del clima sobre los seres organizados" (1808), Obras completas (Bogotá: Universidad Nacional de Colombia, 1966), 112 and "Ensayo sobre el estado de la geografía," in Caldas peregrino de las ciencias, 275 (my emphasis).

²⁸ "Geografía física del Perú," Mercurio Peruano, 4(1792): 21. Like Caldas Unanue thought that the Andes was a privileged laboratory to study the influence of climate on humans, Observaviones sobre

el clima de Lima y sus influencias en los seres organizados, en especial el hombre, in Los Ideologos, Hiopolito Unanue, Jorge Arias-Schreiber Pezet ed., volumes 7-8 of Coleccion Documental de la Independencia del Perú (Lima: Comision Nacional del Sesquicentenario de la Independencia, 1974) 8: 47 and 171

²⁹ "[Peru] es acaso el [país] más pingue en vegetales de toda la tierra", Unanue, "Introducción a la descripción científica de las plantas del Perú", Mercurio Peruano, 2(1791):85-6.

³⁰ "[D]esde [las] faldas a la eminencia [de los Andes] se substituyen por grados todos los climas del Universo," Observaciones sobre el clima de Lima, in Los Ideologos, 8:47.

³¹ "Geografía Física del Peru, ,11; see also Ibid, 16 (where the trope of Peru as a temple of God is explained in great detail. it faces north; its dome is the "Ecuador celeste", the mountains its columns, and the volcanoes its perpetual lamp)

³² "Disertación sobre el aspecto, cultivo, comercio y virtudes de la famosa planta del Perú nombrada Coca", Mercurio Peruano , 11(1794):241-245.

³³ "Carta apologética de la Quina o Cascarilla", Mercurio Peruano, 8(1793):162. For detailed analysis of Unanue's views, see Jorge Canizares Esguerra, "La Utopía de Hipólito Unanue: comercio, naturaleza, y religión en el Perú," in Saberes andinos: Ciencia y tecnología en Bolivia, Ecuador y Peru , Marcos Cueto ed. (Lima: Instituto de Estudios Peruanos, 1995)

³⁴ Andrew Wear, "Making sense of health and the environment in early modern England," Medicine in Society, Andrew Wear ed.

(Cambridge University Press, 1992), esp. 127-129 for nationalist overtones.

³⁵ Guenter B. Risse, "Medicine in New Spain," in Medicine in the New World: New Spain, New France, New England, Ronald Numbers ed. (Knoxville: The University of Tennessee Press, 1987), 12-63.

³⁶ Thus, for example, Alonso Lopez de Hinojosa a 'physic' in New Spain, recommended in 1578 the use of Amerindian herbal cures because the plants were "born in this land through the mercy of God." in Suma y Recopilacion de Cirugia (Mexico, 1578) quoted in Guenter B. Risse, "Medicine in New Spain," 48. In 1592 Agustín de Farfán turned to Amerindian remedies simply because: "I trust God will make the remedies wherever He will be." Tractado Breve de Medicina (Mexico, 1592), quoted in Ibid, 49. See also Paul Starr, The Social Transformation of American Medicine: The Rise of a Sovereign Profession and the Making of a Vast Industry (Basic Books, 1982), p.48-9.

³⁷ "Necesidad de la historia natural científica", Mercurio Peruano, 10(1794), 33-40.

³⁸ Ibid, 45-46.

³⁹ "Observaciones sobre el clima", Ideólogos, 8: 205.

⁴⁰ Pensamiento vivo de Andres Bello, ed. Germán Arciniegas (second edition, Buenos Aires: Losada, 1946), 43-61

⁴¹ "¡Oh jóvenes naciones...honrad el campo, honrad la simple vida/del labrador, y su frugal llaneza/Así tendrán en vos perpetuamente la libertad morada, y freno la ambición, y la ley

templo..." in "La agricultura de la zona torrida," Pensamiento vivo de Andres Bello, 61.

⁴² For analyses of the origins of Latin America's secular pattern of economic dependence, see Stanley J. Stein and Barbara H. Stein, The Colonial Heritage of Latin America: essays on Economic Dependence in Perspective (New York: Oxford University Press, 1970), and Fernando Henrique Cardoso and Enzo Faletto, Dependency and Development in Latin America (Berkeley: University of California Press, 1979).

⁴³ John Harley Warner, "Cultural Nationalism and Tropical Fevers: Models of Colonial Medicine in the American South, 1840-1860," in Mundialización de la ciencia y cultura nacional, 511-518 and "A Southern Medical Reform: The Meaning of the Antebellum Argument for Southern Medical Education," Bulletin of the History of Medicine 57 (1983), 364-81.

⁴⁴ Antonello Gerbi, La natura delle Indie nove: Da Cristoforo Colombo a Gonzalo Fernández de Oviedo (Milan: Riccardo Ricciardi Editore, 1975); Raquel Alvarez Peláez, La conquista de la naturaleza americana (Madrid: CSIC, 1993); Stephen Greenblatt, Marvelous Possessions: The Wonder of the New World (Chicago: The University of Chicago Press, 1991).

⁴⁵ Detlef Heikamp, Mexico and the Medici (Florence: Editrice Edam, 1972).

⁴⁶ "[Colección información sobre la] calidad de tierras, especificando la de cada pueblo, así como las curiosidades y extrañezas que puedan existir en ellos;" Cédula Real of 1533

addressed to Mexican audiencia and the governor of Guatemala (quoted in Raquel Alvarez Peláez, La conquista de la naturaleza americana, 165. "[Informenme de las] calidades y extrañezas de la tierras, puertos, ríos, montes y dehesas de animales," Letter of Charles V to Bishop of Tierra Firme in 1534 (quoted in Alvarez Pelaez, La conquista, 167); "[Colectar informacion sobre] los volcanes, grutas y todas las otras cosas notables y admirables en naturaleza que hubiese en la comarca.... [y describir] todas las demás cosas notables, en naturaleza y efectos, del suelo, aire y cielo, que en cualquiera parte hubiese y fueran dignas de ser sabidas" in "Memorias de las cosas que se han de responder y de que se han de hacer las relaciones [de Indias]" (1577 and second edition 1584, published as an appendix in Alvarez Pelaez La conquista de la naturaleza), questions 21 (p.603) and 49 (p.607).

⁴⁷ Octavio Paz has explicitly dissociated the Baroque quest for the curious from Creole nationalism: "Certain authors, deceived or bedazzled by the originality of Mexican colonial baroque creations...have interpreted them as the first fruit of an emerging national spirit. Although specifically Mexican themes... appear in the poems of this period, it would be questionable to claim that they are expressions of 'literary nationalism'. It was natural--the very aesthetic of the baroque demanded it--that cultivated poetry should assimilate native elements. Not for the sake of nationalism, however, but out of fidelity to the aesthetic of the strange, the unique, the exotic...[Sor Juana] was motivated not by nationalism but by its exact opposite, a universalist

aesthetic that delighted in recording picturesque details and in highlighting specificities." Sor Juana or the Traps of Faith (Cambridge Massachusetts: Harvard University Press, 1988), p. 57-58. This might well be the case in the seventeenth century but in the late eighteenth century the search for the curious did take on nationalistic overtones as I hope to prove in the following pages.

⁴⁸ "Sigue la descripción topográfica de México," [Nov. 17 and Dic.19, 1791], Gacetas the Literatura [1788-95], 2:296-309; 304 (quotation). On Alzate scientific patriotism, see José Luis Peset, Ciencia y libertad, primera parte.

⁴⁹ José Antonio de Alzate y Ramírez, Obras I.[Periódicos], Roberto Moreno ed., (México: Universidad Nacional Autónoma de México, 1980). 224-41,240 (quotation); and "Traducción de algunos artículos del extracto del caballero Born" (December 30, 1790) Gacetas de Literatura, 3 v. (Puebla, Mexico, 1831), 2:84-93. Alzate's defense of a 'national' science began only after he was passed over by peninsular authorities. In 1772 he thought that mining in Mexico could benefit from the new sciences of the Europeans; see Obras I [Periódicos], 98.

⁵⁰ His writings on botanical classification and his spirited defense of local Amerindians taxonomies have been collected by Roberto Moreno in Linneo en Mexico. See also Dorothy Tanck de Estrada, "Justas Florales de los botánicos ilustrados," Díálogos [México], 18(1982) 4:19-31.

⁵¹Linneo en Mexico, 4; see also his "Continua de la descripción topográfica de Mexico" [Octubre 4-18, 1791], Gacetas de literatura, 2:278. Other debates occurred in late colonial

Mexico between Creole and Spanish naturalists over the merits of indigenous and Creole knowledge. Antonio de Leon y Gama one of the most prominent astronomers and historians in late eighteenth-century Mexico fought a protracted intellectual battle against Antonio de Moreno and Alejo Ramón Sánchez, Spanish physicians, over the merits of Mexican lizards. The Mexican Creole presented Mexican lizards as a panacea for fevers, insisting that Indians had long been aware of its curative virtues; see: José Vicente García de la Vega, Discurso crítico que sobre el uso de las lagartijas, como específico contra muchas enfermedades (Mexico, 1782), Leon y Gama, Instrucción sobre el remedio de las lagartijas (México, 1782) and Respuesta satisfactoria a la carta apologética (México, 1783); and Manuel Moreno and Alexo Sánchez, Observaciones crítico-apologéticas sobre la respuesta satisfactoria de Antonio de León y Gama. (Mexico, 1783) and Carta Apologética de las reflexiones sobre el uso de las lagartijas (México, 1782).

⁵² "Descripción detallada de Nueva España con muchas noticias estadísticas e históricas por Antonio Pineda y Arcadio Pineda, Museo Naval de Madrid, MS 562, folio 154r. On the Malaspina expedition see, Virginia González Claverán, La Expedición Científica de Malaspina en Nueva España 1789-1794 (México: El Colegio de México, 1988); Iris Engstrand, Spanish Scientists in the New World: The Eighteenth Century Expeditions (Seattle: University of Washington Press, 1981); Andrés Galera Gómez, La Ilustración española y el conocimiento del Nuevo Mundo: Las ciencias naturales en la expedición Malaspina (1789-1794)

(Madrid: Consejo Superior de Investigaciones Científicas, 1988); Juan Pimentel Igea, Malaspina y la ilustración: Pensamiento político, utopía y realidad colonial en Alejandro Malaspina (Madrid, 1989).

⁵³ David Lindberg, "Greek and Roman Medicine," in The Beginnings of Western Science (The University of Chicago Press, 1992), 111-131; Nancy G. Siraisi. "Physiological and Anatomical Knowledge," in Medieval & Early Renaissance Medicine: An Introduction to Knowledge and Practice (University of Chicago, 1990), 78-114.

⁵⁴ quoted by John E. Wooddham, "The Influence of Hipolito Unanue on Peruvian Medical Science, 1789-1820: A Reappraisal." Hispanic American Historical Review 50(1970):713-14.

⁵⁵ Ibid, 714.

⁵⁶ Almanaque 1812, Obras completas, 13; I follow Appel's translation in Caldas Scientist at Work, 109.

⁵⁷ Caldas peregrino de las ciencias, 29; Arboleda, "Science and Nationalism in New Granada," 249-50

⁵⁸ quoted in Appel, Caldas Scientist at Work, 45.

⁵⁹ Appel draws attention to this aspect of Caldas' work but at the same time he dismisses Caldas' originality. Appel presents Alexander Humboldt as the "real" founder of biogeography; see Caldas Scientist at Work, 43, 53-59, 93-94. Given Humboldt's tendency to borrow heavily from Spanish American Creoles without openly acknowledging his intellectual debts, I am skeptical that the Prussian scientist was even aware of the phenomena prior to this arrival in the Indies where it most likely Creoles taught him to see. We now witness a booming historiographical industry

on Humboldt which, to be sure, pays more attention to his creative genius and less to his more morally dubious activity of collecting, commenting, and paraphrasing the works of Spanish American savants. On Humboldt's bio-geography, see for example Malcolm Nicolson, "Alexander von Humboldt and the geography of vegetation", Romanticism and the sciences, Andrew Cunningham and Nicholas Jardine eds. (Cambridge: Cambridge University Press, 1990), 169-85. The only scholar who, to my knowledge, has dared deflate Humboldt's image as cultural hero pointing out his rather dubious editorial practices is David Brading. According to Brading, Humboldt "engaged essentially in compiling and presenting the collective research and inquiries of an entire generation of Spanish officials and Creole savants;" see First America, 532.

⁶⁰ "If the astronomers of Europe have advantages over us due to their better collections of instruments and buildings [we have the] observatory of Santa Fe [that] is as good as any due to its privileged location in the globe." quoted by Jeanne Chenu in Caldas peregrino de las ciencias, 48.

⁶¹ I take the term "neo-Bourbon" from Frank Safford, The Ideal of the Practical: Colombia's Struggle to Form a Technical Elite (Austin: University of Texas Press, 1976). Although he deals only with the nineteenth-century Colombian elite's rationale for higher education reforms, Safford articulates a model that is applicable to cases like Chile. Like the neo-Bourbons described by Safford, Bello also favored higher education over public education on the grounds that society would reform more efficiently from above (higher education would stimulate

literacy of the masses by helping develop industries). On Bello's view of universities, see "Discurso pronunciado al instalarse la Universidad de Chile el 17 de septiembre de 1843," in El pensamieto vivo de Andrés Bello, selction and introduction by Germán Arciniegas (second edition, Buenos Aires: Editorial Lozada, 1946), 145-67, esp. 155-6.

⁶² "Discurseo al instalarse la universidad", 160.

⁶³ Ibid, 163.

⁶⁴ "El Araucano" (1832), in Pensamiento vivo, 75.

⁶⁵ Bello, "Speech Given on the Anniversary of the University of Chile(1848)," John C. Chasteen and Joseph S. Tulchin, Problems in Modern Latin American History: A Reader (Scholarly Resources, 1994), 181.

⁶⁶ Caldas "Ensayo sobre el estado de la geografía," Caldas peregrino de las ciencias, 295-96.

⁶⁷ Jeanne Chenu, "Introducción," Caldas peregrino de las ciencias, "Soñaba con ver grabado en una piedra del Seminario de Popayan el resultado de sus trabajos, el cálculo de la longitud, de la latitud, de la altura sobre el nivel del mar, la declinación magnética, la presión atmosférica, la temperatura, etc., para dar a cada individuo clara conciencia de su relación espacial con su país, y la posibilidad de situarse mentalmente respecto a sus vecinos". p. 47.