



## COLUMBUS AND COVID-19

### Amerindian Antecedents to the Global Pandemic

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#### Abstract

The eruption and spread of COVID-19 affords us the opportunity to look back and reflect on the role disease has played in shaping Indigenous destinies in the Americas. Discussion illuminates problems of data, chronology, impact, and identification in distinct settings — Hispaniola, Mexico, Guatemala, Ecuador, Peru, and Brazil — and situates regional findings, historically, in hemispheric and global context.

#### Key Words

Columbus – COVID-19 – Old World disease – Amerindian depopulation

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### Antecedentes Amerindios de la Pandemia Global

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#### Resumen

La erupción y difusión de la pandemia COVID-19 nos permite reflexionar sobre el papel de las enfermedades en la historia latinoamericana, sobre todo su impacto en las poblaciones amerindias después de la llegada de Colón y el inicio de la invasión europea. Nuestra discusión ilumina problemas con los datos pertinentes, su cronología y su identificación en distintos entornos: La Española, México, Guatemala, los Andes centrales del Ecuador y del Perú, y Brasil. Se sitúa la discusión, históricamente, en un contexto hemisférico y global.

#### Palabras Clave

Colón – COVID-19 – Enfermedades del Viejo Mundo – Despoblación amerindia

## Introduction

The arrival of Columbus on American shores marked not only the beginning of globalization but possibly the greatest destruction of human lives in history. COVID-19 will not mark the end of globalization, though some of its present arrangements have been altered as governments close borders and impose restrictions on the free movement of people, goods, and services. What the rampage of the virus clearly signals is the need for a better understanding of the key role disease has played in shaping past events and predicaments. Epidemiologically, the unforeseen consequences of Columbus bringing together the Old World and the New resonate with an impact made palpably pertinent since the outbreak of COVID-19. What are the parallels, what are the similarities and differences, between a fifteenth-century intrusion and a twenty-first-century eruption?

In Latin America, the colonial experiences of Indigenous peoples allow us to reflect on the catastrophic effects of contagion on land and life. Many factors besides disease must be examined in order to explain autochthonous depopulation, but foremost in comprehending its scale and rapidity are outbreaks of infection never known before, to which Amerindians were immunologically defenseless. Europeans fell sick and died from illness too, just as countless of those with whom they made contact perished by fire and sword or from trauma and exploitation, reasons connected more to ideology and the pursuit of empire than to genetics and germs. But Old World disease ranks of primary importance when grappling with New World demography, especially in the first century or so following initial contact. That period is crucial, for its temporal span is one in which epidemics that originated as 'visiting people' (Greek *epidemos*) from outside eventually became endemic, meaning that they stayed 'in people' (Greek *endemos*) as immunity was generated and advances made that tempered their repercussions – for most parts of Latin America at any rate.

Few contemporary observers, even those who noted its occurrence and disruptions, were aware of the magnitude and severity of the disease factor. It befell an American geographer, Carl O. Sauer (1935), to be among the first of modern scholars to draw attention to its significance. Along with three of his colleagues at the University of California at Berkeley – Woodrow Borah, Sherburne F. Cook, and Lesley B. Simpson – Sauer not only revolutionized the way we think about the size of pre-Columbian populations at European contact but also the ranking of causes

responsible for their dramatic decline<sup>2</sup>. All told, the findings of the 'Berkeley School' constitute what Thomas S. Kuhn considers a paradigm shift<sup>3</sup>, an alternate view of Latin American history and of what happened in that history. A collision that took place centuries ago reverberates still, in far-flung corners of the Amazon<sup>4</sup> and elsewhere.

Just as COVID-19 has affected, and afflicted, some countries or some regions within a country more than others, so too in colonial times did disease operate with notable spatial variation and long-term demographic fluctuation, east to west, south to north across the hemisphere. The extinction of Indigenous communities in the Island Caribbean contrasts sharply with Maya peoples to this day constituting roughly half of Guatemala's national population. Better, then, to look at regional scenarios before engaging continental and global evaluation. Examined, in turn, are contact and conquest dynamics in (1) Hispaniola, today Haiti and the Dominican Republic; (2) Mexico, its central heartland and its northern frontier; (3) Guatemala; (4) Ecuador and Peru; and (5) Brazil.

### **Hispaniola**

No scenario provokes such controversy, nor such disagreement about the size of aboriginal numbers at contact, as does Hispaniola. Its notoriety involves two eminent protagonists: first, the Admiral of the Ocean Sea himself, the Genoa-born Cristoforo Colombo, better known in the Hispanic world as Cristóbal Colón, who governed the island so adversely post-landfall that he was removed from office in chains; and second, Bartolomé de las Casas, who went to Hispaniola in 1502 as an active participant in its conquest, later mended his ways, and thereafter, as a man of the cloth and 'Defender of the Indians', denounced the deeds of fellow Spaniards and struggled relentlessly to improve the native lot.

Hispaniola's Arawak or Taino inhabitants were the first 'Indians' not only to be labelled as such but also the first whose island home was invaded and destroyed – and them along with it. The range of contact population estimates, given that commentators manipulate essentially the same documentary sources, is staggering –

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<sup>2</sup> Denevan, William M., "Carl Sauer and Native American Population Size", *The Geographical Review* 86, 1996, 385-97.

<sup>3</sup> Kuhn, Thomas S., *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago, 1962.

<sup>4</sup> Amigo, Ignacio, "For Brazil's Indigenous Communities, Pandemic Revives Memories of Earlier Plagues", *Science*, April 15, 2020; Hemming, John, *People of the Rainforest: The Villas Boas Brothers, Explorers, and Humanitarians of the Amazon*, C. Hurst & Company, London, 2019.

from a mere 60.000<sup>5</sup> to a weighty 8 million<sup>6</sup>, with myriad calculations in between, among them the 375.000 to 600.000 of Moya Pons<sup>7</sup>, the 500.000 of Córdova<sup>8</sup> and Lipschutz<sup>9</sup>, and the 1 million of Zambardino<sup>10</sup>. Sauer is shrewdly non-noncommittal, but makes reference to an “*off-repeated figure*” of 1,100,000, the number that Las Casas was told by Archbishop Deza of Seville as one that Columbus had mentioned to him in conversation<sup>11</sup>. Sceptical of the entire exercise, Henige maintains that “*it is futile to offer any numerical estimates at all on the basis of the evidence*”<sup>12</sup>, his dismissal at times instructive and insightful, if also ascerbic and scathing<sup>13</sup>. Others press on, re-evaluating extant sources for new, fresh insight and conjuring up alternative appraisals<sup>14</sup>. Whatever estimate one opts for, however, is but a prelude to erasure: by 1519, barely a quarter-century after Columbus came ashore, Hispaniola and its Antillean neighbours had been reduced to what Sauer describes as “*a sorry shell*”<sup>15</sup>. What could have caused such precipitous, irreversible depopulation?

Smallpox. Leaning on his medical training, Guerra had previously discounted malaria or yellow fever in favour of typhus or influenza (in the form of swine fever) as the likely agent of destruction<sup>16</sup>. However, scrutiny by Gil and Varela of a hitherto unknown report of Columbus establishes the presence of smallpox, which they date as having arrived in Hispaniola with a returning ill Taíno on the Admiral's second voyage

<sup>5</sup> Verlinden, Charles, *Le repartimiento de Rodrigo de Alburquerque à Española en 1514*, Rijksuniversiteit, Ghent, 1968.

<sup>6</sup> Cook, Sherburne F. and Woodrow Borah, *Essays in Population History*, 3 vols., University of California Press, Berkeley, 1971, 1974, 1979.

<sup>7</sup> Moya Pons, Frank, *La Española en el siglo XVI, 1493-1522*, Universidad Católica Madre y Maestra, Santo Domingo, 1971. Moya Pons, Frank, *Después de Colón: Trabajo, sociedad y política en la economía del oro*, Alianza Editorial, Madrid, 1987.

<sup>8</sup> Córdova, Efrén, “La encomienda y la desaparición de los indios en las Antillas Mayores”, *Caribbean Studies* 8: 23-49, 1968.

<sup>9</sup> Lipschutz, Alejandro, “La despoblación de los indios después de la conquista”, *América Indígena* 26: 229-47, 1966.

<sup>10</sup> Zambardino, Rudolph A., Critique of David Henige’s “On the Contact Population of Hispaniola: History as Higher Mathematics”, *Hispanic American Historical Review* 58, 700-08, 1978.

<sup>11</sup> Sauer, Carl O., *The Early Spanish Main*, University of California Press, Berkeley, 1966, 65-69.

<sup>12</sup> Henige, David, “On the Contact Population of Hispaniola: History as Higher Mathematics”, *Hispanic American Historical Review* 58: 217-37, 1978, 237.

<sup>13</sup> Henige, David, *Numbers from Nowhere: The American Indian Contact Population Debate*, University of Oklahoma Press, Norman, 1998; Lovell, W. George, Review of David Henige, *Numbers from Nowhere: The American Indian Contact Population Debate* (1998), in *Ethnohistory* 49: 468-70, 2002.

<sup>14</sup> Watts, D., *The West Indies: Patterns of Development, Culture, and Environmental Change since 1492*, Cambridge University Press, Cambridge, 1987; Cook, Noble David, “¿Una primera epidemia americana de viruela en 1493?”, *Revista de Indias* 63: 49-64, 2003; Livi Bacci, Massimo, “Return to Hispaniola: Reassessing a Demographic Catastrophe”, *Hispanic American Historical Review* 83, 1: 3-51, 2003; Moya Pons, Frank and Rosario Flores Paz (eds.), *Los taínos en 1492: El debate demográfico*, Editora Búho, Santo Domingo, 2013.

<sup>15</sup> Sauer, Carl O., *The Early Spanish Main*, 294.

<sup>16</sup> Guerra, Francisco, “La epidemia americana de influenza en 1493”, *Revista de Indias* 45: 325-47, 1985.

of 1493<sup>17</sup>. After smallpox struck, Spaniards wanted little more to do with the ruin it triggered and the devastation it left behind. Wealth lay on the mainland to the west, towards which sailed an armada led by Hernán Cortés.

### **Mexico: The Mesoamerican Core**

Spaniards under the command of Cortés landed on the Mexican coast at Veracruz on Good Friday, 1519. They immediately became aware that they had entered a world organized and settled very differently from the Caribbean islands they had been so anxious to leave. We know it today as Mesoamerica, a term coined by Paul Kirchoff to define a resource-rich region embraced by central and southern Mexico, Guatemala, Belize, El Salvador, the westernmost parts of Honduras and Nicaragua, and the Nicoya peninsula of Costa Rica<sup>18</sup>. At the time of the Cortés invasion, Mesoamerica was home to scores of cultures capable not only of meeting basic needs but also of attaining remarkable achievements in art and architecture, astronomy, mathematics and the measurement of time, plant domestication, environmental management, and the building of towns and cities.

The splendours of Mesoamerica were many, but none more spectacular than the Aztec capital of Tenochtitlán. There, on November 8, 1519, Cortés was welcomed as a guest, his manner watchful and inquisitive, his eyes taking stock. After their intent to seize power became apparent, he and his men were driven out, seeking safe haven in Tlaxcala, a nearby city whose people had sided with the Spaniards against their arch enemies, the Aztecs<sup>19</sup>.

A little more than a year passed before a Tlaxcalan-Spanish alliance forced the surrender of Tenochtitlán. Its fall on August 13, 1521, came about primarily because of the havoc unleashed by another outbreak of smallpox. Because the Aztecs, in the Mesoamerican tradition, had inherited a sophisticated system of writing, we have their testimony to draw on, one mournful text running:

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<sup>17</sup> Gil, Juan and Consuelo Varela (eds.), *Cristóbal Colón: Textos y documentos completos*, Alianza Editorial, Madrid, 1997.

<sup>18</sup> Kirchoff, Paul, "Mesoamérica", *Acta Americana* 1: 92-107, 1943.

<sup>19</sup> Restall, Matthew, *When Montezuma Met Cortés: The True Story of the Meeting that Changed History*, Ecco Press, New York, 2018.

"While the Spaniards were in Tlaxcala, a great plague broke out here in Tenochtitlán. It lasted for seventy days, striking everywhere in the city and killing a vast number of our people. We were covered with agonizing sores from head to foot. The illness was so dreadful that no one could walk or move. The sick were so utterly helpless that they could only lie on their beds like corpses. A great many died of this plague, and many others died of hunger. They could not get up to search for food, and everyone else was too sick to care for them, so they starved to death in their beds".<sup>20</sup>

How many may have perished, in Tenochtitlán and the rest of the Mexican heartland, depends on how many we think were alive to begin with. As with Hispaniola, the range of estimates is dizzying, from a low of 4.5 million<sup>21</sup> to a high of 25.2 million<sup>22</sup>. A middle ground of 12 million to 15 million, for all of Mesoamerica, is staked by Sanders and Price<sup>23</sup>, with Sanders reckoning 1 million to 1.2 million for the Basin of Mexico<sup>24</sup>. There, roughly one-quarter to one-third were residents of the "metropolitan area and satellite villages and towns" of Tenochtitlán, the island city proper (a sprawling twelve square kilometres) home to some 150,000 to 200,000 inhabitants. Also for the Basin of Mexico, Whitmore advances 1.59 million as a figure he believes conforms to the "moderate historical estimates" of Sanders<sup>25</sup>, championing an "all-Mexico total" of 16 million<sup>26</sup> based on a "scaling procedure" that extends his computer simulations for the Basin of Mexico farther afield. Like Whitmore, Zambardino concerns himself more with methodological procedure than source interpretation, offering a contact estimate of 5 million to 10 million for central Mexico, which for him "matches the evidence gathered and presented by Borah and Cook far more accurately than their estimate of 25 million"<sup>27</sup>. Following Sanders, Slicher van Bath lowers Borah and Cook's ratios to convert diverse socioeconomic categories into total population, shaving their count

<sup>20</sup> León-Portilla, Miguel (ed.), *The Broken Spears: The Aztec Account of the Conquest of Mexico*. Translated by Ángel María Garibay and Lysander Kemp, Beacon Press, Boston, [1962] 1992, 92-93.

<sup>21</sup> Rosenblat, Ángel, *La población indígena y el mestizaje en América*. 2 vols., Editorial Nova, Buenos Aires, 1954.

<sup>22</sup> Borah, Woodrow and Sherburne F. Cook, *The Aboriginal Population of Central Mexico on the Eve of the Spanish Conquest*, Ibero-Americana 45, University of California Press, Berkeley, 1963.

<sup>23</sup> Sanders, William T. and Barbara Price, *Mesoamerica: The Evolution of a Civilization*, Random House, New York, 1968.

<sup>24</sup> Sanders, William T., "The Population of the Central Mexican Symbiotic Region, the Basin of Mexico, and the Teotihuacán Valley in the Sixteenth Century." In *The Native Population of the Americas in 1492*, edited by William M. Denevan, 85-150, University of Wisconsin Press, Madison 1976, 149.

<sup>25</sup> Whitmore, Thomas M., "A Simulation of the Sixteenth-Century Population Collapse in the Basin of Mexico", *Annals of the Association of American Geographers* 81: 464-87, 1991, 477.

<sup>26</sup> *Ibid.*, 483.

<sup>27</sup> Zambardino, Rudolph A., "Mexico's Population in the Sixteenth Century: Demographic Anomaly or Mathematical Illusion?", *Journal of Interdisciplinary History* 11:1-27, 1980, 22.

by 15 percent to arrive at 21.4 million for central Mexico<sup>28</sup>.

That region is the spatial unit for which the estimates of Cook and Borah apply, native depopulation between 1518 and 1605, in millions, tallied in seven counts as follows<sup>29</sup>:

<b>1518:</b>	25.2
<b>1532:</b>	16.8
<b>1548:</b>	6.3
<b>1568:</b>	2.7
<b>1580:</b>	1.9
<b>1595:</b>	1.4
<b>1605:</b>	1.1

Zambardino argues that, from a mathematical standpoint, each of these estimates conceals a significant margin of error, having been calculated for an extensive area from data which, for the most part, are indirect, incomplete, and locally specific<sup>30</sup>, a criticism levelled also by Sanders<sup>31</sup>. Aware that debate is far from over, Cook and Borah contend that “*the Indian population of central Mexico, under the impact of factors unleashed by the coming of the Europeans, fell by 1620-1625 to a low of approximately 3 percent of its size at the time the Europeans first landed on the shores of Veracruz*”<sup>32</sup>. Demographic collapse in the century following conquest is attributed primarily to pandemic outbreaks.

Singling out the disease factor leads logically to a discussion of what ailments particular episodes might have featured, not at all easy to ascertain. A convergence of diagnoses that identifies the first bout of pestilence as smallpox – we even know the name of the black slave, Francisco de Eguía, said to have transferred infection from ship to shore in 1520 – does not apply to the second pandemic of 1531-32, nor most subsequent outbreaks between 1538 and the early seventeenth century. Prem

<sup>28</sup> Slicher van Bath, B. H., “The Calculation of the Population of New Spain”, *Boletín de Estudios Latinoamericanos y del Caribe* 24: 67-95, 1978.

<sup>29</sup> Cook, Sherburne F. and Woodrow Borah, *Essays in Population History*, 1971, viii.

<sup>30</sup> Zambardino, Rudolph A., “Mexico’s Population in the Sixteenth Century...”.

<sup>31</sup> Sanders, William T., “The Population of the Central Mexican Symbiotic Region...”.

<sup>32</sup> Cook, Sherburne F. and Woodrow Borah, *Essays in Population History*, 1979, 102.

addresses the issue assiduously<sup>33</sup>, his analysis of Indigenous health and welfare, like that of López Austin<sup>34</sup>, evaluating compelling Aztec testimony that augments better-known, though not always carefully consulted, Spanish texts. Prem dissects relevant sources with considerable caution before venturing an opinion as to what possible contagion matches the symptoms and characteristics recorded. Two of his conclusions are noteworthy: (1) that the manner in which a disease presently occurs may not correspond to how it was manifest in the past; and (2) that only the earliest outbreaks, few in number but especially virulent, involved one specific pathogen. The greater likelihood, Prem asserts, is that vulnerable native populations were exposed to what Borah calls “*compound epidemics*”<sup>35</sup>, a combination of two or even three maladies for which the “*virgin-soil*” conditions they penetrated proved lethal. Of particular note in Prem’s sequence of disease outbreaks is the incidence of measles and typhus at roughly thirty-year intervals. He also lobbies, as do Slicher van Bath<sup>36</sup> and Whitmore<sup>37</sup>, for depopulation having occurred in a series of abrupt, irregular drops rather than the smooth, gradual progression inferred in the work of Cook and Borah<sup>38</sup>.

### **Mexico: The Northern Frontier**

That part of Mexico lying beyond the northern perimeter of Mesoamerica, from the Pacific lowlands of Sonora and Sinaloa up through the canyon country of Chihuahua and on to the open plains cut by the Río Bravo or Grande, presented yet another landscape for Spaniards to contemplate. No *conouco* mounds here, those earthen, food-producing piles conspicuous on Hispaniola, nor manicured *chinampas*, the ‘floating gardens’ that Cortés and his followers marvelled at in the waters surrounding Tenochtitlán. Favourable pockets did exist, where intensive agriculture was practised and where towns and villages flourished, but the cultural whole, with some notable exceptions, lacked the political, social, and technological sophistication

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<sup>33</sup> Prem, Hanns J., “Disease Outbreaks in Central Mexico in the Sixteenth Century.” In “*Secret Judgments of God*”: *Old World Disease in Colonial Spanish America*, edited by Noble David Cook and W. George Lovell, 20-48, University of Oklahoma Press, Norman 1992.

<sup>34</sup> López Austin, Alfredo, *The Human Body and Ideology: Concepts of the Ancient Nahuas*. 2 vols. Translated by Thelma Ortiz de Montellano and Bernard Ortiz de Montellano, University of Utah Press, Salt Lake City, 1988.

<sup>35</sup> Borah, Woodrow, Introduction to “*Secret Judgments of God*”: *Old World Disease in Colonial Spanish America*, edited by Noble David Cook and W. George Lovell, 3-19, Norman, University of Oklahoma Press, 1992.

<sup>36</sup> Slicher van Bath, B. H., “The Calculation of the Population of New Spain...”.

<sup>37</sup> Whitmore, Thomas M., 1991. “A Simulation of the Sixteenth-Century Population...”.

<sup>38</sup> Cook, Sherburne F. and Woodrow Borah, *Essays in Population History*, 1971, 80-81.

found farther south. Population levels at contact, therefore, would not have been comparable to those of central Mexico, but even in this vast, daunting periphery, indications are that human numbers were still impressively large.

A fundamentally different view of the meaning of conquest, and advocacy of higher contact-period estimates of Indigenous populations than researchers had proffered before, begins in the 1930s with the pioneering work of Sauer, for it is in the regional setting of northwestern Mexico that prevailing scholarly notions about aboriginal culture and demography were challenged. In their study of Aztatlán, Sauer and Brand<sup>39</sup> combine perusal of documentary sources with field observation to assert that, at the time of Spanish intrusion, the area of the Pacific coast under examination supported roughly the same numbers as those living there in the early twentieth century, which in 1920 was 225,000. They caution that "*statements we present herewith are anything but conclusive*", instead intimating that "*certain discoveries*" be treated "*in terms of a tentative thesis*"<sup>40</sup>. Critical though the disease factor was, other explanations must be sought to account for native decline in Aztatlán: slave raids, looting, and wanton destruction are recorded as having been enacted "*by about as hard a gang of killers as Spain let loose anywhere in the New World*"<sup>41</sup>. Three years later, Sauer published another monograph in which the same analytical approach was applied to a much more extensive territory, resulting in a similar finding as at Aztatlán:

*"The record, as interpreted, gives an aboriginal population between Gila and Río Grande de Santiago in excess of half a million, almost three-fourths of the number now living in this part of Mexico. Bit by bit, the theme has obtruded itself that aboriginal rural populations and present ones are much the same. This, I believe, is not a sensational conclusion, but a quite natural one"*<sup>42</sup>.

What struck the mind of Sauer as "*quite natural*" was, in fact, "*a sensational conclusion*" for others not inclined to interpret the evidence as he did. Someone who must have found Sauer's proposition difficult to accept was another of his Berkeley colleagues, anthropologist Alfred L. Kroeber<sup>43</sup>, who had earlier estimated the contact

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<sup>39</sup> Sauer, Carl O. and Donald Brand, *Aztatlán: Prehistoric Mexican Frontier on the Pacific Coast*. Ibero-Americana 1, University of California Press, Berkeley, 1932.

<sup>40</sup> *Ibid.*, 3.

<sup>41</sup> *Ibid.*, 41.

<sup>42</sup> Sauer, Carl O., *Aboriginal Population of Northwestern Mexico*. Ibero-Americana 10, University of California Press, Berkeley, 1935, 32.

<sup>43</sup> Kroeber, Alfred L., "Native American Population", *American Anthropologist* 36: 1-35, 1934.

population of northwestern Mexico at 100,000, less than one-fifth the number calculated tribe by tribe, region by region, by Sauer.

Following Sauer, the work of Peter Gerhard reconstructs the situation in other parts along the northern frontier, in jurisdictions administered by Spain as Nueva Galicia and Alta y Baja California<sup>44</sup>. Findings for Nueva Galicia conform to those of central Mexico, with a sixteenth-century collapse, a seventeenth-century nadir, and an eighteenth-century recovery. Alta and Baja California, on the other hand, resemble a delayed variant of the Antilles, with aboriginal inhabitants dwindling to near extinction. Gerhard observes that “*whereas in central and southern Mexico the native population may have dropped by 95 percent in the sixteenth century, on the northern frontier the loss, while drastic, was less pronounced and, as might be expected, occurred later*”<sup>45</sup>. He takes pains to observe that “*native populations here sometimes were fatally infected before they came under Spanish control*”, a point made too by Daniel Reff, whose investigations traverse Sonora, Sinaloa, Durango, and Chihuahua in Mexico and over into Arizona, New Mexico, and Texas in the United States<sup>46</sup>.

Reff's cross-border analyses reconstruct the events surrounding sixteen disease episodes between 1530 and 1653. He divides his chronology into two periods that fall before and after the arrival of Jesuit missionaries in 1591. The coming of the ‘Black Robes’, with instructions to keep records and write annual reports, means that post-Jesuit outbreaks can be pieced together with greater attention to detail than pre-Jesuit occurrences. Unlike Dobyns<sup>47</sup>, Reff considers trade routes not to have been so heavily frequented as to facilitate diffusion into the region of the smallpox that caused so much destruction in central Mexico in the 1520s<sup>48</sup>. He does contend, however, that pestilence erupted on at least four occasions before Father Gonzalo de Tapia and Father Martín Pérez made their way to Villa San Felipe in 1591. This leads Reff to conclude that Jesuit missionaries “*found only vestiges of once populous and developed cultures*” and that the discrepancies between their accounts and those of early explorers can be attributed to “*significant disease-induced changes*” between

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<sup>44</sup> Gerhard, Peter, *The North Frontier of New Spain*, Princeton University Press, Princeton, 1982.

<sup>45</sup> *Ibid.*, 23-24.

<sup>46</sup> Reff, Daniel T., *Disease, Depopulation, and Culture Change in Northwestern New Spain, 1518-1764*, University of Utah Press, Salt Lake City, 1991.

<sup>47</sup> Dobyns, Henry F., *Their Number Become Thinned: Native American Population Dynamics in Eastern North America*, University of Tennessee Press, Knoxville, 1983.

<sup>48</sup> Reff, Daniel T., *Disease, Depopulation, and Culture Change...*, 102.

the time of penetration by the first contingent of Spaniards and the arrival on the scene of the second<sup>49</sup>.

Discussion of the demographic consequences of disease outbreaks complements without duplicating Gerhard's treatment of the matter. Reff estimates that "most native populations were reduced by 30 percent to over 50 percent prior to sustained contact with the Jesuits"<sup>50</sup>. Their missionization program, which gathered together in one fixed location formerly dispersed, mobile groups, resulted in the reduction of Christian converts "by upwards of 90 percent". Depopulation was the outcome of "a complex set of demographic factors, but particularly an exceedingly high infant mortality rate". While cognizant of the devastating impact of disease, Reff acknowledges (like Sauer and Brand) that certain objectives and policies promoted by the colonial regime accelerated the process of decline. Mining operations in Chihuahua and Durango forged "routes of contagion" south to north from about 1546 on, and missionization, by nucleating native families and thereby increasing the likelihood of greater mortality when disease broke out, in fact killed the very people whose souls it was supposed to save. The latter circumstance, not surprisingly, resulted in widespread mission abandonment and the terrifying correlation of sickness with outside, foreign presence.

A backlash was inevitable. Father Gonzalo de Tapia met his martyr's death – a severed head, a dismembered arm – after a group of stricken parishioners who believed that it was he who had infected their communities took revenge during the Jesuit's pastoral visit to Tovorapa on July 11, 1594. After setting the church on fire, they stuck Father Gonzalo's head on a pole and paraded it on a circuit of neighbouring settlements, possibly only spreading more sickness in their gory trek from town to town.

## Guatemala

Compared to Mexico, better documented by both Indigenous and Spanish sources, Guatemala is a more challenging terrain to scrutinize. Studies of the contact population vary from 300,000<sup>51</sup> to 2 million<sup>52</sup>. The latter estimate is a composite pieced

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<sup>49</sup> Ibid., 15

<sup>50</sup> Ibid., 16

<sup>51</sup> Solano, Francisco de, *Los mayas del siglo XVIII*, Ediciones Cultura Hispánica, Madrid, 1974.

<sup>52</sup> Lovell, W. George and William R. Swezey, "The Population of Southern Guatemala at Spanish Contact", *Canadian Journal of Anthropology*, 3, 1:71-84, 1982; Lovell, W. George and Christopher H. Lutz, with Wendy Kramer and

together from the tally of a dozen or so smaller territorial units, all meticulously examined, rather than a blanket calculation for the region as a whole.

Post-contact depopulation conforms to the trajectory for central Mexico, a collapse of 93.4 percent between 1520 and 1624-1628, during which time native reduction can be correlated with no fewer than eight pandemics<sup>53</sup>. It is not possible in most instances to determine what the bouts of sickness actually were, because ambiguous, contradictory, or inadequate descriptions defy accurate diagnosis. Such is the case with the first great outbreak, a disease recorded in a Maya text as having struck Guatemala between August 1519 and October 1520, four to five years before Spaniards led by Pedro de Alvarado themselves arrived<sup>54</sup>. In the memorable words of Murdo MacLeod, pathogens that mowed down susceptible populations were “the shock troops of the conquest”<sup>55</sup>, an example of what nowadays we would consider community transmission. The *Annals of the Cakchiquels* – like the Aztecs, Mayas knew how to write and so recorded their own history – grieves and laments:

*“It was in truth terrible, the number of dead among the people. The people could not in any way control the sickness. First they became ill [with] a cough. They suffered from nosebleeds and illness of the bladder. It was truly terrible the number of dead there were in that period. Little by little heavy shadows and black night enveloped our fathers and grandfathers and us also, oh, my sons!*

*Great was the stretch of the dead. After our fathers and grandfathers succumbed, half of the people fled to the fields. The dogs and the vultures devoured the bodies. The mortality was terrible. Your grandfathers died, and with them died the son of the king and his brothers and kinsmen. So it was that we became orphans, oh, my sons! So we became when we were young. We were born to die!”<sup>56</sup>*

While we must be grateful that a Kaqchikel scribe has left us with such a

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William R. Swezey, *“Strange Lands and Different Peoples”: Spaniards and Indians in Colonial Guatemala*, University of Oklahoma Press, Norman, 2013.

<sup>53</sup> Lovell, W. George, “‘Heavy Shadows and Black Night’: Disease and Depopulation in Colonial Spanish America”, *Annals of the Association of American Geographers*, 82, 3:426-43, 1992.

<sup>54</sup> Lovell, W. George, Christopher H. Lutz and Wendy Kramer, *Strike Fear in the Land: Pedro de Alvarado and the Conquest of Guatemala, 1520-1541*, University of Oklahoma Press, Norman, 2020.

<sup>55</sup> MacLeod, Murdo J., *Spanish Central America: A Socioeconomic History, 1520-1720*, University of California Press, Berkeley, 1973, 40.

<sup>56</sup> Recinos, Adrián and Delia Goetz (eds. and trans.), *The Annals of the Cakchiquels*, University of Oklahoma Press, Norman, 1953, 115-16.

poignant and graphic description, difficulties abound when it comes to identifying what disease or combination of diseases the extract might refer to. The balance of opinion favours smallpox, but not unanimously so. Alternative designations suggest influenza, measles, pulmonary plague, and exanthematic typhus. Commentators with a medical background are more inclined to opt for a diagnosis of measles than smallpox.

If identification is equivocal, not so is the grim reality described – high mortality, social disruption, fear and panic, a breakdown (as with COVID-19) of all semblance of normality. The source also distinguishes between a time (August 1519 to October 1520) when “*the plague raged*” and a period thereafter (October 1520 to March 1521) when “*the plague spread*”<sup>57</sup>. In terms of origin and chronology, where the sickness came from and when, Prem correlates it with the smallpox that devastated Mexico in 1520 and 1521<sup>58</sup>. This correlation, however, fails to account for notice of the disease showing up in 1519. The problem is resolved if the source of infection is sought in the Yucatán, where indications of smallpox date to 1517<sup>59</sup>. A halcyon, pre-European milieu is recorded in another Maya text, *The Book of Chilam Balam of Chumayel*:

*“There was then no sickness; they had then no aching bones; they had then no high fever; they had then no smallpox; they had then no burning chest; they had then no abdominal pains; they had then no consumption; they had then no headache. At that time the course of humanity was orderly. The foreigners made it otherwise when they arrived here. They brought shameful things when they came”*<sup>60</sup>.

The advance guard that cut down Maya peoples in Guatemala played a similar role in the campaign launched by Francisco Pizarro to conquer the Inca Empire.

### **Ecuador and Peru**

In terms of aboriginal accomplishments, comparisons are inevitably made between Mesoamerica and Tawantinsuyu, the latter the name bestowed by the Incas

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<sup>57</sup> Ibid., 115

<sup>58</sup> Prem, Hanns J., “Disease Outbreaks in Central Mexico...”, 26-27.

<sup>59</sup> Roys, Ralph L., *The Book of Chilam Balam of Chumayel*, Carnegie Institution, Washington D.C., 1933, 138; Clendinnen, Inga, *Ambivalent Conquests: Maya and Spaniard in Yucatan, 1517-1570*, Cambridge University Press, New York, 1987.

<sup>60</sup> Roys, Ralph L., *The Book of Chilam Balam of Chumayel*, 1933, 34.

on their Andean empire stretching from southern Colombia through Ecuador, Peru, and Bolivia to northern Chile and northwestern Argentina<sup>61</sup>. These two teeming realms were the ones that attracted Spaniards most, for their resources were varied and plentiful. Present-day scholarship exhibits the same bias, but not quite in equal measure. We tend to know more about Mesoamerican peoples than we do about their Andean counterparts because the Aztecs, Mayas, and neighbouring societies had developed a strong written tradition by the time of conquest, which enabled them to record their version of events as they were actually happening, or soon after subjugation. The Incas and their predecessors kept track by means of *quipus* or *kipus*, knotted-string cords previously thought to be devices that registered numerical or statistical data but whose narrative and phonetic qualities are now being championed and will reveal welcome insights into the Andean world<sup>62</sup>. Lack of full-fledged writing systems, however, means that much information about the Spanish invasion from an Indigenous perspective was never recorded, or was put down on paper many years after initial contact, with inevitable shortcomings. This is apparent when it comes to documenting the swath cut early on by disease, for few Andean texts exist to complement Spanish sources.

Available evidence, nonetheless, indicates that (as in Central America) sickness preceded the physical presence of Spaniards by several years, diffusing ahead of them to weaken Inca opposition. According to Newson<sup>63</sup>, an outbreak of what may have been hemorrhagic smallpox, whereby a strain of smallpox infects the blood, causing a rash on the skin similar to that produced by measles, hence the possibility of misidentification, had entered the Ecuadorian Andes by 1524. There it resulted in heavy mortality. Among its victims was the Inca ruler Huayna Capac, who was then in Quito to consolidate Inca power over northern territories recently brought to heel.

As well as Huayna Capac, the epidemic also claimed the life of his designated heir, Ninan Cuyuchi, igniting a divisive civil war between two of the Inca's sons, the

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<sup>61</sup> Murra, John, "Andean Societies before 1532". In *The Cambridge History of Latin America*, edited by Leslie Bethell, Cambridge University Press, Cambridge, vol. 1, 59-90, 1984.

<sup>62</sup> Urton, Gary, "From Knots to Narratives: Reconstructing the Art of Historical Record Keeping in the Andes from Spanish Transcriptions of Inka *Khipus*", *Ethnohistory* 45, 5: 409-38, 1998. Urton, Gary, *Inka History in Knots*, University of Texas Press, Austin, 2017; Salomon, Frank, *The Cord Keepers: Khipus and Cultural Life in a Peruvian Village*, Duke University Press, Durham, 2004; Hyland, Sabine, "Writing with Twisted Cords: The Inscriptive Capacity of Andean Khipus", *Current Anthropology*, 58: 412-419, 2017.

<sup>63</sup> Newson, Linda A., "Old World Epidemics in Early Colonial Ecuador". In *'Secret Judgments of God': Old World Disease in Colonial Spanish America*, edited by Noble David Cook and W. George Lovell, University of Oklahoma Press, Norman, 89, 84-112, 1992.

half-brothers Atahualpa and Huascar, rival contenders for their father's throne<sup>64</sup>. By the time Pizarro followed up his coastal reconnaissance of the 1520s with an inland foray in the 1530s, relying for his advance (as Cortés had done in Mexico) on native cooperation, the chaos caused by severe sickness facilitated Spanish victory. Like Aztec Tenochtitlán, the Inca capital Cuzco was taken as much because of contagion as by the might of Pizarro, a fact the Spaniards acknowledged<sup>65</sup>.

If the disease that paved the way for Spanish victory indeed was smallpox, how did it reach the Andes? Passage from Central America is the most likely trajectory, given the importance of Panama as the point of departure for expeditions of discovery and conquest. Borah, however, suggests the Río de la Plata basin, pointing out that outbreaks of sickness are recorded as having occurred from south to north<sup>66</sup>. Newson mediates by contending that Inca troops stationed in Tumbes may have fallen ill and carried smallpox south to Cuzco, from where it radiated back towards its source of origin<sup>67</sup>. She also argues that the Incas could have been exposed to other diseases before the arrival of Pizarro, possibly measles or plague, emanating from Central America.

Andean epidemic history has been studied by Polo<sup>68</sup>, Lastres<sup>69</sup>, Dobyns<sup>70</sup>, N. D. Cook<sup>71</sup>, Alchon<sup>72</sup>, and Newson<sup>73</sup>. Their contributions document, after the first outbreak of smallpox, more than twenty episodes of chronic sickness having occurred between 1530 and 1635, the cumulative impact of which was to decrease native numbers by the early seventeenth century to a fraction their size at contact. Newson records eighteen epidemics in Ecuador alone between 1531-1533 and 1618<sup>74</sup>. She estimates the contact population to have been 1.6 million, about half of which lived in the sierra region, one-third on the coast, and the remainder (15 percent) in the Amazonian

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<sup>64</sup> Hemming, John, *The Conquest of the Incas*, Abacus Sphere Books, London, 28-29, [1970] 1972.

<sup>65</sup> Wright, Ronald, *Stolen Continents: The Americas through Indian Eyes since 1492*, Houghton Mifflin Company, Boston, 72-75, 1992.

<sup>66</sup> Borah, Woodrow, Introduction to *"Secret Judgements of God": Old World Disease in Colonial Spanish America*, 15.

<sup>67</sup> Newson, Linda A., "Old World Epidemics in Early Colonial Ecuador", 91.

<sup>68</sup> Polo, J. T., "Apuntes sobre las epidemias del Perú," *Revista Histórica* 5: 50-109, 1913.

<sup>69</sup> Lastres, Juan. B., *Historia de la medicina peruana*, 3 vols., Universidad de San Marcos, Lima, 1951.

<sup>70</sup> Dobyns, Henry F., "An Outline of Andean Epidemic History to 1720", *Bulletin of the History of Medicine*, 37: 493-515, 1963.

<sup>71</sup> Cook, Noble David, *Demographic Collapse: Indian Peru, 1520-1620*, Cambridge University Press, Cambridge, 1981.

<sup>72</sup> Alchon, Suzanne A., *Native Society and Disease in Early Colonial Ecuador*, Cambridge University Press, Cambridge, 1991.

<sup>73</sup> Newson, Linda A., *Life and Death in Early Colonial Ecuador*, University of Oklahoma Press, Norman, 1995.

<sup>74</sup> Newson, Linda A., "Old World Epidemics in Early Colonial Ecuador", 111, 1992.

lowlands east of the Andes. The native population of the sierra dropped from 838.600 to 164.529 during the sixteenth century, a fall of 80.4 percent. Newson computes a decline of 95.3 percent for the coast, from between 546.828 and 571.828 to 26.491<sup>75</sup>. As with the etiology of COVID-19, her findings, like those of Cook<sup>76</sup>, stress regional differences as well as variations within a region, reflecting cultural and environmental conditions that are area-specific or place-specific, factors not taken into enough consideration before.

The seminal work of N. D. Cook warrants close attention<sup>77</sup>. He deploys six different methods to estimate what the contact population of "Indian Peru" may have been. An ecological model based on "carrying capacity" produces a figure of 13.3 million. Archaeological data, reflecting the less-developed state of the field compared to Mexico, Cook considers too deficient for any kind of calculation beyond those that are site-specific – and even those, he notes, should be treated cautiously: excavations at Chan Chan, for instance, yield estimates of a range of occupants from 25.000 to 200.000. Depopulation ratio models, which Cook believes to be unreliable because of problems of statistical sampling<sup>78</sup>, produce a wide range of estimates: Rowe calculates 6 million<sup>79</sup>, Wachtel 10 million<sup>80</sup>, Smith 12 million<sup>81</sup>, and Dobyns 37.5 million<sup>82</sup>, all of which encompass the central Andes (Ecuador, Peru, Bolivia). Models pertaining to political and social structure<sup>83</sup>, an "idealized concept" with "little basis in fact", furnish a range of 16 million to 32 million. Census projection models, described by Cook as "one of the most promising avenues of approach"<sup>84</sup>, give a minimum estimate of 3.9 million and a maximum of 14.2 million, upper and lower limits he asserts "to be valid". His enthusiasm for this procedure, however, does not extend to Shea<sup>85</sup>, whose estimate of 2 million to

<sup>75</sup> Newson, Linda A., *Life and Death in Early Colonial Ecuador*, 338-40, 1995.

<sup>76</sup> Cook, Noble David, *Demographic Collapse: Indian Peru, 1520-1620*, Cambridge University Press, Cambridge, 1981.

<sup>77</sup> *Ibid.*

<sup>78</sup> *Ibid.*, 109.

<sup>79</sup> Rowe, John H. 1946, "Inca Culture at the Time of the Spanish Conquest". In *Handbook of South American Indians*, edited by Julian H. Steward, Bureau of American Ethnology, Washington, vol. 2, 183-330, 1946.

<sup>80</sup> Wachtel, Nathan, *Vision of the Vanquished: The Spanish Conquest of Peru through Indian Eyes, 1530-1570*. Translated by Ben and Siân Reynolds, Sussex: Harvester Press, Sussex, 1977.

<sup>81</sup> Smith, Clifford T., "Depopulation of the Central Andes in the Sixteenth Century", *Current Anthropology*, 11: 453-64, 1970.

<sup>82</sup> Dobyns, Henry F., "Estimating Aboriginal American Populations: An Appraisal of Techniques with a New Hemispheric Estimate", *Current Anthropology*, 7: 395-449, 1966.

<sup>83</sup> Means, Philip A., *Ancient Civilizations of the Andes*, Charles Scribner's Sons, New York, 1931; Means, Philip A., *Fall of the Inca Empire and Spanish Rule in Peru, 1530-1720*, Charles Scribner's Sons, New York, 1932.

<sup>84</sup> Cook, Noble David, *Demographic Collapse: Indian Peru*, 109-10, 1981.

<sup>85</sup> Shea, Daniel E., "A Defense of Small Population Estimates for the Central Andes in 1520". In *The Native Population of the Americas in 1492*, edited by William M. Denevan, University of Wisconsin Press, Madison, 157-80, 1976.

2.9 million he rejects on the grounds of insufficient data and the erroneous supposition "that the rate of decline prior to 1581 paralleled the rate following that date"<sup>86</sup>.

Methodologically, perhaps the most novel of Cook's six procedures is his deployment of disease mortality models, whereby death rates known to have occurred during certain epidemics are applied, with appropriate modification, outbreak by outbreak to the disease chronology established for Peru. Working from a "calculated base" of 671.505 in 1620, Cook reckons the "maximal population" a century before at 3.243.985. His calculations are episode-specific: 30 to 50 percent mortality during the first outbreak of smallpox; 25 to 30 percent mortality when smallpox and measles appear jointly, as they did in the murderous epidemic of 1585 to 1591, along with mumps, influenza and typhus. The model overlooks key variables – differential mortality, age-specific mortality, physiological adaptation – but offers reasonable ground for estimation, provided (of course) that diagnoses have been made with some degree of confidence.

Cook then steps back from the preponderance of numbers to propose a figure of 9 million for the population of Peru on the eve of Spanish conquest<sup>87</sup>, a figure that straddles a range of estimates from 4 million to 15 million. "Although [a] choice of 9 million may appear to be arbitrary", he muses, "it is made after careful weighing of the evidence, rather than being purely an act of faith". For the Inca Empire as a whole, Roberts reports Cook as favouring a contact estimate of 14 million<sup>88</sup>, which means he reckons that some 5 million lived under Inca rule in Colombia, Ecuador, Bolivia, Argentina, and Chile. A century later the heirs of the Incas in Peru are thought to have numbered 600.000. An overall decline of 93 percent "almost completely wiped out" those living along the Pacific coast, as was also the case in Ecuador, leaving the high Andes the redoubt of Indigenous survival in both countries.

### **Brazil**

Pedro Álvares Cabral is the Portuguese equivalent of Columbus. Allegedly, the fleet he captained was blown off course as it sailed from Lisbon to round the Cape of Good Hope, at the southern tip of Africa, en route to India. Landfall on the coast of

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<sup>86</sup> Cook, Noble David, *Demographic Collapse: Indian Peru*, 95, 1981.

<sup>87</sup> Cook, Noble David, *Demographic Collapse: Indian Peru*, 113-14, 1981.

<sup>88</sup> Roberts, Leslie, "Disease and Death in the New World", *Science* 246: 1245-47, 1989.

Brazil on April 22, 1500, inadvertent or otherwise, thereafter meant that Portugal would penetrate South America from an Atlantic seaboard while Spain moved into the heart of the continent from the opposite direction, that of the Pacific. The two imperial powers disputed territorial ownership even before either had any sense of the enormity of the Amazon interior, which the Portuguese laid claim to in forays from the east despite a Spaniard, Francisco de Orellana, being the first to navigate the mighty river downstream from the west in 1542.

Prior to the European invasion, as many as 8 million to 10 million people may have inhabited Greater Amazonia, a figure some scholars would reduce by half or more<sup>89</sup>. The nature of Indigenous societies and their response to foreign sorties was a decisive factor in determining survival. Sedentary populations under Spanish domination adapted to the advent of strangers by having epidemics that accompanied or arrived ahead of them become endemic, meaning that introduced infections (the lethal likes of smallpox and measles but also mumps, typhus, influenza, and whooping cough) over time became part of the Amerindian disease pool, affording the benefits of some kind of immunity. This was not the case in Portuguese domains, where less sedentary groups fled assault and enslavement for the refuge of the forest. There, in remote reaches of what would eventually be Brazil, native communities were sheltered from sickness until the frontier of European expansion caught up with them. In 2020, the remaining relatives of entire peoples wiped out in the sixteenth through twentieth centuries – today fewer than 1 million of Brazil's population of 210 million is Indigenous – are faced with the same threat from COVID-19 as their ancestors were in 1500.

### **Continental and Global Perspectives**

Hemispheric estimates of Amerindian numbers at European contact, not surprisingly, are as disparate as the sub-continental components alluded to above.

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<sup>89</sup> Denevan (Denevan, William M., "Estimating Amazonian Indian Numbers in 1492", *Journal of Latin American Geography*, 13, 2: 207-221, 215, 2014) advances the estimate of 8 million to 10 million. Newson (Newson, Linda A., "The Population of the Amazon Basin in 1492: A View from the Ecuadorian Headwaters", *Transactions of the Institute of British Geographers*, New Series 21: 5-26, 1996) favours 5.46 million, Hemming (Hemming, John, *Red Gold: The Conquest of the Brazilian Indians, 1500-1760*, Macmillan, London, 1995) 3.24 million, and Meggers (Meggers, Betty J., "Prehistoric Population Density in the Amazon Basin", *Disease and Demography in the Americas*, edited by John W. Verano and Douglas H. Ubelaker, Smithsonian Institution, Washington, D. C., 197-205, 1992) 1.5 million to 2 million.

Borah champions upwards of 100 million<sup>90</sup>, an estimate that echoes the 90 million to 113 million of Dobyns<sup>91</sup>, both in stark contrast to the 8.4 million of Kroeber<sup>92</sup>, the 13.4 million of Rosenblat<sup>93</sup>, and the 15.5 million of Steward<sup>94</sup>. Perhaps the most judicious assessment to date has been made by Denevan<sup>95</sup>, who considers his estimate of 53.9 million “conservative” (personal communication). Koch, Brierley, Maslin, and Lewis propose 60.5 million, mid-way between their range of 44.8 million to 78.2 million<sup>96</sup>. The great French scholar Pierre Chaunu believed that an Amerindian population that constituted 20 percent of all humankind in 1490 within a century had been levelled to 3 percent<sup>97</sup>.

We will never know how many Native Americans died in the aftermath of Columbus, but fatalities of 55 million to 60 million or more cannot be ruled out<sup>98</sup>. While the turmoil of war and post-conquest exploitation abhorrent in the extreme took an immense toll, disease outbreaks are the most plausible explanation for the extent and severity of Indigenous demise. In terms of historical parallels, the Black Death (bubonic plague) that stalked Europe between 1346 and 1353 is reckoned to have killed an estimated 50 million<sup>99</sup>, the Spanish Flu (H1N1 virus) between August 1918 and March 1919 upwards of 25 million<sup>100</sup>. World War I eliminated an estimated 40 million, World War II an estimated 60 million<sup>101</sup>.

COVID-19 caught the world off-guard, and we are paying a high price for our negligence and complacency. Its speed of diffusion, literally, is breathtaking. That an

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<sup>90</sup> Borah, Woodrow, “Renaissance Europe and the Population of America”, *Revista de Historia*, 105: 47-61, 1976.

<sup>91</sup> Dobyns, Henry F., “Estimating Aboriginal American Populations...”, 1966.

<sup>92</sup> Kroeber, Alfred L., *Cultural and Natural Areas of Native North America*, University of California Publications in American Archaeology and Ethnology, University of California Press, Berkeley, 38, 1939.

<sup>93</sup> Rosenblat, Ángel, *La población indígena y el mestizaje en América*, 2 vols., Editorial Nova, Buenos Aires, 1954.

<sup>94</sup> Steward, Julian H., “The Native Population of South America”, *Handbook of South American Indians*, Bureau of Indian Ethnology, Washington, vol. 5: 655-68, 1949.

<sup>95</sup> Denevan, William M., ed., *The Native Population of the Americas in 1492*, Second Edition, University of Wisconsin Press, Madison, [1976] 1992.

<sup>96</sup> Koch, Alexander, Chris Brierley, Mark M. Maslin, and Simon L. Lewis, “Earth System Impacts of the European Arrival and Great Dying in the Americas after 1492”, *Quaternary Science Reviews*, 207: 13-36, 2019.

<sup>97</sup> Chaunu, Pierre, *Conquête et Exploitation des Nouveaux Mondes (XVI Siècle)*, Presses Universitaires de France, Paris, 1969.

<sup>98</sup> Denevan (personal communication, 10 April 2020) concurs. So too do Koch et al. (Koch, Alexander, Chris Brierley, Mark M. Maslin, and Simon L. Lewis, “Earth System Impacts...”, 2019), whose “great dying” estimate of 54.5 million is the mid-point between a low of 39 million and a high of 72.4 million.

<sup>99</sup> Benedictow, Ole J., *The Black Death, 1346-1353: The Complete History*, The Boydell Press, Woodbridge, Suffolk, 2004.

<sup>100</sup> Crosby, Alfred W., *America's Forgotten Pandemic: The Influenza of 1918*, Cambridge University Press, Cambridge, 1989.

<sup>101</sup> (Internet Archive n. d.)

outbreak of disease could cause such calamity, and so endanger the human condition, after we have deluded ourselves for so long that *Homo sapiens* controls all, shakes us to our foundations. The incredulity of Las Casas, contemplating the destruction of the Indies in the early sixteenth century, resembles ours, half a millennium on. “Who, among those born in the centuries to come”, the bishop asked, “will believe this?” He then allowed himself: “Even to me, who is writing it down, who saw it, and who knows most of it, it now seems to me that it was not possible”<sup>102</sup>.

We are much better placed to survive now than we were in 1492. Our improved knowledge of the scourge of disease, how it flares up and spreads, how best to combat it, will see us prevail. Ironically, though, just as divine ruling was thought to be the cause back then – “secret judgments of God”<sup>103</sup>, according to one cleric in 1582 – so throughout Latin America the call to heaven above is still voiced for solace if not salvation: Easter Sunday 2020 was celebrated by prayers to Our Lady of Guadalupe, asking her for health and intervention to end to the pandemic<sup>104</sup>. The ravages of COVID-19 are of alarming concern, increasingly so as the pandemic racks Latin America and its most vulnerable, Indigenous peoples among them. With applied medical advances and humanitarian efforts, however, after the disease has run its course it is unlikely that mortality related to it will approximate that of the Amerindian holocaust of five centuries ago.

### **Acknowledgments**

*Grappling with the issues raised here has been formative ever since my years as a graduate student at the University of Alberta in the 1970s. Postdoctoral trajectories in the 1980s saw me expand my spatial interest in the subject beyond Mexico and Guatemala, including a research foray to Brazil. Residency as a visiting scholar at the University of California at Berkeley (UCB) during fall term 1985*

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<sup>102</sup> Las Casas, Bartolomé de, *Obras escogidas de Fray Bartolomé de las Casas*, Ediciones Atlas, Madrid, vol. 2: 106, 1957-61.

<sup>103</sup> Writing to the Council of the Indies on November 5, 1582 – see Lovell, W. George. [1992], “Disease and Depopulation in Early Colonial Guatemala”, in *“Secret Judgments of God”: Old World Disease in Colonial Spanish America*, edited by Noble David Cook and W. George Lovell, University of Oklahoma Press, Norman, 49-83, 75-78, 2001 for elaboration and archival provenance – the Dean of the Cathedral of Guatemala, Pedro de Liévano, reflected: “What causes the Indians to die and to diminish in number are secret judgments of God beyond the reach of man. But what this witness has observed during the time he has spent in these parts is that from the province of Mexico have come three or four pestilences, on account of which the country has been greatly depopulated.”

<sup>104</sup> Ironically, too, because of fears that COVID-19 would be spread by their continuing to be undertaken, Roberts (2020) reports that mass vaccination drives against a host of diseases, including cholera, measles, meningitis, polio, and yellow fever, have been suspended in many countries alas still plagued by them. “A devil’s choice” is how Seth Berkley, the head of Vaccine Alliance, a global health organization, deemed the dilemma.

was a pivotal experience. There, where the great Carl Sauer (1889-1975) shook things up after his arrival in 1923, I benefited from association with three of his distinguished Berkeley colleagues – Woodrow Borah (1912-1999), James J. Parsons (1915-1997), and John H. Rowe (1918-2004). I also profited from sitting in on a seminar on historical demography offered by Massimo Livi Bacci, himself then also at UCB as a visiting scholar. An invitation to participate in a conference at the Newberry Library in Chicago, organized by the inimitable Henry F. Dobyns (1925-2009), allowed me not only to interact with a pioneer in the field but also to strike a partnership with Noble David Cook, with whom I have co-edited two books dealing with the ravages of Old World disease on Indigenous peoples in colonial Spanish America (Cook and Lovell [1992] 2001; Cook and Lovell 2000). My research has been funded over the years by several agencies, sustained most of all by the financial assistance of the Killam Program of the Canada Council and the Social Sciences and Humanities Research Council of Canada. Teaching for forty years at Queen's University in Canada, and for a quarter-century in Spain either at the Universidad Internacional de Andalucía in La Rábida or the Universidad Pablo de Olavide (UPO) in Seville, have been immensely rewarding. Affiliation with both institutions has enabled me to distil research findings into the courses I teach, at undergraduate and graduate level, to generations of students, from whom I learn immensely.

"Columbus and COVID-19" had a previous iteration, long before the global pandemic was ever imagined, as "Heavy Shadows and Black Night," a piece solicited by Karl W. Butzer (1934-2016) for an edition of the *Annals of the Association of American Geographers* (1992) to mark the Columbus quincentenary. Its enhanced present form I owe to the prodding of my UPO colleagues, Juan Marchena Fernández and Tristan Platt, and the critical eye of William M. Denevan. The equally critical eye and copy-editing prowess of Maureen McCallum Garvie run throughout. To those four, and a litany of unnamed but much-appreciated others, I extend my most grateful thanks.

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