

Human Migration in the Context of Evolutionary Ecology

Dean R. Snow

The Pennsylvania State University

Workshop on

General Patterns of Migrations

The Santa Fe Institute

September 16-18, 2005

Introduction

I am mindful of the title and intent of this workshop, so I offer what follows as a rough first draft of general definitions and persisting problems in the study of human migration. I begin with some basic definitions and axiomatic statements, which I expect can be refined through discussion in the workshop. Following that I provide some case studies as a means to refine our understanding of the forms migration and to (not incidentally) convince skeptics about the validity of those refinements. Finally, I propose some basic conclusions about migration that I hope will generate further productive discussion.

The problems of greatest interest to me are inherently interdisciplinary. The difficulty with this perspective on the world is that many scientists restrict themselves to their particular disciplines and draw conclusions from selective sets of evidence. The results sometimes sound like one of those old jokes about encounters between Catholic priests, Jewish rabbis, and Protestant ministers. Consider an encounter between a geneticist, an archaeologist, and a historical linguist, all of them interested in the origins of some particular seventeenth-century culture. It would not be surprising to find that each of them had sorted through several alternative hypotheses designed to explain data derived from their separate domains. Each of them has selected the most parsimonious hypothesis and has proposed that it is the most likely of all those tested. Regrettably the three favored hypotheses are all mutually exclusive. The available genetic, archaeological, and linguistic data lead to three explanations that cannot all be simultaneously valid. Yet each of the scientists is correct by his or her own lights.

The larger problem is that none of the scientists has considered all of the available evidence. To do so they must all adopt a broader perspective, and they are all reluctant to move outside their own areas of expertise. This problem is much more common than many practicing scientists are willing to admit, and it seriously handicaps modern archaeology in particular. Thus when a colleague tells me that the available archaeobotanical evidence does not necessarily require human migration to explain the presence of maize in tenth-century New York he is quite right {Hart, 2001 #1344}. However, when ceramic, lithic, linguistic, and genetic data are added to the mix, a hypothesis involving human migration becomes the most parsimonious explanation

{Snow, 1995 #723} {Snow, 1996 #726}. This is an example of how disciplinary specialization can impede scientific progress, particularly when there is a bias against a particular line of explanation. That is why I favor evolutionary ecology as a theoretical approach and an empirical approach that includes the full range of phenomena that can inform the student of human migration, not just data from narrower domains such as archaeology, linguistics, or biology.

Some Definitions and Axioms

- 1) Human migration is the long-term or permanent movement of human beings across space and over time.
 - a) Many anthropologists prefer “demic diffusion” to “migration” because of the many special definitions that have been associated with the latter term {Bogucki, 1993 #1526}.
 - b) Seasonal movements (including transhumance), commuting, and other short-term movements, whether regular or irregular, are excluded from this definition (I am mindful that if adopted by ornithologists, this definition would mean that migratory birds do not migrate).
 - c) Migration may involve any number of people, from a single individual to the entire national society.
 - d) Low-density, low-intensity foragers tend to marry distantly, while later high-density, highly invested cultivators tended to marry locally {Fix, 1999 #1868}.
 - e) Migrations may be either voluntary or coerced.
 - f) Migrations of long duration by large societies may result from the cumulative effects of migrations by relatively small subsets over relatively short distances.
 - g) Internal migration is migration that takes place within the territory of a national society. External migration is migration that takes place across the borders of distinct national societies.
 - h) Local migration is a special case of internal migration {Anthony, 1990 #1298}, or what Lee would refer to as a change in residence {Lee, 1969 #1531}.
 - i) The absolute distance of any migration is variable contingent upon the prevailing means of transportation.

- j) Much of the confusion observed amongst scholars who study migration results from a failure to explicate intentionality. To qualify as human migration the movement must be intentional. This is not a factor in nonhuman cases of migration.

Some Expanded Discussions

- 1) It is assumed that all voluntary movements are adaptive at some level even though some may eventually prove to be maladaptive due to changing or misperceived circumstances.
- 2) The following is a preliminary listing of types of population movement. I have shown in **bold face** the nine specific categories used by Robert Sokal in his compilation of 3460 documented instances in Europe {Sokal, 1991 #1528}. The types are presented in no particular order and are subject to further refinement and reorganization.
 - a) **Peopling** is defined as the initial occupation of a region by humans. Expansion of a population into previously unoccupied marginal environments is excluded from this definition inasmuch as even marginal environments would have been traversed and occasionally used by earlier people. It is intentional only locally.
 - b) **Migration** is the long-term or permanent movement of human beings across space and over time. Major migrations are often intentional and corporate. Complete migrations, which are rare, involve the movement of the entire national society, whereas **partial migrations** involve movement of only a fraction of the whole.
 - c) Territorial **expansions** usually characterize dominant populations growing and expanding at the expense of subordinate ones. Intentionality varies and specification of it allows for finer distinctions.
 - d) Territorial **contractions** usually occur as reactions of subordinate populations to the expansions of dominant ones. Contractions may be preceded by or associated with numerical declines. Numerical declines can involve either emigration or a reduction of total size as a consequence of mortality being greater than fertility. Intentionality is local for the contracting population.
 - e) **Conquest** involves the expansion of a dominant society over one or more subordinate ones. It is always intentional. Conquered societies do not necessarily

- move and dominant societies can be very small relative to the conquered ones if their relative technological or organizational advantages are sufficiently great.
- i) Dominant conquest societies often resettle conquered societies within imperial boundaries, a form of **coerced migration**.
 - ii) Colonial societies may establish **settlements or military garrisons** as enclaves in the territories of other typically subordinate societies. These are special forms of displacement and they often presage conquest.
 - iii) **Military attacks** are often the first stage of conquest or settlement by territorial empires. Naval attacks are special cases often associated with the expansion of overseas empires. Unless they are followed by other forms of population movement, attacks of both kinds often have only relatively minor long-term consequences for the attacked populations.
- 3) Migration variables can be scaled along a small number of well-defined parameters.
- a) Distance of the migration (may be measured as a function of time as a means to adjust for variation in transportation technology).
 - b) Size of the migrating group (may be measured as absolute size or as a fraction of the parent group).
 - c) Duration of the relocation (a measure of permanence).
 - d) Degree of coercion (carrot and stick factors).
 - e) Relative sizes of competing populations (not a factor in peopling).
 - f) Relative cultural dominance of competing populations (either technological dominance, organizational dominance, or both).
 - g) Cultural persistence (the degree to which the migrating group abandons old cultural norms and adopts new ones).
 - h) The number and sizes of obstacles that inhibit movement.
- 4) Large scale migrations (adaptive expansions) can involve the expansion of dominant populations at the expense of subordinate ones. The dominant population can be numerically smaller. The possible consequences for the subordinate populations are:
- a) Displacement
 - i) expulsion
 - ii) marginalization
 - b) Absorption (assimilation)
 - c) Extirpation

Each of these cases produces its own typical pattern of trait transfer. Absorption of large numbers of subordinates can dilute the genetic distinctiveness of the dominant population, as in the Northern Iroquoian case. But research has shown that even in that case there are identifiable genetic differences {Malhi, 2001 #1114}.

- 5) Small scale migrations can involve the movement of subordinate populations into or within the territorial limits of dominant populations. The possible consequences for the subordinate populations are:
 - a) Absorption (assimilation)
 - b) Isolation (insulation, marginalization)
 - c) Extirpation (annihilation)
 - d) Expulsion
 - e) Return migration

Each of these cases produces its own typical pattern of trait transfer.

- 6) Diffusion is the transfer of traits across societal boundaries in the absence of migration.
 - a) Transculturation {Rouse, 1986 #1525:11} is trait exchange without the loss of identity, a special form of diffusion.
 - b) Acculturation {Rouse, 1986 #1525:12-13} is another special form of diffusion in which a society gradually loses its unique identity through the replacement of endogenous traits by exogenous traits.
- 7) Classes of evidence useful for the study of migration:
 - a) Historical linguistics (languages as complex and organic wholes)
 - b) Genetic evidence
 - c) Archaeological complexes
 - d) Osteological evidence
 - e) DNA evidence
 - f) Simulation (model building)
 - g) Experimental archaeology
- 8) A basic assumption is that individuals are the units of transformation {Snow, 2002 #860}. Another is that societies (broadly defined) can propagate or dissolve rapidly as individuals join or abandon them. Several forms of migration entail for individuals

the abandonment of social memberships and the acquisition of new ones. This is a simpler and clearer way of stating the factors listed by Lee {Lee, 1969 #1531}. It is also a way of defining the factors such that they can be used for further analysis.

- 9) “Transhumance is a system of semi-nomadic livestock farming with migration or transport of the stock normally between two, occasionally between more, only seasonally usable pasture grounds, which differ in their location as regards altitude, climatic conditions and vegetation” {Hofmeister, 1961 #1438}.
- 10) No ruby-throated hummingbird will decide this year to cancel its migration across the Gulf of Mexico on the basis of its consideration of compelling circumstances. This level of intentionality is unique to human behavior. Intentionality is also a confounding factor in any discussion of human migration, especially when it is left implicit. I argue that it makes sense to define human migration as necessarily intentional in order to get past this conceptual obstacle.

Some Informative Cases

The Cheyenne

The earliest references we have that might refer to the Cheyenne place them in a series of small villages near the uppermost Mississippi in northern Minnesota before A.D. 1680. According to Hennepin, by 1680 they were living amongst the Dakota in the area between the Mississippi and Mille Lacs. There they practiced some horticulture, but were still dependent upon hunting and harvesting wild rice. Their dwellings were wigwams, or possibly bark tipis. Expeditions to hunt buffalo required them to walk southwestward to reach the prairie of southern Minnesota.

Jonathan Carver found the Cheyennes in two villages on the Minnesota River in 1766. The valley is forested, but the Minnesota River cuts across open prairie, affording anyone living there direct access to herds of buffalo. By moving to these locations the Cheyennes gained better access to buffalos and had better conditions for growing corn, but at the cost of moving out of the range of wild rice. Carver noticed that some of the Cheyennes were by this time living in skin tipis, good evidence that buffalo hunting was increasing in importance. Others, however, were living in earth lodges, permanent dwellings that could only have been possible if their reliance on corn had also increased.

Another Cheyenne village was founded by 1724 at the Biesterfeldt site on the Sheyenne River of North Dakota {Wood, 1971 #1124}. Here too they lived in earth lodges up to 10m in diameter. Most houses held around 15 people, and the total population of the village was probably around 900. This would have been no more than a third of the total Cheyenne population at the time.

Some Cheyennes moved to the Missouri River valley where it crosses the modern boundary between North and South Dakota. The Cheyennes from the Biesterfeldt site took refuge there when the Chippewas attacked and burned them out of their village around 1780. From there Cheyenne villagers later moved to new locations west of the Missouri on the Grand River tributary. The Cheyennes were still farmers and still lived in earth lodges, but their movement to west of the Missouri put them just northwest of the Black Hills and on the edge of the high plains. From there they needed only horses to prompt them to abandon farming and settled life for nomadism and full-time buffalo hunting {Moore, 1987 #1045; Moore, 1994 #1532; Moore, 1996 #1046}.

So long as they maintained earth lodge villages the Cheyennes had to defend them from raids by other groups looking for food stores. Even after they acquired horses, they were compelled to leave some men at home to defend the villages while others hunted. The Chippewas had driven them on to the plains with such raids. Once there they had to put up with raiding by the Arikaras. A shift to nomadism enabled them to concentrate all their men on hunting, to keep women and children close, and to deny the Arikaras and other enemies the temptation of poorly defended villages. Mobility allowed them to pursue the buffalo herds wherever they went rather than waiting for them to wander within range of settlements. Mobility also opened up vast new opportunities for trade.

Horses were available from the south, guns from the north and east. The skin tipis could be dragged from place to place on horse-drawn travois. The prophet Mutsiev (Sweet Medicine) made a trip to the Black Hills and came back with a bundle of sacred arrows and word that a new set of ceremonies would make the abandonment of their villages ideologically possible. However, the Cheyennes also needed to have enough horses to make the change. As farmers they had only enough grass to pasture a relatively small number of horses around their villages. For a few years they planted crops and left the villages to pasture their growing herds. Finally, when the number of horses equally or

exceeded the number of people, the Cheyennes changed from village farmers to quintessential Plains nomads.

The challenge for an archaeologist is to find a way to track a rapidly evolving culture like this one across time and space. It is unlikely that we could do so easily without historic documentation. There is a rough hierarchy of evidence that is usually accepted as indicating migration and intrusion. This evidence is what one would expect to find in the recipient area in situations involving stratified societies. In order of significance they are:

1. burials
2. architecture
3. ceramics
4. economy

Other technological items (especially those associated with metallurgy) are not good indicators, as can be demonstrated by reference to a multitude of examples. Mode of burial tends to be very conservative, architecture generally a little less so, and so on. But we see from the Cheyenne case that architecture and economy both changed dramatically more than once over a couple centuries. Their mode of burial might have persisted with less change over time and their ceramics might be a good indicator of continuity. If we had access to enough well-selected samples of mtDNA we might be able to track the Cheyenne migration, but any such effort would require many more data than we currently have.

Moore's ethnohistory of the Cheyenne nation emphasizes the dispersal of Cheyenne bands after they left northern Minnesota and their eventual reunion in the nineteenth century {Moore, 1996 #1046}. Thus the ethnogenesis of the nomadic Cheyenne bison hunters was a rhizomic process rather than a dendritic one {Moore, 1994 #1532}. This is an important point and one that applies to many small migrating American Indian during the contact period. Population decline, mainly from epidemic diseases, led small remnant groups to amalgamate as they relocated. This is something that biological species, once separated, cannot do. A multiethnic community in which five or ten different languages were spoken typically evolved into a cohesive society in which everyone spoke the same language. That language was either the dominant one among the various Indian languages or one of the colonial languages. The southeastern Creek nation formed this

way, as did the Seminole nation that derived from the Creeks. The reunion of the Cheyenne nation winnowed out Dakota and other elements they had picked up along the way.

New England Pilgrims

The migration of English religious dissidents to Massachusetts in the early seventeenth century is a case that is a very well-known case. David Anthony points out that migrating groups typically replicate the culture of the parent society in simplified form. However, he does not fully explore the processes underlying this. One might expect migrants to express a simplified version of the parent culture if only because they represent a subset of the original culture that is adapting to a new environment. But there's more. It is important to realize that migrants are often (perhaps usually) self-selected and therefore are going to be a coherent subculture, not just a random subset, of the parent culture. Thus the Puritans of eastern England migrated in order to get away from the diversity of the larger regional English society. We should hardly be surprised that Plymouth, Massachusetts displays less diversity than did Anglia in the 1630s .

Northern Iroquoians

A decade ago I shook up the world of Iroquoian archaeology by publishing a new hypothesis that argued that they had expanded into New York and Ontario from the south about a millennium ago after they acquired maize horticulture {Snow, 1995 #723; Snow, 1996 #726}. Undisciplined migration scenarios led Northeastern archaeologists to shun migration as a demographic option five decades ago. The "*in situ*" hypothesis of Northern Iroquoian origins subsequently became the controlling model for interpreting their development. Eventually contrary evidence accumulated to the point that the *in situ* hypothesis of Northern Iroquoian origins could no longer withstand close scrutiny. The practical problem for me was that the *in situ* hypothesis had solidified into dogma and several distinguished reputations had been built on its framework. The bearers of those reputations did not receive my arguments well. Nevertheless, by 1995 it was clear that the *in situ* hypothesis, which required that all archaeological explanations in the region had to assume as a first principle that no migration occurred in the past, had to be abandoned.

The immediate archaeological ancestor of the Northern Iroquoians appears to be the Clemsons Island (archaeological) culture of central Pennsylvania. I have been able to

demonstrate the expansion of Northern Iroquoians out of that area into New York, Ontario, and Quebec on empirical archaeological grounds {Snow, 1994 #1527}. No one has yet defined the source population for Clemsons Island culture other than to presume that it was one that was shared by the Cherokee, the sole survivors of the Southern Iroquoian branch of Iroquoian.

Indo-European

Jared Diamond has pulled together a variety of archaeological, historical, linguistic, and genetic evidence to show that the spread of agriculture from various developmental hearths around the world was typically carried by expanding populations of cultivators. Their demographic expansions involved both rapid growth in numbers and spread beyond their regions of origin. This was typically at the expense of demographically stationary and less dense populations of nonagriculturalists who were displaced or (less frequently) absorbed. The result of this process is a widespread modern population of agricultural populations that show less genetic diversity than those that have been in place longer {Diamond, 1997 #612; Diamond, 2003 #926}. Recent research has shown that a demic model for the spread of agriculture to India does match up with both linguistic and genetic evidence {Cordaux, 2004 #1295}. Moreover, no one has challenged various other cases discussed by Diamond, so the problems with the European case appear to be exceptional for the world prior to 1492.

Colin Renfrew made the same observation, and it led to his controversial book on the expansion of Indo-European languages across Europe {Renfrew, 1987 #1296}. The problem with this case is that the expansion of agriculture out of Anatolia cannot be matched up convincingly with either the evolution and spread of Indo-European languages or the genetic evidence {Mallory, 1989 #319; Sokal, 1991 #1528}. I think that it is likely that Renfrew is right and that language(s) did spread with the expansion of agricultural communities across Europe, they just were not Indo-European languages. Indo-European speech almost certainly arrived much later, almost certainly spreading by a very different mechanism. I conclude that the most economical hypothesis currently available is that the process by which Indo-European became established across Europe was basically the same as the process by which Latin later became established across most of what are now France and Spain. A dominant elite established a series of polities

that each dominated several preexisting languages and a multitude of dialects. Adoption of the elite language became adaptive because local folks need both a common language and access to political power in the new larger polity. The elite language provided them with both.

There are many examples of the spread of language without migration, or at least only minor migration. English is an excellent example. The process by which Latin became established in France and Spain was replicated by English in India. Both English and French spread widely through colonial empires in the nineteenth and twentieth centuries. Spanish spread similarly across Latin America in the sixteenth and seventeenth centuries. The spread of English largely (but not entirely) with migration across North America is probably an exception to the more common pattern for that language.

Celts

Techniques, particularly new innovative ones (like iron swords) diffuse rapidly across cultural boundaries. However, sword styles can vary without functional consequences, so we should expect them to be more diagnostic for purposes of detecting migration. Contra this, however, is the example of La Tene, an artifact complex that is often associated with and argued to be evidence of the spread of Celtic-speaking populations across Europe and into the British Isles. The problem is that La Tene artifacts were probably the blue jeans, CDs, and Coke bottles of their time, highly valued items that spread rapidly through and between populations. One did not have to be a Celtic speaker to covet them, and I doubt that La Tene artifacts can be associated with any particular population or language.

The bottom line is that there is no evidence to indicate that Celtic speech arrived in the British Isles as the result of large-scale migration. Like the spread of Indo-European generally, Celtic was probably established there as a lingua franca by a dominant elite that offered a common language to what had become a linguistic mosaic of older languages across the islands. Interestingly, Latin subsequently failed to become established in the same way in Great Britain, probably because the Romans did not stay long enough.

An interesting aside is that when the Romans pulled out of Great Britain they left behind a unit of 5500 Sarmatian in the vicinity of Hadrian's Wall. These migrants disappeared into the Celtic and later English populations of the island.

Basques

The Basques are famous for being the only non-Indo-Europeans in Europe and having been in place for a very long time. Their relevance to a discussion of migration is that they probably reflect the situation in many parts of the world prior to the time when small dominant migrating groups established themselves and their speech over large domains. There are eight dialects of Basque spread over only 10,000 km² of Spain and France. That kind of diversity spread over a much larger area would ripen into numerous unintelligible languages over a millennium in the absence of modern transportation and communication, setting the scene for the kind of small-scale migration that led to the establishment of Indo-European in Europe, English in Ireland, and Pidgin-English in New Guinea. The Basque dialects are the last linguistic remnant resisting the spread of Latin and its daughter languages in western Europe.

The alternatives for modern Basque are to maintain their current diversity and risk extinction or opt for the choice made by English-speakers after the Norman conquest. The English might have adopted the French speech of the dominant elite, but instead they generalized the various dialects of Germanic Old English by simplifying grammar and standardizing vocabulary. Thus there must be a tipping point on one side of which subject peoples resist the language of the dominant elite and on the other side of which they adopt it and abandon traditional languages. The critical difference might be the degree to which the elites allow subjects access to political power and/or the degree to which broader economic opportunities replace traditional local economies.

Huns

“Hun society by its very nature was such that we can never expect to discover many traces of it in the archaeological record” {Thompson, 1996 #382:7}. The Huns were a Turkic society that arose in central Asia like so many other nomadic peoples. Their great military advantage was that they used a new and every efficient compound bow, larger and stronger than the earlier Scythian bow. Their arrows were longer and tipped with steel such that they immediately rendered the armor of heavy Sarmatian cavalry obsolete. They swept aside the Massagetae and Sacians by around 165 BC, and turned their attention westward.

The Eastern Roman Empire went to war against Persia in 420, stripping the northeastern border of much of its protection. The Huns perceived the weakness and began attacking Thrace again in 422. In 433 the Huns began their ferocious expansion to the west and north. The Huns were galvanized by a single leader. Attila was for them what the ideology of organized religion later was for Muslim and Christian armies.

The principal reason for the military success of the Huns was their cavalry. Because they virtually lived on horseback, the Huns were a ready-made army that could be instantly mobilized. Every able-bodied adult male could be transformed in minutes into a cavalryman, and an entire tribe could be turned on even a distant enemy with unprecedented alacrity.

The Empire of the Huns was perhaps more parasitic than any empire the world had known up to that time. By 450 the empire stretched from the Caspian Sea to France, from the Balkans to the Baltic. The organizational structure, which depended upon an overextended network of personal relationships and loyalty founded on charisma and a constant flow of loot, was stretched and fragile. Eventually the Romans recovered enough to defeat the Huns in battle at least some of the time, to refuse extortion demands, and to even refuse the Huns access to market towns. Hunnish bonds of personal loyalty fragmented, Hunnish leaders grew older, local leaders looked to their own interests, and the empire dissolved in place. The Huns, now dispersed all over Europe had few means of production of their own. They had long since abandoned pastoralism and had become dependent upon subject populations for food and clothing. Many individual Huns must have been annihilated by former subjects. Some held out in Hungary for a while, then followed those that had already retreated back to the steppes. Others were probably recruited into the local populations. Thus thousands of Huns disappeared into the populations they had briefly dominated. In April 2005 some Hungarians who claimed Hunnish descent failed to gain recognition as a minority population from the Hungarian government.

Some Tentative Conclusions

Many additional cogent cases could be added to the above, but readers with Type A personalities have already skipped ahead to this section. As an archaeologist I am most interested in a few general observations that will allow me to make sense of the

archaeological record in terms of major demographic processes, especially migration. In other words, what are the archaeological signatures of the processes discussed above, and how can I infer different forms of migration (or the lack of it) from those signatures?

The gross archaeological signatures of population expansions often mimic those of the spread of highly adaptive traits and innovations in the absence of substantial population movement. This circumstance is what misled Colin Renfrew to infer that the spread of Indo-European speech was coincident with the spread of agriculture across Europe. However not all archaeologically observable phenomena will display this kind of equifinality. Researchers should consider the potential test implications of the following:

1. Distributions resulting from population expansions (often horticulturally driven)
 - a. will show relatively little internal genetic diversity.
 - b. will show uniformity in conservative traits that differ from those of the previous residents of the region.
2. The spread of artifact types or language without substantial demic expansion
 - a. will result in the persistence of genetic diversity in the population so defined.
 - b. will not result in the replacement of typically conservative traits.

Migrating populations often carry simplified forms of the cultural inventories of their source populations. Dissident factions such as Massachusetts pilgrims or more recent Amish immigrants are good examples. In these cases one should look for genetic continuity with the presumed source population, although one must be mindful of the founder effect and the probable genetic bottleneck created by a small founding population. One should also expect to encounter persistence of conservative traits in the simplified inventory.

Migration is not convincingly disconfirmed by studies that artificially limit the scope of analysis. For example, Hart has asserted that researchers need not necessarily infer demic diffusion in the Northern Iroquoian case because both matrilineality and maize horticulture can be explained more simply by their mutual adaptability {Hart, 1999 #1345; Hart, 2001 #1344}. However, Hart omits consideration of genetic evidence, and the archaeological evidence of ceramics, lithics, and architecture from his discussion,

three conservative classes that all show discontinuity with earlier evidence in the region occupied by Northern Iroquoians over the last millennium.

Migration was a common demographic phenomenon in the past. American archaeology came to be biased against discussion of migration in the second half of the twentieth century because of earlier undisciplined use of migration scenarios. Rouse argued long ago that the burden of proof rested on migration, the default hypothesis being one that assumed no movement at all. Rouse's criteria for demonstrating migration were stringent and rarely met {Rouse, 1958 #1529:64}:

1. Identify the migrating people as an intrusive unit in the region it has penetrated.
2. Trace this unit back to its homeland.
3. Determine that all occurrences of the unit are contemporaneous.
4. Establish the existence of favorable conditions for migration
5. Demonstrate that some other hypothesis, such as independent invention or diffusion of traits, does not better fit the facts of the situation.

To these David Sanger added a sixth requirement, namely that one had to establish the presence of all cultural subsystems in any hypothesized migratory group, as opposed to an isolated one such burial practices {Sanger, 1975 #1530:73}. The bias against migration as a common feature of human evolutionary ecology persisted in American archaeology until the 1990s. An article by David Anthony marked a turning of the tide {Anthony, 1990 #1298}. A better stance is to assume that migration is one of several commonly-seen demographic processes and that it is better to find ways to force choices between them than to preempt research by assuming at the onset that migration is the least likely of them to occur.

If simplification is the consequence of deliberate self-selection, then most migrations are bound up in the process of ethnogenesis. This is the shoe that I have not yet dropped on the Iroquoianists. The way it would have worked in the real world is that a subset of Iroquoians seeing the advantages to be gained from adopting full-time horticulture, multifamily houses, compact villages, etc. would have migrated away from a parent society having a more diverse set of subsistence and settlement characteristics. Migrants who guess wrong die out or come home with their tails between their legs.

Those that guess right live and prosper, and the parent societies either come along belatedly in chain migration or dwindle in place or continue with a different (and perhaps still more diverse) adaptation. We see this over and over again in the record. This is what the Cheyenne did twice in a matter of decades. This process describes the Puritans in New England, the Mormons in Utah, the Spanish in Cuba, the Pipil, the Nicaro, the Mongols, you name it. People usually migrate in part to reinvent themselves by keeping what they value and leaving behind what they detest. Little wonder that they look like simplified versions of their parent societies.

Major demic expansions of dominant cultures can result in their absorption by subordinate societies if they spread themselves too thinly over conquered territories.

The Huns are the best example. The colonial Spanish might have experienced the same fate in Latin America had smallpox and other epidemic diseases not reduced the native populations as dramatically as they did.

Human migration is intentional by definition. Migrating humans do it on purpose; they are deliberately changing their customary domiciles. This excludes cyclical (often annual) relocations or temporary moves.

References Cited