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Disease and Demography in the Americas: The Subject as Seen through the Book

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ABSTRACT: The impact of European contact on Native American health and demography is now perhaps a more popular subject than ever before. An examination of the recent compilation, *Disease and Demography in the Americas*, reveals some of the shortcomings of research in this field, including ineffective borrowing of methodology and data. In the study of Native American health and depopulation, an excessive emphasis on being scientific — in particular on quantification and narrowly defined research problems — is reflected in a disregard for the larger sociopolitical and historical contexts of the phenomena under consideration, and of the research itself. This disregard both compromises and impoverishes the study of contact in the Americas.

Many of us sighed quietly in relief as 1992 drew to a close, concluding a relentless stream of quincentenary events marking the anniversary of of Christopher Columbus and company's arrival in the New World. However, as repetitive and unexceptional as these events sometimes seemed, they were not insignificant, and may have far reaching consequences — not unlike the first few Spanish sneezes on Hispaniola. As Chomsky points out, the trend was notable for its demonstration of a recent change in tune regarding the Columbian experience.

> Had the quincentennial of the Old World Order fallen in 1962, it would have been celebrated once again as the liberation of the hemisphere. In 1992, that was impossible, just as few can blandly talk of our task of "felling trees and Indians". The European invasion is now officially an "encounter", though large sectors of the population reject that euphemism as only somewhat less offensive. (Chomsky 1993:288)

The quincentenary of the "encounter" in question was thus an occasion for few celebrations, and many expressions of sorrow and mourning. These political dimensions will be discussed shortly; for the time being, however, let us focus on the realm of academia, for in addition to the rallies, there were abundant scholarly symposia on the phenomena of intercontinental contact. Many volumes were produced on the subject, including *Disease and Demography in the Americas*, edited by Verano and Ubelaker, based on a symposium in the 1989 'Seeds of Change'

conference series, which was hosted by the U.S. National Museum of Natural History to commemorate the anniversary of Columbus' landing. The volume can be regarded as representing the 'state of the art' in studies on New World contact-period disease and demography, and thus serves as a convenient basis for a commentary on the field as a whole. I will first include a brief overview of the contents of the book to provide an indication of the types of research currently being undertaken in this field, and then, using examples from this book, I will discuss what I perceive to be some major problems in the way contact-period disease and demography are studied today.

The first section of *Disease and Demography in the Americas*, "Disease Before and After Contact", contains Ortner's useful introductory chapter on the potential and limitations of palaeopathology, eleven chapters on prehistoric disease and demography in various regions (the Andes, Florida, the Southwest, Ontario Iroquoia, the Maritimes, etc.), pre-Columbian treponematosis, the reconstruction of diet through isotopic analysis of bone, and finally, a section summary by Arthur Aufderheide. Part Two, "Population Size Before and After Contact", contains Ubelaker's introduction to the debates and history of population estimation attempts, ten chapters on subjects including population decline at contact in various regions (the Northeast, the Southwest, the Andes, the Northwest coast, *etc.*), Native American trading centres as propagators of disease, yellow fever as a determinant of ethnic composition of Caribbean populations, the 1832 Missouri River inoculation program, and a section summary by Alfred Crosby. Most of the prominent researchers in the field contributed to the volume, and as the editors make explicit, the essays were chosen not because of their collective cohesion, but because they represented a diverse range of perspectives and opinions.

However, fascinating research projects, distinguished contributors, and appreciable diversity aside, I must express some reservations about *Disease and Demography in the Americas*, which stem primarily from my discomfort with the larger field of contact studies which this volume represents. These reservations concern some fairly practical matters, such as insufficiently interdisciplinary approaches, and more theoretical matters, regarding the philosophical orientations of the researchers involved.

To begin with, I am distressed at the shortage of truly collaborative and interdisciplinary initiatives in *Disease and Demography in the Americas*, which had the explicit aim of bringing together researchers from different disciplines — especially palaeopathologists and historical demographers, who traditionally "do not communicate well with each other", and tend toward diametrically opposed opinions (Verano and Ubelaker, pg.1).[1] Though here, at least, the work of these

1 This is due at least in part to differing conceptions of prehistoric Native American society and health — palaeopathologists have long been aware of the considerable disease load of some prehistoric populations, while historians have often characterized the precontact Americas as pristine and almost

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different specialists has been published together in one volume, it seems to me that this is largely more of the same. Too often, the authors in *Disease and Demography in the Americas* comment on the necessity of interdisciplinary approaches, but then assiduously avoid them.

Arguably much worse than this, however, is an emerging tendency in contact studies towards borrowing tools and data from other disciplines without adequate knowledge of their appropriate uses and their shortcomings. Examples of this in *Disease and Demography in the Americas* abound — moreover, methodology and databases aside, on several occasions, an author's apparent lack of relevant knowledge, or incomplete understanding of crucial material was noticeable. For example, those who suffered greatly from malaria in 18th and 19th century Ontario would be rather surprised to learn of Snow's assertion that "Malaria is not carried by the mosquitos of northeastern North America" (Ch.16:179). Indeed, though malaria is not endemic in Ontario now, there are at least three species of *Anopheles* mosquito in the area which are capable of carrying the disease (Roland 1984:160). Furthermore, malaria was a well-established and serious problem in Mexico by 1580 (Friedlander 1977:118), and so, it seems overly confident to dismiss without discussion the possibility that it could have been present in North America in the 1630s, as Snow does. Another inaccuracy can be found in Snow's reference to scarlet fever; while scarlet fever is a streptococcal infection, not all streptococcal infections are scarlet fever, as Snow seems to suggest (Ch.16:179). In general, however, most of the problems with this volume are due more to some authors' vague understanding of the realities of disease and epidemics than to actual errors in fact. For example, Cook's comment that "The Native American possessed virtually no natural immunity to several important disease strains" (Ch.19:207), suggests a muddled understanding of the nature of immunity to infection.

Returning now from inaccuracies to the problem of borrowed methodology in *Disease and Demography in the Americas*: I felt that the attempts at deterministic epidemic modelling by Snow (Ch.16) and Thornton *et al.* (Ch.17) were not as sophisticated or informed as they might have been. First of all, though deterministic models of epidemics have their value, especially in first 'rough' attempts at modelling (Bailey 1975), they have been twice superseded, by stochastic and chaotic models; these can more closely model reality by taking into account random variation, which is critical in modelling relatively small populations such as the ones under consideration (King and Solskone 1988; Schaffer *et al.* 1990). Second, the data used by Snow as the basis for rates of infection and mortality in his simulation are not necessarily appropriate — true, they are from recorded smallpox epidemics, but the mortality rate for any epidemic is affected by much

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disease-free (Milner Ch.9; Saunders, Ramsden, and Herring Ch.10). These different conceptions of precontact health both entail, and are entailed by, different models of contact shock.

more than the specific disease at work. In virgin-soil measles epidemics in Amazonia, for example, psychosocial factors and social disruption were observed to have a major effect on overall mortality (Neel 1982), while other variables such as coinfection and compromised initial health are also known to affect the progress and outcome of an epidemic (Bailey 1975; Taylor 1983).[2] Given these restrictions, it must be recognized that although deterministic historical simulations can be valuable aids to understanding disease processes, they cannot be taken as accurate reconstructions of past events; unfortunately, this is how Snow (Ch.16) and Thornton *et al.* (Ch.17) appear to take them.

In addition to these problems with borrowed methodology in *Disease and Demography in the Americas*, there occasionally seemed to be insufficient appreciation of the deficiencies in borrowed databases. In particular, some scholars apparently lack a sense of the substantial problems inherent in palaeodemography and archaeological population estimation techniques. Steadman Upham, for example, in his chapter on Spanish contact in the Southwest, relies heavily on earlier palaeodemographic and archaeological work for comparison of precontact populations to postcontact populations, without showing much concern for the considerable shortcomings of these databases.[3]

These deficiencies in knowledge, and the careless use of methodology and databases borrowed from other disciplines are confidence-shaking, especially when it is considered that these problems are not restricted to the book *Disease and Demography in the Americas,* but are widespread in the larger field of contact studies. The basic reason for this state of affairs is that in order to truly confront the real problems of contact and depopulation, one must be thoroughly versed in ethnohistory, osteology, archaeology, demography, epidemiology, and medical anthropology — at the very least. This is impossible for any one individual in this era of intense specialization, and so the answer must lie in the borrowing and exchange of actual personnel, as well as ideas, between disciplines. Some have clearly realized this; however, though there is some collaboration in this volume between people from different specialties within anthropology and biology, the all-important alliances between historians and epidemiologists/medical anthropologists

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2 Other authors in the volume (e.g. Milner Ch.9) discuss this issue of inappropriate use of mortality rates from one social context in another. However, not all researchers appreciate the problem, as is illustrated by Dobyns' comment upon his own assumption that measles behaved essentially the same way in Iceland in 1707 as it did in South America in the 1500s: "Physical anthropologists argue that viruses recognize racial differences. Frankly, I don't think viruses give a damn about race" (in Roberts 1989:1246). Any possible biological differences aside, the assumption that measles would behave the same way in these very different societies cannot be accepted, simply because of the enormous impact of cultural factors upon morbidity and mortality in an epidemic (e.g. seeNeel 1982).

3 For discussions of the challenges facing palaeodemographers and palaeopathologists, see Wood *et al.* (1992), and Buikstra and Konigsberg (1985). For assessments of some of the drawbacks of archaeological population estimation techniques, see Fletcher (1981), Hassan (1981), and Schacht (1984).

are absent. Such exchanges are the key to correcting some major problems in contact-period depopulation research, including insensibility to the importance of cultural variables in disease impact, and a poor general understanding of epidemiological principles.

These specific problems of methodology and data aside, efforts to study the problems of contact in the Americas have become as interesting on the 'meta-level' of examining disciplinary fragmentation and confusion, as they are with respect to the original subject matter. Perhaps the paucity of truly inter-disciplinary initiatives relates to well-established differences in philosophy between the 'humanities' and 'social sciences', and to academic protectionism and parochialism. The importance of the frequently-resurrected squabble over the relationship of history and science is deflated by the recognition that the two, and indeed all branches of study of the world around us, face the same epistemological problems (Carr 1981); nonetheless, the Western adoration of 'science' and the 'scientific method' has led to some rather counterproductive situations in the field of contact studies, including an obsession with quantification and tightly focused research questions, and a refusal to acknowledge forces other than the data which shape our interpretations.

The importance of knowing the precise population of the Americas prior to contact, and thus the exact ratio of depopulation, for example, is debatable, and yet this has been the focus of much research in the past. Such quantification-based research persists in *Disease and Demography in the Americas* — an illustration of this is Crosby's advocation of continued "precise scholarship", so that the accuracy of hemispheric population estimates might be improved (Ch.26:277-8). A manifestation of this emphasis on precision is the prevailing concern with very tightly focused research questions, which are perceived as both appropriate and answerable. For example, Upham (Ch.21) focuses on accurately determining the population size of groups living in specific regions of New Mexico and Arizona at intervals between 1450 and 1600 — an impossible task where archaeological evidence must be extensively used. It seems that the basis of much of this book (and the larger field) is the belief that there is an objective 'right answer', and a 'historical truth', which will someday be attained if research is "meticulous" and "rigorous" enough (Crosby Ch.26:277), and the belief that this 'right' and 'precise' answer is all-important. But to believe this is to misconstrue the nature of history (Carr 1981).[4]

Related to this empiricist concern with 'right answers' is a belief that there is

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4 Here, I should perhaps note that though great particularism is the trend in much contact-period research, generalizations are not completely absent In fact, there are some truly magnificent examples in *Disease and Demography in the Americas*, including Reff's comment that "the aboriginal population of the Greater Southwest was representative of Indian populations as a whole, with respect to population densities and economic and sociopolitical systems" (Ch.25:265).

such a thing as 'direct evidence'. Bones are not 'direct evidence', contrary to the assertions of some of the authors in *Disease and Demography in the Americas*; they, like any other observable entity, must be transformed by theory before meaning can be extracted. Despite this, Stodder and Martin, and others, still insist that disease and nutrition can be "directly assessed" through osteological study (Ch.6:55). Such statements suggest, at worst, a wilful blindness to theoretical concerns, and at best, a subconscious disregard for them. This is a cause for trepidation, especially now, when the theory behind palaeopathology and palaeodemography is in a state of considerable flux, if not disaster (see Wood *et al.* 1992 for a vivid discussion of this crisis).

These perceptions of the processes of historical research, and the raw information which feeds this research, are also problematic in a larger sense — in them is an implicit denial of factors other than science being involved, and of the subtexts which shape our interpretations.[5] The subtexts and shaping influences in question include both politics and personal philosophies, in addition to the historical development of this area of study. With respect to the latter, it can be argued that the entire field of research in precontact health and demography has its roots in the sociopolitically important question of 'just how many Native American deaths did Europeans cause, and were those deaths deliberate or accidental?', not in less loaded, more anthropologically and historically oriented questions, such as 'how did Native American people live prior to contact?'. Many Euro-Americans have studied aboriginal peoples with an agenda, conscious or unconscious, which relates ultimately to their own concerns, rather than as an attempt to better understand aboriginal health and societies for their own sake.

In general, this larger context of the subject of disease and demography in the Americas was sadly neglected in this volume. Several authors made comments about the political ramifications of the research being done — in particular, Saunders, Ramsden, and Herring (Ch.10) comment on the political utility of certain views of precontact America, while Ubelaker (Ch.15) and Reff (Ch.25) also allude to the broader significance of research into Native American demography — but this is not sufficient. The editors should have sought out a sustained, introspective discussion of the social setting of this research, and the forces which have driven much of it; such works exist (*e.g.* Henige 1990; Hill 1992) but it is clear that they are not thought to have a place in volumes such as *Disease and Demography in the Americas*. More attention to this aspect of social setting is needed — not least because it is becoming increasingly obvious that some of the questions about contact in the Americas, especially those pertaining to depopulation, are unanswerable.

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5 Crosby, comparing the body of contact-period depopulation data to a Rorshach test, says, "You interpret it according to your preconceptions" (in Roberts 1989:1245); however, it is surely difficult to reconcile this view with his expectation, discussed above, that "precise scholarship" will provide us with the answers we seek.

Archaeologically-based estimates of precontact population sizes will never be precise enough to allow a determination of the extent of depopulation. Neither will the timing of the depopulation process ever be clearly established for all regions of the Americas. This is simply because the scale of the data cannot support the resolution asked of them. In their discussion of scale effects in scientific studies, Meentemeyer and Box state that "raw data provide the finest level of resolution obtainable, so the analysis must be compatible with their implied scale" (1987:21). The unresolvable post-contact depopulation debate stands as testimony to the truth of this rule (*e.g.* see Ramenofsky 1987). Part of the problem is that as one considers questions of finer and finer scale in space and time, the number of important variables *increases* dramatically, as simultaneously, the precision of the data *decreases* dramatically.

This unfortunate fact, while something of a revelation to outsiders, is apparently well known to many of the chief participants in the debates over the timing and extent of American depopulation. According to Henige, many historians who claim very high precontact population sizes and thus, extremely swift and severe depopulation due primarily to sweeping epidemics, are aware of the fact that their hypotheses cannot be tested, because the data necessary do not exist; moreover, their arguments both presume and are predicated upon this lack of evidence (1990:184). Henige's beyond-scathing critique further proposes that it is not historical reality that these authors seek, but expiation. This might be seen as a predictable development, given the recent transformation in perceptions of the Columbian experiences mentioned ealier.

Increasingly, it appears that research into the depopulation of the Americas is taking place in a quagmire of questionable motives and debates that have as much to do with modern mindsets as with history or the actual people who died. However, this reality is given no more than passing consideration in *Disease and Demography in the Americas*. Moreover, this book, and the body of research it represents, have missed another crucial opportunity; that is, an opportunity to situate the occurrences of contact in the Americas in time and in space, to take advantage of the perspective afforded us by the passage of time. Chomsky (1993) shows that the phenomena in question were not isolated, but had clear predecessors (for example, in the campaigns against the Celtic groups of the British Isles), and are today ongoing in a very real and global way. The processes of imperialism which contact-period scholars study are not located exclusively in the historical past; they extend into the present, shaping political futures as well as academic inclinations. If there had only been more than a nod to this reality, in this book ostensibly about history and humanity, I would have found *Disease and Demography in the Americas* much more meaningful.

Of course, it would be unfair to suggest that the study of disease and demography in the Americas is, of course, not beyond redemption. Though the field essentially grew up around the problematic questions of 'how many died, how fast,

from what', there is research being done which, while having bearing on the depopulation debate, focuses on different considerations. For example, in *Disease and Demography in the Americas*, the chapters by Verano (Ch.3), Buikstra (Ch.8), and Saunders, Ramsden and Herring (Ch.10) are first and foremost about precontact health. Though these contribute to the study of depopulation, they also clarify our picture of what prehistoric life and health might have been like. Other publications like this include Merbs' (1992) review, which focuses on the identification of pathogens which may have been present in the Americas prior to contact, and McGrath's (1988) computer simulations of disease spread within and between prehistoric groups in the Lower Illinois Valley. Similarly, Storey's (1992) work in Teotihuacan, and Powell's (1988) assessment of health at Moundville, provide examples of valuable research in prehistoric health and disease that has been carried out without the intent of supporting a specific model of contact shock.

Other chapters in *Disease and Demography in the Americas* which also have particularly redeeming features include Meggers' (Ch.18) illumination of the continuity between recent and prehistoric communities in the Amazon Basin, and Kiple and Higgins' (Ch.22) discussion of the influence of disease in shaping the ethnic composition of the Caribbean. These are also papers which do not use body counts as an excuse for serious contemplation about the past, and do not engage in futile attempts to ascertain exact historical realities, but instead offer explorations of the past, and the processes of culture contact.

Unfortunately, however, such truly productive perspectives are still in the minority, both in this particular book and in the field at large. I would heartily recommend *Disease and Demography in the Americas* as an overview of current studies in Native American disease and depopulation, for it is indeed "state of the art"; however, I would suggest that despite occasional flashes of inspiration, this state itself leaves much to be desired.

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