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THE RETREAT FROM MIGRATIONISM

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One of the most persistent, though least acknowledged, explanatory paradigms in culture history is that which attributes the growth and spread of culture to the movement of peoples. We are not here referring to diffusion, but to theories which specifically envision the movements and displacements of populations. As will be shown presently, migration and diffusion theories have quite different intellectual pedigrees, and their relationship in practice has often been antithetical. But while diffusionism (like evolutionism) has had and continues to have its avowed champions, migration has never been formally articulated as a general principle of historical explanation. It has nevertheless been invoked as an ad hoc explanation for cultural, linguistic, and racial change in such an extraordinary number of individual cases that to speak of a migrationist school of explanation seems wholly appropriate (131, p. 169; 133, pp. 15, 30).

Migration theory in a sense is as old as tribal mythology; indeed, it is a rare corpus of myth that does not include at least one migration episode. In this primeval form migrationism may be recognized as the handmaiden

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of creationism. If we accept the premise, implicit in most creation myths, that men and their cultural institutions went forth together from the hand of the creator, and that a fixed relationship between the two was ordained, then it follows that culture can move from one place to another only when and if its human carriers move from one place to another. This mode of thought has been remarkably enduring; it underlies not only the myths of antiquity but a good deal of migration theory even of the recent past. It is worth noting that migrationism was and is the only explanation for culture change that can comfortably be reconciled with a literal interpretation of the Old Testament; this alone assured its predominance down to the middle of the last century.

The rise of a nonscriptural, anticreationist view of history in the nineteenth century did not, however, signal the immediate downfall of migrationism. On the contrary, the more or less concurrent development of comparative linguistic studies, of comparative racial studies, and of prehistoric archaeology gave to migration theory both a broadened scope and a new guise of empirical respectability. Cultural distributions, both ethnographical and archaeological, were seen to correlate with linguistic distributions; both cultural and linguistic distributions were seen to correlate with "racial" distributions, as adduced from the evidence of comparative craniometry (cf 196, p. 420). This seeming conjunction of racial, linguistic, and cultural evidence elevated migrationism from a purely historical doctrine to an explicitly scientific one, according to the canons of nineteenth century natural science. Under these circumstances migration theory probably attained its peak both of popularity and of scholarly respectability.

Even while migrationism was gaining status as a scientific principle, however, it began to be challenged by the rival doctrine of cultural evolutionism, which from the outset became the dominant explanatory paradigm for the early phases of European prehistory (i.e. primarily the Paleolithic). Migration remained the preferred explanation for late prehistoric and early historic culture changes in the Old World, as well as for New World archaeological horizons to the limited extent that they were known. Then, around the beginning of the twentieth century, another challenge arose in the form of the newly articulated concept of diffusion.

The relationship between migrationism and diffusionism has been widely misunderstood (cf 9); there is a tendency among modern critics to discuss (and often dismiss) them together as though they were different words for the same thing (87, pp. 263–80; 153, pp. 337–41; 185, pp. 30–37). At times this is legitimate in the study of racial distributions, but the equation of diffusion with migration is hardly appropriate in the study of cultural distributions, either archaeological or ethnological. Up to the late nineteenth century, it is true, cultural diffusion had usually been seen as a priori

evidence of population movement; hence the popularity of migration theories in circumstances where today we would suggest no more than a dissemination of ideas. It was Tylor who, in giving us a concept of culture independent of society (cf 140, p. 11), also made it possible to conceive of diffusion without migration. Although the elevation of diffusionism to the level of a general explanatory principle did not occur until a generation later, Tylor must be acknowledged at least as the godfather of this development (cf 9).

The rise of diffusionism as an explanatory principle in the early twentieth century can be attributed in considerable part to a reaction against the excesses of nineteenth century evolutionism (69, pp. 82–87; 205). The battle between diffusionists and evolutionists was, however, largely confined to the interpretation of ethnographic data. In the field of archaeology, on the other hand, the diffusionists much more often found themselves at odds with older migrationist theories, because at the time evolutionism had not yet been widely applied as an ad hoc explanation for prehistoric cultural distributions, except in the European Paleolithic. As Daniel (69, pp. 31–49) and others have pointed out, the evolutionary doctrine can only be applied successfully within a fairly extended time frame, and in 1900 no such time frame had yet been imagined except for the Paleolithic sequence of Western Europe. Neolithic and Bronze Age cultures, as well as the whole range of New World cultures, were seen as products of the fairly recent past and were still subject primarily to migrationist explanations. So the debate over these later phases of prehistory pitted diffusionists against migrationists, and to the extent that the newer doctrine prospered, it did so largely at the expense of the older one.

The gradual ascendency of diffusionism over migrationism was aided by a concurrent theoretical development in twentieth century anthropology: the separation of racial, linguistic, and cultural evidence, and insistence that they be treated as independent variables. In time it became clear that some of the suggested links between racial, linguistic, and cultural trait distributions would not stand up to close scrutiny; this had the effect of removing the mutually reinforcing props from many of the older migration theories. Insofar as migration theory persists in the present day, it does so for the most part independently, and on the basis of separate evidence, in the three fields of physical anthropology, linguistics, and cultural anthropology. Thus our survey of the current state of theory must necessarily consider these fields separately.

It remains to add that, notwithstanding the separate and frequently antithetical development of migration and of diffusion theories in the twentieth century, there are a good many cases in which the dividing line between these two interpretations is still far from clear. Because migration

and diffusion tend to be invoked both as ad hoc and as post hoc explanations for distributional phenomena, rather than as subjects for study in their own right, the actual mechanics of movement have received much less attention than they deserve. Some culture historians seem deliberately to beg this issue by talking simply about "expansion," without specifying whether population expansion or only cultural dissemination is envisioned.

Any diffusion theory must obviously comprehend enough human movement to allow for the transmission of ideas and/or the circulation of goods from one people to another. The minimum necessary amount of movement may be small in some instances and large in others. In cases of pelagic or transoceanic diffusion, some fairly prodigious feats of travel must be envisioned, and for this reason ideas of trans-Pacific contact between Asia and prehistoric America, for example, are often thought of as migration theories. It is clear nevertheless that such theories usually envision only enough human movement to serve as a vehicle for cultural diffusion, and thus they are properly diffusion rather than migration theories. In our survey we shall not be concerned with cases of this kind, but only with theories which posit the simultaneous and permanent movement of substantial numbers of people; in short, with imagined migrations which might be expected to leave measurable traces in the cultural, the linguistic, and the skeletal record of peoples or areas.

A preliminary overview will show that migration theory has been in general though by no means precipitate retreat since the beginning of the twentieth century. The reasons are somewhat complex, and are not entirely the same in the fields of physical, linguistic, and cultural anthropology. In all three fields, however, the migrationist position has been under attack on at least two levels. On one level specific cases have been subject to alternative explanation on the basis of empirical evidence, while at a higher level there has been a general movement away from historical explanation of all sorts and toward a more systemic model of analysis.

Notwithstanding the inroads wrought by contrary theory and by contrary data, migrationism still remains surprisingly persistent as an ad hoc explanation for cultural, linguistic, and racial distributions in specific cases. Not only are many old migration theories still unchallenged, but new ones are continually being proposed. In the next pages we will review independently the current state of theory in the cultural, linguistic, and racial fields, and will try to suggest some of the reasons both for the persistence and for the decline of migrationism.

CULTURAL EVIDENCE OF MIGRATIONS

Because migrationism, unlike evolutionism and diffusionism, has never been propounded as a general explanatory principle in culture history, the

strength of its persisting influence cannot be measured either in terms of programmatic endorsements or of polemical denunciations. Only a wide-ranging survey of ad hoc applications will serve to disclose the true state of the art. First, however, a word must be said about the general conceptual parameters surrounding the use of migration theory by modern culture historians.

In the nineteenth century migration theory was applied primarily to the explanation of ethnographic data, partly because there was relatively little archaeological data to interpret at that time. This is emphatically no longer the case. While the sweeping theories of early ethnologists have been attacked head-on both by evolutionists and diffusionists, and few of them survive in viable form today, the archaeologists have been at work providing a whole new range of trait distributions for analysis, and they have had their own turn at invoking migration theory when it seemed to fit the data. Thus our survey of present-day migration theories will focus primarily on the archaeological field, with comparatively little attention to the evidence of ethnography, of ethnohistory, and of recorded history.

It is also notable that the migration theories of archaeologists, like most other archaeologists' theories, have a pragmatic quality far removed from the heroic generalizing of nineteenth century ethnologists. For the most part they are simply ad hoc and somewhat mechanical explanations for anomalous site or trait distributions. In these circumstances a kind of unwritten accommodation has taken place between migrationist and diffusionist interpretations so that they are seldom in theoretical conflict. Migration is the obvious explanation for anomalous site distributions (sudden abandonment of old sites or appearance of new ones), for there is hardly any conceivable alternative (233, pp. 9–19). Diffusion, on the other hand, is the preferred explanation for trait distributions (abandonment of old traits and adoption of new ones), particularly when the source of innovation can be identified in a neighboring area (233, pp. 9–19). When there appears to be sharp discontinuity in the sequence of cultural development, however, there is a tendency to invoke migration rather than diffusion as an explanation, even though no external source may be recognizable. Rouse (188, p. 65) and Trigger (216, pp. 40–41) have warned that this is empirically unacceptable; supposedly anomalous traits should be traceable to an external source before they can legitimately be called intrusive. A survey of currently accepted migration theories nevertheless reveals that only a minority of them will stand this test. In many cases migrations are simply referred back to some vaguely defined reservoir or peoples with no specific cultural parameters, such as the "Gran Chichimeca" of northern Mexico, the Arabian deserts, and the Central Asian Steppes (cf 196, p. 420). Thus while there are still cases of active dispute between the adherents of migrationist and diffusionist interpretations, they are usually waged only at a low

level of data enumeration. In these cases the issue is whether the seeming discontinuities in the archaeological record are or are not sufficient to warrant a hypothesis of migration.

The pragmatic accommodation between migration and diffusion theories has at the same time left room for a third alternative, which may be called invasionism. This is a model which specifically envisions hostile migrations, either temporary or permanent, the effect of which is primarily negative: sudden culture loss and/or the abandonment of sites. The invasionist hypothesis is applied over and over again to the abandonment of individual sites, but it has also been suggested at a much broader and more systemic level to account for the disappearance of whole civilizations such as the Classic Mayan (1, pp. 30-33; 62, pp. 155–56; 190), the Aegean (167, pp. 7–8; 191, pp. 131–41), and the Harappan (19, pp. 26–38; 116, p. 397; 170, pp. 214–88). Invasion theory is technically a subclass of migration theory, but because its defining parameters are essentially negative rather than positive, it will receive comparatively little attention in the discussion that follows.

When it suits their purposes, then, archaeologists may postulate migrations either on the basis of site or of trait distributions. Of these applications the first is, most of the time, by far the more convincing; indeed, there is hardly any other way of accounting for the total abandonment of sites or for the foundation of new ones. Moreover, it is often possible in these cases to recognize specifically where the migration came from and/or where it went to, as with many of the prehistoric and historic migrations in the American Southwest. A closely similar situation is observable in the Maya area. In both the aforesaid cases we find that the putative migrations covered relatively short distances, and were confined within the same general culture area. In short, migrations based on site distributions are nearly always conceived as internal migrations within the same general area. On the other hand, migrations based on trait distributions must, almost by definition, bring in outsiders from far away to account for the presence of seemingly anomalous traits, since traits originating in the same general area would probably be explained on the basis of diffusion rather than migration. Thus trait-based migration theories have a much lower inherent probability value than have site-based theories, and it is primarily the former which have been and are foci of controversy.

Migration may of course involve large or small numbers of individuals. Historically by far the most common migrations have been those involving isolated individuals or families, and the rather large body of migration literature which has developed in the fields of sociology and of cultural geography is relevant principally to this type of migration. Such movements, however, would probably leave no trace archaeologically, and in any

case archaeological explanation has not yet found a place for the human individual as a significant variable. The lowest level at which archaeologists have been able to recognize migration is at that of the community. There are some fascinating and seemingly well documented cases of community migration, as attested by isolated "intrusive" sites in various parts of the world (34, pp. 111, 145–46; 67, p. 88; 115; 155, pp. 281–85), but their number is not large. The overwhelming majority of archaeologists' theories involve the movement of whole peoples, or in other words, society-level migrations—precisely the kind that have occurred least frequently in the course of recorded history. In the pages that follow we shall therefore find ourselves concerned chiefly with society-level theories of migration.

A World Tour of Migration Theories

THE AMERICAN ARCTIC Since nearly everyone envisions the peopling of America by means of one or more migrations across the Bering land bridge, a general acceptance of migration theory is more or less inescapable in this area. Nevertheless, Krantz (136) has recently asserted that populations at the hunting-gathering level of technology cannot migrate through territory which is already occupied, and has gone on to suggest that our picture of the peopling of America should encompass only one wave of migration and not several. While this theory has not attracted many overt adherents, it is fairly representative of the general attitude toward migration which now prevails in the school of cultural materialism.

Within the Arctic region itself there are two widely accepted migration theories, both based primarily on site distributions rather than on trait distributions. These envision the successive sweeps of Dorset and of Thule peoples across the Canadian Arctic (231, pp. 442–46).

THE NORTHWEST COAST Boas, who gave us our paradigm of the Northwest Coast as a culture area, was of the opinion that the coastal peoples had migrated to their present habitat from the interior plateaus (35, pp. 1–5; 36). This idea was based partly on cultural, partly on linguistic, and partly on racial evidence, as they were understood in Boas's time; it continues to find support in the recent work of Borden (38–41). Nevertheless, Boas and other scholars also identified many traits in Northwest Coast culture which seemed to point to a northeast Asiatic origin (35, pp. 1–5; 76; 138, p. 31). Fladmark, arguing from the perspective of cultural ecology, has recently dismissed both of these once-prevalent theories as inconsequential. He suggests that all of the determinants for understanding the development of Northwest Coast culture can be found in the local environment, so that it is unnecessary to look further (87, pp. 293–97).

EASTERN NORTH AMERICA Migration theory in this area has flourished since the earliest colonial days. It found an early focus in the widely held image of the Mound Builders as a vanished higher race which had been succeeded by degenerate modern Indian peoples (112, pp. 75–85). Although that particular myth was laid to rest, at least in scholarly circles, almost a century ago (212), there is a persisting tendency to attribute each of the most widespread and most seminal of eastern cultural horizons—Adena, Hopewell, Mississippian, and Iroquoian—to the coming of new peoples. As in a good many other areas, these theories seemed at one time to be buttressed by independent racial evidence. It is startling to find even so dedicated a materialist as Spaulding invoking migration theory at a number of different points in eastern prehistory, though at the same time he longs for " . . . the happy day when we can dispense with such homely crutches in favor of unexceptionable generalizations . . ." (200, p. 14). In discussing Adena origins, Spaulding reviews the evidence for and against migration and opts for the former as "less cumbersome" (200, p. 21). Later and more doctrinaire materialists no longer accept cumbersomeness as a relevant consideration; to them a "scientific" theory is always preferable to a "historical" one no matter how cumbersome (cf 114).

In Eastern North America there is as yet no general countermovement against migrationism as there is in Europe and elsewhere. At most there are only substantive attacks on particular theories. One of the most conspicuous is that of MacNeish, who argues for the in situ development of Iroquoian culture in the northeast (148; 217, pp. 25–35).

THE SOUTHWEST The state of culture historical theory in the Southwest presents an instructive contrast to that in the East. Here, too, migration theory has flourished, but it is internal migration theory based primarily on site distributions rather than on trait distributions. The archaeological remains at least in the northern Southwest show an obvious continuity of cultural development from the earliest times to the present. [There was an old theory of population discontinuity between the Basket Makers and Pueblos (129, p. 122), but it was based mostly on racial rather than on cultural evidence, and it has long since been discarded (195, pp. 32–33).] On the other hand, the Colorado Plateau is not only dotted over with abandoned sites, but exhibits vast tracts that have been entirely deserted by their puebloan inhabitants: seemingly evidence both of community-level and of society-level migrations. This prehistoric situation is closely paralleled in the historic era, when there is a well-documented record of restlessness and instability in puebloan society (89; 213, pp. 98–99). Reed nevertheless suggests that local migration theory in the Southwest has been overworked, and that some theories are based on nothing more substantial

than the distribution of pottery styles or types (180, p. 7). His critique is applied even to the supposed migration of the "Salado people" from the plateau uplands to the Salt River Valley (179, p. 54), an idea which heretofore has been almost universally accepted.

In the lower Southwest, some truly bizarre migration theories were proposed by Harold Gladwin (96–98) to account for the origins of the Mogollon and Hohokam cultures and even for internal modifications within them. These theories received a certain attention because of Gladwin's legitimate status as the discoverer of the Mogollon and Hohokam cultures, but they have no serious adherents today.

MESOAMERICA On the Central Mexican Plateau, power in the Postclassic period shifted from Teotihuacan to Tula and thence to Aztec Tenotchtitlan. According to conventional interpretation, each power shift was brought about by the migration of a new barbarian people from the "Gran Chichimeca" to the north (231, pp. 152–66). This view evidently draws heavily on Aztec ethnohistoric tradition and indeed it may be correct. On purely archaeological grounds, however, it would be quite possible to imagine a periodic shifting of power among groups already established in the area, as happened from time to time in Peru, in Mesopotamia, and in China, without invoking major population shifts to account for the prevailing political instability.

The Maya area presents interesting parallels with the American Southwest. Here again there is no notion of ethnic or cultural discontinuity (barring the late and apparently site-specific Toltec intrusion at Chichen Itza); the modern Maya are generally accepted as lineal descendants of the Olmec. On the other hand, there is a plethora of abandoned sites attesting to the continual shifting of communities, especially within the lowland area. Again, documentary evidence shows that this has been conspicuous throughout the historic period as well (37; 123, p. xx; 189). "Withdrawal to new areas appears to be a common Maya reaction to crisis," as Webb (222, p. 401) has written.

THE CARIBBEAN Migration theory obviously has a higher probability value in island environments than elsewhere, for here diffusion over any distance must necessarily also involve migration. Yet there is disagreement as to the number of major migrations that can be adduced from the archaeological evidence in the Caribbean. In Haiti, for example, Rainey (176, p. 7) sees the Crab and Shell periods as evidence of separate migrations from the South American mainland, while Rouse (187, pp. 185–86) sees the Crab culture as evolving into the Shell without benefit of outside stimulus.

SOUTH AMERICA The Andean region is par excellence the home of diffusionist theory, thanks to the enormous attention given to pottery styles in this area. Here the locally developed concepts of cotradition and of horizon style have given to diffusion theory a greater coherence and clarity than is often the case (26; 230). Both, however, are classificatory rather than explanatory concepts. At the explanatory level there has been a tendency to associate the spread of major horizon styles with the expansion of political power from states like Huari and Tiahuanaco (27, pp. 134–35; 44, pp. 74-75, 97–105; 143, pp. 132–35). Purely as an explanation for ceramic distributions, this is hardly a necessary or even a likely hypothesis; probably, as in Mexico, it owes as much to ethnohistoric tradition as to archaeological evidence.

At the beginning of the Peruvian sequence, the earliest manifestations of civilization have been attributed on the one hand to population migrations from the trans-Andean Montaña (44, p. 54; 209), and on the other to diffusion from Mesoamerica (44, pp. 55–56). Both suggestions are questioned by Lanning (143, pp. 74–79) and specifically repudiated by Moseley (161), who feels that all of the conditioning factors for Andean civilization can be found in the Peruvian maritime environment.

Marajoara culture, which developed at the mouth of the Amazon in late prehistoric times, provides an instructive example of migration theory based on supposed cultural anomalies. The culture belongs to the generalized Amazonian farming tradition but exhibits a degree of elaboration and specialization which is otherwise found only in the western Amazon. On the premise that there should not be two widely separated climax zones within the same general culture area, a number of scholars have postulated a western origin for the Marajoara people. Cultural resemblances are nevertheless too generalized to indicate a specific point of origin. Meggers and Evans (85, pp. 86–90; 157) have suggested the northern Andes, Collier (60, pp. 18–19) the Peruvian or Bolivian Montaña, and Willey (232, p. 426) the middle Amazon.

In southern South America there is a large body of archaeological material that has been attributed to recent migrations of the Tupi-Guarani peoples (232, pp. 452, 458, 472). This interpretation is at least consistent with the extraordinary restlessness manifested by the Tupi-Guarani in the historic era (175, pp. 75–113).

EUROPE Migration theory seems to flourish on European soil as on no other. Its popularity undoubtedly stems in part from the large number of irrefutably documented migrations that have taken place in the historic era. In addition, however, migrationism in Europe since the nineteenth century has had an explicitly political overtone; it has been used in conjunction with

notions of racial or national superiority to produce nationalistic pseudo-histories (cf 185, pp. 30–37; 207, pp. 157–58). Of these Gustav Kossina's *Die Deutsche Vorgeschichte, eine Herrvoragend Nationale Wissenschaft* (*German Prehistory, a Supremely National Science*) (135) is archetypical; it later became a cornerstone of official Nazi mythology. Such thinking seems to represent a latter-day survival of the kind of migrationism found in early tribal mythologies. Its lingering aftereffects can be detected in the somewhat murky field of "Indo-European archaeology," which remains popular in parts of eastern Europe (54, pp. 141–54, 209-11; 66, pp. 853–59; 172, pp. 78–97). Although the crude excesses of Nazi Aryanism have been repudiated, there persists a kind of Nietschean image of the early Indo-Europeans as a race of mighty manslayers whose appearance everywhere signaled a heroic age of *sturm und drang* (cf 172, pp. 78–80).

The real organizing genius of European migrationism, nevertheless, was neither a racist nor a nationalist, but the unabashed Marxist V. Gordon Childe. In *The Dawn of European Civilization* (53), and still more in *Prehistoric Migrations in Europe* (54), he attributed nearly every major cultural development of the Neolithic and Bronze Ages to a movement of peoples, usually from the east. Of the first of these works Daniel has written that "... *Dawn* was a new starting point in prehistory. Gone was the simple evolutionary cultural sequence. Here was a prehistory studying the complexity of culture, studying human *society* [italics ours] in the prehistoric past. Childe's lead was soon followed all over the world by those analyzing and writing about prehistory" (69, p. 84). It is startling here to learn that Childe's migrationist ideas were developed specifically in reaction against the kind of evolutionary stage theory which, as a good Marxist, he might have been expected to endorse. It is also surprising to find that Childe declared himself a diffusionist rather than a migrationist (54, p. 9); indeed it is not clear that he ever systematically distinguished the two processes. In case after specific case, however, we find that his notion of "diffusion" involved the wholesale movement of peoples, as if he could not quite conceive of the movement of culture in any other terms. As Daniel implies, the Childean formula has been retained almost intact by most later students of European prehistory, both in general surveys (80; 116, pp. 240–54; 171; 172) and in the interpretation of specific sites and cultures (33, 59, 174, 220, pp. 242–44).

If Europe has been a primary seedbed of migration theory, it is also the area in which a countermovement has taken most articulate shape. The beginnings of this development can surely be traced to Grahame Clark, whose *Prehistoric Europe, the Economic Basis* (56) did not specifically attack migration theory, but offered a model for understanding European prehistory without reference to external factors. In another work, however,

Clark expressly challenged the notion that repeated invasions had been the main source of prehistoric culture change in the British Isles (57). A later generation of cultural materialists has gone much further than Clark in insisting that prehistoric cultural development in Europe can be linked to technoenvironmental determinants, and that earlier theories both of diffusion and of migration are "unscientific" and untenable.

The primary spokesman for the new materialist point of view is Colin Renfrew (183–185). Armed with a new and still controversial set of radiocarbon determinations, he argues that we are no longer required to concede priority to the Near East in the development of monumental architecture, metallurgy, complex political organization, and other institutions of civilization. That being the case, we should cease looking to the east for the sources of European cultural development and should concentrate on factors in the local environment. This view is shared by a number of younger followers of Renfrew (75, 196, 228), who have applied the materialist perspective to the interpretation of various individual cultures and sites. Renfrew himself has similarly reinterpreted the prehistory of the Aegean (184), another area where migrationist theory has flourished for a very long time (113; 224, pp. 302–8; 225, pp. 571–608).

It should be added that the controversy among diffusionists, migrationists, and cultural materialists largely involves the Neolithic and Bronze Age cultures of Europe. The Paleolithic era is still dominated by evolutionary stage theory, which at least conceptually has made relatively little progress since the end of the nineteenth century.

AFRICA In Africa it is the earliest phases of prehistory—i.e. those that can be fitted directly to the European and west Asiatic paleolithic sequence —that have attracted the greatest attention. Here, as in Europe itself, evolutionary stage theory remains predominant. There has, however, been a modest development of diffusion and migration theory with reference to the later prehistoric cultures in various parts of the continent. In North Africa, for example, the spread both of Aterian (154, pp. 158–62) and of Capsian (154, pp. 225–26) culture has been attributed to migrations, though the source area has not been clearly identified in either case.

The supposed influx of pre-Berber peoples into the Sahara, ousting an earlier population of Neolithic pastoralists, is of interest because this is the only migration theory known to us which is based primarily on the evidence of rock art. Scattered along the desert caravan routes are depictions of standing figures in two-wheeled chariots which, according to Desmond Clark "used to run down the troglodytes of the desert" (55, p. 207). These pictures are rather obviously based on pharaonic Egyptian iconography, as are the numerous pictures of Egyptian solar boats in the eastern Sahara

(215, p. 63). The reliability of such representations as evidence of actual historical events seems to us very dubious.

In southern Africa the spread of iron working has been associated by a number of writers with a southward movement of Bantu speakers (55, pp. 213–18; 119). Derricourt (71) now suggests that this is an oversimplification. It seems, as in a good many other areas, that we must consider the distributional evidence of language and of culture independently.

The controversy surrounding the Zimbabwe ruins of Rhodesia may represent the last surviving instance of a migration theory having overtly political overtones. The official Rhodesian government position is that Zimbabwe was built by Phoenicians, Arabs, Portuguese, or some other intrusive "higher race," because (according to nineteenth century racist-evolutionist doctrine) a people capable of monumental architecture should also be capable of self-government (45, p. 31), a privilege which the white minority in Rhodesia is not yet ready to concede to the black majority. For their part the black nationalists of Rhodesia have attempted to turn the racist argument on its head by claiming Zimbabwe as their own, thereby in principle validating their right to self-government. The fact that the builders of Zimbabwe have been dead for at least several hundred years, and therefore could have no practical bearing on the issue of present-day self-government, does not seem to be acknowledged by either side.

EGYPT AND THE NEAR EAST Here migration theory has flourished almost as uninhibitedly as in Europe, again partly because of the number of well-documented migrations in the historic period. In Egypt (23, 169, 193, 194), in Nubia (83, 181, 182), in Palestine (127), and in Sumer (116, pp. 367–69) each of the successive cultural stages of late prehistory was once attributed to the coming of new peoples who presumably submerged or displaced their predecessors. In Egypt and Nubia the cultural evidence for migration was at first seen to be reinforced by racial evidence, as adduced by the eminent comparative anatomist (and dedicated migrationist) G. Elliot Smith (81). This second line of evidence has been discredited by more recent work (29, 162), and in addition the accumulation of archaeological evidence now suggests that the supposed differences between successive prehistoric stages were exaggerated. Although old migrationist theories die hard in this area (partly because it has not been much penetrated by anthropologists) there is at least a growing tendency to view the late prehistoric cultures of Egypt (15, pp. 42–44; 124; 125, pp. 135–36; 216, pp. 77–86), of Nubia (5–7), and of Sumer (2; 90; 149, pp. 343–44) as successive stages in the development of the same peoples. A similar reassessment has not yet been made in Palestine, but the evidence from Jericho (127) seems ripe for such reinterpretation.

INDIA Considering the frequency and the destructive effect of migrations and invasions in the historic period, it is rather surprising to find that not many cultural developments of the prehistoric era have been attributed to outsiders. There is, however, one conspicuous exception: the supposed wave of Aryan migration that put an end to Harappan civilization in the second millennium B.C.. This suggestion was first put forward quite tentatively by Wheeler (226) as one of a number of possible explanations for the Harappan decline. It has since acquired almost the status of dogma, perhaps because of its congruence with the general theory of warlike Indo-European migrations in Europe (19, pp. 26–38; 66, pp. 850–53; 116, p. 397; 170, pp. 143–45, 214–88). Yet as recently as 1968 Wheeler could remind us that his original theory was a *jeu d'esprit,* and as of that time was "still sustained by no positive evidence" (227, p. 131).

THE FAR EAST J. G. Andersson, the first discoverer of many Far Eastern prehistoric cultures, was inclined to attribute the whole sequence of Chinese Neolithic and Bronze Age development primarily to diffusion from the West (12, 13). Not surprisingly, his theories have not appealed to archaeologists of Chinese origin, who regard the Neolithic and Bronze Age sequence in the Far East as primarily an indigenous development. Chang has been able to trace the Neolithic Yangshao and Lungshan cultures to localized centers of origin in North China (52, pp. 51–96). Yet the same author attributes the southward spread of Lungshan influence to a migration of northerners into the Yangtze basin (51, pp. 185–86). A contrary view has recently been expressed by Meacham (156), who visualizes a more or less concurrent process of evolutionary growth over the whole of eastern China in Neolithic times. Like many writers critical of migration and diffusion theory, Meacham considers that a cultural materialist model of ". . . assumed local evolution and parallel development over a wide region constitutes the most appropriate theoretical model with which to frame the data, and leads generally to more productive lines of investigation . . . than do other a priori models" (156, p. 381).

It is apparent from the foregoing quick survey that migration theory remains a force to be reckoned with in many parts of the world, even though it is now under attack from a number of different directions. Not surprisingly, since it has never been articulated as a general explanatory principle, neither the support for migration theory nor the opposition to it seem very well organized or very consistent at the theoretical level. On the contrary, there are evidently a number of different reasons for embracing the migrationist position in individual cases, and also a number of reasons for attacking it. In the next pages we shall consider briefly some of the reasons, good and bad, why migrationism persists, and then some of the directions from which it is now under attack.

Reasons for the Persistence of Migrationism

There appear to be at least ten reasons why migration theories have arisen and why they persist in various parts of the world today. The reasons are of course not wholly distinct from one another; many of them are logically interconnected.

PERSISTENCE OF THE CREATIONIST WORLD VIEW As we noted earlier, migration is the only explanation for culture change which is fully congruent with a creationist world view; as such it was the basic explanatory paradigm for change down to the nineteenth century. It was out of the anticreationist ideology of nineteenth century natural science that the rival paradigms both of evolutionism and of diffusionism arose, and in the study of culture these still remain more or less specifically anthropological concepts. There are large areas of the world, however, where the investigation of prehistory has not become exclusively or even primarily the province of anthropologists. European prehistorians are still as often trained in the classical-historical tradition as in the anthropological one, while Near Eastern archaeologists draw their interpretive paradigms from the ancient and traditional literature of their respective areas. It comes as no surprise to find that migrationist theory continues to flourish particularly in those parts of the world which have been least influenced by specifically anthropological thinking: eastern Europe, the Near East, and India. The relentless application of migration theory to every successive prehistoric stage by such scholars as Kenyon (127, pp. 36, 47, 60, 70, 82, 84), Reisner (181, pp. 5–6; 182, pp. 313–48), and Woolley (116, pp. 367–69) suggests that alternative explanations for culture change never occurred to them.

THE LINGERING AFTEREFFECTS OF RACISM As we saw earlier, in the nineteenth and early twentieth centuries racial and cultural data were often used in conjunction to suggest historical theories based on notions of differential creativity among peoples. In these circumstances the spread of "high cultures" at the expense of backward ones was often attributed to the movement of racially "superior" peoples (cf 185, pp. 30–37; 207; 221, pp. 119–24). Although the destruction of Nazism was accompanied by a general repudiation of this kind of thinking, there are remaining areas in which migration theory is not entirely free from notions of differential capacity among peoples. This is clearly apparent in the rather large body of theory relating to Indo-European migrations, although, curiously, the ancestral Indo-Europeans are imagined not as great creators but as great destroyers (54, pp. 141–54, 209–11; 66, pp. 853–59; 167, pp. 6–11; 172, pp. 78–97). A much more overt case of racism has already been noted in our discussion of the origins of Zimbabwe (45), and it must be admitted that among the

lay population of the Ohio Valley the attribution of prehistoric mounds to a vanished higher race (cf 112, pp. 75–85) has also not entirely died out. The migration theories of Harold Gladwin (96–98) in his reconstructions of aboriginal American culture history had a fairly considerable racist bias, but these are now pretty well consigned to the realm of fantasy.

THE CONSTRAINTS OF SHORT CHRONOLOGY Daniel and others have pointed out that an evolutionary perspective requires a certain amount of chronological elbowroom (69, pp. 31–49). Thus the emergence of a general concept of evolution had to await the discovery of geologic time, for the 6000 or so years allowed by biblical commentators was simply insufficient time for the slow processes of adaptive mutation and of cultural innovation to take place. The same limitation applies in a lesser sense to diffusion theory, in that diffusion in culture history is usually conceived as a slower process than is the movement of peoples. Thus migration has been and remains the preferred explanation when major culture change must be fitted within a short period of time. As Grahame Clark has observed, even after the general acceptance of geologic time, the relatively conservative guess-dating applied to prehistoric cultures often did not allow sufficient time for the operation either of evolutionary or of diffusion processes. Grahame Clark argues that the higher chronologies indicated by radiocarbon dating have permitted the contemplation both of evolutionist and of diffusionist alternatives to migration in the explanation of British prehistory (57, p. 176).

THE INFLUENCE OF HUMANISTIC PARTICULARISM For the benefit of American readers, it cannot be stressed too often that not all prehistorians are anthropologists; outside the Western Hemisphere very few of them were until recently. Binford, in questioning ". . . the adequacy and validity of traditional arguments advanced by anthropologists (particularly archaeologists) in treating the complex problem of the dynamics of culture change" (31, p. 162) seems wholly unaware that many of the arguments he attacks were not proposed by anthropologists. Such active and successful field practitioners as Gordon Childe, Flinders Petrie, and Mortimer Wheeler probably never took an anthropology course in their lives. Their academic training was in the European tradition of classics and history, which means in the general climate of historical particularism. This is an approach which, when applied to cultural data, is generally anticomparative and consistently stresses differences as opposed to similarities between cultures. It is not surprising then that scholars like Kenyon (127), Reisner (181, 182), and Woolley (116), trained in the particularist tradition, should have been overimpressed by the seeming differences between successive

cultures; differences which appeared to them so great that only migration could account for them. Very often anthropologists looking at the same data have seen much more cultural continuity than discontinuity, and have suggested that a migration theory raises more problems than it solves. Thus in attacking the prevailing, Childean version of European prehistory, Edmonson has written that "Migration would be a ready enough explanation for anomalies of dating and distribution, but it seems to me that if migration were a factor of frequent or extensive importance it would create more such anomalies than [the] data manifest" (80, pp. 85–86). The same kind of reasoning has been employed in challenging theories of discontinuity in Egypt (216, pp. 77–86), Nubia (4–7), and Sumer (90).

OVEREMPHASIS ON "INDEX FOSSILS" Nineteenth century geologists learned to distinguish geologic strata one from another on the basis of specific, diagnostic fossils found within them. Similarly, archaeologists dealing with cultural stratigraphy have learned to distinguish one time horizon from another by individual diagnostic traits which are analogous to "index fossils." These are invariably the most stylistically expressive of surviving culture elements: arrowheads until they are succeeded by pottery styles; pottery styles until they are succeeded by monumental architecture; monumental architecture until it gives way to language and literature.

From a heuristic standpoint the differentiation of time horizons on the basis of individual diagnostic traits is entirely justifiable; it has proven its value in practice over and over again. There is, however, a tendency to forget that traits which are valuable for heuristic purposes were not necessarily significant in any larger sense (cf 50, pp. 35–38; 126, pp. 132–33). For example, a truly extraordinary number of migration hypotheses have been suggested simply to account for the distribution of pottery styles (cf 180, p. 7), as though pottery styles are inherently more important and more demanding of explanation than are such nondiagnostic traits as basketry, stone technology, or domestic architecture. Setting aside the evidence of ceramics, we often find that the differences between supposed premigration and postmigration cultural horizons are few. Grieder has attempted to overcome this difficulty by suggesting that pottery change always mirrors more significant change in other domains of culture (107, p. 850), but W. Y. Adams argues that, at least in the historic period, no such correlation can be demonstrated (8).

OVERPERIODIZATION FROM FRAGMENTARY EVIDENCE Under the two preceding subheadings we have dealt with factors leading to an overemphasis on cultural discontinuities at the expense of continuities. Still another factor is the tendency, in the early stages of investigation in a new area, to

construct periodized culture chronologies before much actual data has come to hand. The first recognition of different archaeological "cultures" in the same region usually results either from the investigation of "pure" sites (containing remains of only one horizon) of different types, or from relatively limited test cutting through stratified sites. Neither procedure gives an adequate measure of the extent of cultural continuity between one horizon and the next. Thus cultural discontinuities nearly always appear greater in the early stages of investigation than they do when more information has come to hand. In arguing for the essential continuity of prehistoric Southwestern cultural development, Kidder long ago wrote that

> When our knowledge of Southwestern archaeology was less full than it is today, transition stages between the main periods were not recognizable, and a theory of development by jumps or influxes seemed necessary to account for the observed facts. Now that transitions are beginning to be found, it is becoming increasingly evident that the Southwest owes to outside sources little more than the germs of its culture . . . (129, p. 119).

Fifty years later W. Y. Adams used almost the same words in arguing for the continuity of the early Nubian cultures against an older migrationist paradigm (7, p. 666).

THE "HALO EFFECT" FROM TEXTUAL HISTORY In areas of the world with a long recorded history, and above all in the Near East, there has not been a sharp theoretical or methodological dividing line between prehistorians and excavators of historic remains. Excavators like Kenyon, Petrie, Reisner, and Woolley worked with equal facility both in prehistoric and in historic horizons. Since in the historic periods they looked for explanation and interpretation to the surviving textual records of these periods, it is hardly surprising that they attempted to apply the same interpretive models to the prehistoric horizons.

The reality of migrations in the historic Near East can hardly be disputed. In Mesopotamia we have evidence of the coming of Amorites, Kassites, Hurrians, and others; in Palestine of Philistines and Hebrews; in Egypt of Hyksos and Libyans. Moreover, the coming of such peoples was often associated by ancient chroniclers with major shifts in the tides of history. No wonder, then, that the archaeologists have come to view prehistoric culture change in pretty much the same terms.

The fallacy of such reasoning lies in the fact that the evidence for migrations in the historic period is philological, not cultural. Without the supporting evidence of texts no single archaeological site, or even culture trait, can be identified specifically and exclusively as Sumerian or Akkadian, Amorite or Kassite or Hurrian. In short, the great population movements of the historic period brought about no recognizable culture changes *except*

in the domain of language. And since we observably cannot argue from ethnic change to cultural change in the historic period, it follows that we also cannot argue from culture change to ethnic change in the prehistoric period (6, pp. 202–3). The likelihood that culture change is a priori evidence of ethnic change still remains to be demonstrated (cf 166, pp. 485–86; 207).

THE ANTI-EVOLUTIONIST REACTION As the foregoing discussion has shown, many older theories of migration and some persisting ones are based either on prescientific thinking or on logical fallacies. However, by no means all migration theory can be similarly dismissed. The theories of Childe and his followers are relatively modern developments, arising specifically in reaction against the simplistic excesses of evolutionary stage theory (69, pp. 82–85; 131, p. 163; 132, p. 691). As Daniel suggests, the Childean approach liberated the study of prehistory from the sterile culturological models characteristic of evolutionism and allowed the contemplation of social as well as cultural factors (69, p. 84). This approach has brought only limited enlightenment, however, partly because of Childe's own inability to distinguish diffusion and migration as separate processes.

THE HISTORICAL REALITY OF MIGRATIONS Above and beyond situational evidence and situational logic, any proponent of a migration theory can fall back for support upon the very substantial evidence of migrations in the historic period. It is difficult to refute the logic of migrationism merely by a "law of least moves" (121, p. 433) when we are confronted with so many historically documented population movements (74, pp. 43–44; 167, pp. 5–36, 321–24; 229, pp. 27–90). This is a problem that the antimigrationist school of cultural materialists has not yet adequately confronted.

Logically we should expect to find the greatest number of migrations in areas where there are the fewest natural barriers to population movement, and this seems to be confirmed historically in northern Europe, the Eurasian steppes, the Mediterranean basin, and the Near Eastern heartland. The fact that prehistoric migration theory has flourished in precisely the same areas, therefore, does not seem wholly illogical; it may be evidence that the migrationists understand environmental determination better than do the materialists who continually argue for in situ development. In the New World, too, migration theory flourishes especially in eastern North America, where there are few natural barriers to population movement.

THE MYSTIC MIND There is a familiar mentality which, contemptuous of scholarly cavils, delights in the contemplation of the infinite, the remote, and the improbable. For possessors of this mentality, the more seemingly improbable a theory is (according to narrow canons of rationality), the more

stubborn is their adherence to it. In the recent past they have flocked to the banners of Von Däniken as they once did to Velikovsky, to Churchward, and to Elliot Smith.

From the writings of the aforesaid authors, and of many others, it is apparent that ancient, long-range migrations, in defiance of conventional laws of history and of technology, have a special appeal to the mystic mind. And because the mystic mind is cross-cultural, it will always turn up from time to time within the halls of academe itself, though it will find its main audience outside.

Robert Wauchope has dealt so delightfully with mystical migration theories in *Lost Tribes and Sunken Continents* (221) that further discussion on this subject is superfluous.

Opposing Trends and Doctrines

As we noted earlier, the retreat from migrationism in the twentieth century began with a recognition that racial, linguistic, and cultural distributions do not necessarily or even usually coalesce, and that reconstructions based on any such assumption are probably simplistic. Since that time migration theories in archaeology have generally had to stand or fall on cultural evidence alone. As such they have been subject to attack from at least three different directions, each involving a somewhat different set of presuppositions about the nature of culture.

THE PARTICULARIST ALTERNATIVE: DIFFUSION Diffusionists mounted the earliest and in some cases the most persistent challenge to migration theories, although the parameters of disagreement between the two positions are in fact quite narrow. The foreign origin of cultural innovations is generally taken taken for granted by both, since they share in common a belief in human uninventiveness (cf 147, p. 178). The issue between them is whether innovations should be attributed to a movement of peoples or only to a movement of ideas; in practice this usually resolves itself into a debate over the extent of continuity or discontinuity in the archaeological record and the readiness with which an external source of innovation can be recognized. As we noted earlier, there is a general tendency to speak of diffusion when an immediate local source can be identified, and of migration when no immediate source is apparent.

Cases in which older migrationist theories have been challenged, and in some cases supplanted, by diffusionist interpretations include those of the northern Northwest Coast cultures (76), many Eastern North American cultures (cf 32, p. 3), a few Southwestern cultures (179, p. 54; 180, p. 7), the earliest farming horizons in Peru (44, pp. 55–56; 232, p. 106), and a very

large number of Neolithic and Bronze Age cultures of continental Europe and the British Isles (57). In at least two of these areas, Eastern North America and Europe, the interpretation of prehistory is still largely dominated by the diffusionist-migrationist dispute (32, p. 3; 196, pp. 419–21; 200). It is noteworthy that the controversy rages most strongly in areas where there is a diversity and complexity of cultural styles, in such matters as pottery decoration and burial rites, and where the interpretation of culture history rests heavily on stylistic evidence. The diffusionists and the migrationists still have the field of style largely to themselves, for even the most dedicated of evolutionists have yet to suggest that the existence of closely parallel styles in different areas can be explained by common adaptation to a common environmental challenge. The theory of trans-Pacific contacts between Japan and Ecuador in the third millennium B.C., invoked specifically to account for stylistic resemblances between Jomon and Valdivia pottery (158), is eloquent testimony to the inability even of loyal materialists to explain stylistic resemblances in other than historical terms.

THE POSITIVIST COMPROMISE: IN SITU DEVELOPMENT "The ultimate task of archaeology," wrote Albert Spaulding, "[is] the development of the ability to explain the similarity or lack of similarity between any two components. We would expect that two components closely associated in geographical space and time would resemble each other closely in culture type" (200, p. 14). When the expected resemblance has not been found, either migration or diffusion has been the most commonly suggested explanation for the anomaly. However, the steady accumulation of archaeological evidence in different parts of the world has suggested again and again that early impressions of discontinuity between components were exaggerated. In these circumstances theories of migration have often been discarded in favor of an assumption of local cultural development, making allowance where necessary for diffusion of stylistic influences. Cultures and sequences which have been subjected to this kind of reinterpretation include the Basket-Maker to Pueblo sequence (129, p. 119) and the Hohokam development (231, pp. 235–36) in the Southwest, the Iroquoian cultures of the Northeast (148; 217, pp. 25–35), the Shell Culture of the Caribbean (187, pp. 185–86), the Chavín horizon in Peru (27, pp. 91–102; 143, pp. 98–102), a large number of Neolithic cultures in Europe (16; 57; 58, p. 233; 68; 173, p. 221; 186, pp. 90–92), the successive levels from I to VI at Troy (34, pp. 59, 89), and the late prehistoric sequences in Egypt (216, pp. 77–86), Nubia (5–7), and Sumer (90). In most of these areas there are no longer perceived to be major discontinuities between periods. Even where discontinuities

remain, however, there is often a tendency to see them as analogous to geological unconformities; that is, as indicative of gaps in the data rather than of genuine interruptions in the orderly process of cultural development (4, pp. 17–18; 5, p. 9; 143, p. 73).

Like the debate between migrationists and diffusionists, that between migrationists and the champions of in situ development (whom we may for convenience call "isolationists") has generally been confined to the interpretation of specific cases and has not been articulated as a difference of principle. Such a difference nevertheless exists, for the isolationists place their primary faith in a "law of least moves" while both diffusionists and migrationists place theirs in a "law of fewest inventions." "Don't look abroad for the sources of innovation unless you are forced to" is the essence of the isolationist position. Wheeler has expressed the same idea metaphorically: "In the quest for far horizons there is always the danger of tripping over the pebbles at our feet" (227, p. 24). The "law of least moves" nevertheless remains generally implicit rather than explicit in the arguments of isolationists, in contrast to its very overt formulation by cultural materialists.

It must be added that not all denials of diffusion and migration theory are based on a positivistic reassessment of evidence. Some have more the appearance of particularistic isolationism: the loyal repudiation of alien influence by scholars anxious to establish the cultural autonomy of their chosen regions or peoples. In this category must surely be placed the adamant denial of transoceanic contacts by the vast majority of twentieth century Americanists—something which A. V. Kidder candidly acknowledged to be an article of faith not wholly consistent with his other culture historical beliefs (130). An element of particularist isolationism can perhaps also be detected in Frankfort's insistence on local autonomy in the preliterate Sumerian sequence (90), and in W. Y. Adams's similar approach to the sequence of Nubian cultures (5, 7).

THE MATERIALIST CRITIQUE: SCIENCE VS HISTORY While both diffusionists and isolationists have generally been content to dispute the migrationists on a case-by-case basis, and at the level of empirical evidence, a far more sweeping challenge has recently been heard from the newly ascendant school of cultural materialism. The materialists assert that both diffusion and migration are nonexplanations in that they do not make culture change retrodictable in the light of general causal principles or laws (153, pp. 337–41; 184, pp. 58–60; 185, pp. 30–37). Archaeology to be academically respectable must conform to the established canons of science, and must therefore eschew interpretations that stop short of causal explanation.

Techno-environmental factors, in the view of materialists, can be shown to account for whatever is significant and patterned in culture change. For prehistoric peoples the appropriate conditioning factors can usually be identified in the immediate local or regional environment, which with its human inhabitants constitutes a meaningful and complete interactive system. Foreign influences can therefore be dismissed as historical accidents which could not significantly alter the environmentally determined course of cultural evolution. It is on this basis that Fladmark has reinterpreted the prehistory of the Northwest Coast (87), Moseley the beginnings of civilization in Peru (161), Renfrew and his followers the whole course of prehistory in Europe and the Aegean (17, 184, 185, 196), and Meacham the development of the Chinese Neolithic (156). In support of their position these scholars have made explicit their adherence to the "law of least moves" (cf 121, p. 433), which is merely implicit in the work of the isolationists.

Although the polemical style adopted by some of the leading cultural materialists has provoked anguished protests from more historically minded scholars, there has not yet been a very effective or concerted response. W. Y. Adams, however, has pointed out that for all their denunciation of diffusion and migration as "nonscientific," what the materialists have actually contrived is not an opposed but an alternative paradigm in which migrations are ignored rather than specifically refuted (9). This is accomplished by agreeing in advance to dismiss stylistic phenomena as irrelevant (153, pp. 320–21; 183, pp. 155–56). Archaeology is thereby made "scientific" at the cost of ignoring whatever cannot be rigorously predicted, a limitation which is unlikely in the long run to prove acceptable either to many culture historians or to the general public. As Boulding has written, "It will be a sad day for man when nobody is allowed to ask questions that do not have any answers" (42a, p. 8).

MIGRATION THEORY IN HISTORICAL LINGUISTICS

Comparative linguistics, like ethnology and archaeology, has developed several distinct and sometimes competing paradigms in its attempts to grapple with the diversity of human languages. To a structuralist these may be interpreted as a series of binary opposites, each with a parallel analog in ethnology and archaeology. The most fundamental contrast in comparative linguistics is that between the particularistic orientation of historical linguistics and the universalistic and sometimes evolutionary orientation of typological linguistics. Historical linguistics deals with specific instances of change in a particular language family, whether these are products of innovation or borrowing. Typological linguistics, on the other hand, is

concerned with the discovery of universals of language and evolutionary sequences of language development based upon the comparison of unrelated languages. The analogs in ethnology and archaeology are, respectively, historical particularism vs evolutionism, and culture history vs culture process. Restated as a logical proposition:

historical linguistics : typological linguistics :: historical particularism : evolutionism :: culture history : culture process

There is, too, a rather direct parallel in the relative fates of these approaches in the three subdisciplines of anthropology. In each of the three there occurred a shift away from the universal and toward the particular in the early part of the twentieth century, with a subsequent reawakening of interest in universals and a rejection of particularism in relatively recent times.

A fundamental dichotomy may also be recognized within the particularistic orientations themselves. The opposition between diffusion and migration in both ethnology and archaeology is closely paralleled by the contrast between areal and genetic classifications of language. Thus

diffusion : migration :: areal classification : genetic classification.

Greenberg (99, pp. 102–4) has argued for rather close parallels between the migrationist theories of the *Kulturkreislehre* and the principles of genetic comparison in historical linguistics and a similar parallelism between culture area theory in ethnology and areal linguistics. It seems that migration and genetic relationship are generally seized upon first as explanations for cultural and linguistic similarity, with subsequent refinements leading to the acceptance of diffusionist and areal linguistic explanations for similarities.

Still a third dichotomy can be found in the contrast between permanent migrations and temporary invasions in archaeology, which is paralleled nicely by the contrast between conventional notions of genetic relationship among languages and substratum theories in which two distinct languages are said to have merged. Substratum theories of language have fallen into disfavor recently, while theories of language migration have been advanced by the application of fairly rigorous procedures for the identification of language homelands.

The three dichotomies mentioned above have led to the development of four strategies for explaining linguistic history:

1. typological linguistics
2. areal linguistics
3. genetic comparison and migration theory
4. substratum theories

Each of these strategies will be discussed below, with particular attention given to recent developments.

Genetic Comparison and Migration

Historical linguistics stands somewhat apart among the three anthropological subdisciplines under discussion here, in that migration has remained a highly respectable explanatory device for most linguists. Genetic relationships, at least between languages not separated for more than a few millenia, are rarely called into question. Consequently the fact of migration, for widely separated but closely related languages, can hardly be called into dispute. Migration as a source of explanation for linguistic distribution can take one of two forms:

1. identification of an area of greatest linguistic diversity within a continuously distributed language family as the source from which later dispersals took place;
2. assigning a prior continuous distribution to a language family which is now discontinuously distributed.

The first of these is a principle of long standing in historical linguistics. Many putative homelands have been located through the application of the maximum-diversity principle. Dyen (79, pp. 53–57) has argued for an Austronesian homeland in Melanesia or Formosa because of greater linguistic diversity in those areas than in Indonesia, the traditionally recognized homeland. Webb (223) locates the Pomoan homeland in the Russian River Valley. Lamb (142) hypothesizes a homeland for the Numic family of Uto-Aztecan in the Death Valley area. Krauss (137) recognizes a Proto-Athabascan homeland in central Alaska. While all of these studies rely simply on the notion of area of greatest diversity as the homeland, some demonstrate an additional sophistication in that the degree of diversity is precisely quantified through the techniques of lexicostatistics.

Discontinuous distribution of daughter languages in a family has been explained by application of a rather detailed methodology known as "migration theory." This method was developed by Dyen (77) to allow the precise selection of the most probable homeland for a group of related languages. Migration theory rests on two postulates:

1. "The area of origin of related languages is continuous."
2. "The probabilities of different reconstructed migrations are in an inverse relation to the number of reconstructed language movements that each requires" (77).

Using two distributional units, chains and separates, and the intervals which separate them, Dyen devised a series of precise procedures for determining the number of linguistic movements required by each possible re-

constructed migration. The reconstructed migration which requires the least number of language movements is the one selected as most probable. One important application of the method is a study of two language families by Diebold (73). In one case, he examines three discontinuities in the distribution of Mayan languages and is able to recognize movement of 1. The Huastec from the Chicomuceltec area; 2. the Lowland Maya from the highlands; and 3. Chorti from the Chontal-Chol area. The Proto-Maya homeland is placed in the Highland Maya area. In a second case, an examination of Salishan distribution reveals two points of discontinuity which are accounted for by either migration of Bella Coola and Tillamook or intrusion of unrelated languages. The homeland of the Proto-Salish is the North Georgia to Olympic area.

Another historical linguistic technique which may be applied to the problem of identifying linguistic homelands is the Wörter und Sachen technique, based on the premise that we can reconstruct not only the phonological forms of words in a given proto-language but also their meanings. By reconstructing faunal and floral taxa in a proto-language we can identify the biotic community in which it was spoken. The homeland of any proto-language is recognized to be the area where distributions overlap for all those species of flora and fauna which are named in the vocabulary of the proto-language.

Wörter und Sachen technique has been used extensively in the search for the homeland of Indo-European (24, 211), but the results have not always been wholly satisfactory. A major difficulty is introduced by the very drastic alterations of species ranges in Eurasia during the last several millenia. Too often, modern distributions have been accepted in lieu of ancient ones, with consequent poor results. Friedrich's recent work with Proto-Indo-European trees (91) has brought new sophistication to the method through the inclusion of palynological data in an attempt to define prehistoric floral distributions more accurately.

Applications of Wörter und Sachen technique to language families other than Indo-European have been limited. However, Siebert (198) has suggested a homeland for the Proto-Algonquian people. He has been able to reconstruct a total of 53 taxa for Proto-Algonquian by comparing Central (Fox, Cree, Menomini, Montagnais, Ojibwa, Shawnee, Miami) with Eastern (Delaware, Natick, Abenaki) Algonquian languages. Using about 20 of these species and plotting aboriginal ranges for each, Siebert finds an area of overlap in range which can be identified as the Proto-Algonquian homeland:

> The original home of the Algonquian peoples lay in the region between Lake Huron and Georgian Bay and the middle course of the Ottawa River, bounded on the north by Lake Nipissing and the Mattawa River and on the south by the northern shore of Lake Ontario, the headwaters of the Grand River, and the Saugeen River (198).

Fowler (88) has applied the same method to the Numic group of Uto-Aztecan. This group consists of three branches of two languages each (Mono and Northern Paiute, Panamint and Shoshoni, Kawaiisu and Ute). While terms shared by members of any two branches should be sufficient to posit a Proto-Numic form, Fowler believes that the closeness of the phonological systems makes it extremely difficult to control for interlanguage borrowing. To overcome this difficulty she selects forms which have cognates in other Northern Uto-Aztecan languages (Hopi, Tübatulabal, Takic). Her reconstructions thus encompass Pre-Numic and perhaps Proto-Northern-Uto-Aztecan as well as Proto-Numic. Using modern distributions of animal and plant species, Fowler locates the Numic homeland in southern California slightly to the west of the Death Valley homeland proposed by Lamb (142) on the basis of linguistic diversity. The two separate techniques confirm one another sufficiently to allow us to reject the northeastern Great Basin homeland proposed by Taylor (208), the southwestern Utah and/or northwestern Arizona homeland proposed by Gunnerson (108), and the eastern Idaho homeland for Shoshoni proposed by Swanson (206). There seems now to be general agreement among linguists as to the homeland and to direction of expansion, but archaeological attempts to find confirmation for this expansion have yielded little.

Fowler cites palynological evidence for a lack of major climatic alteration in the past several millenia, adding to the probability of the southern California homeland.

The foregoing studies exemplify several major trends in recent linguistic migration theory:

1. There has been an increased tendency to quantify linguistic diversity for the purpose of locating original homelands.
2. Precise techniques have been developed to account for discontinuities in distribution.
3. The application of Wörter und Sachen techniques has been extended beyond Indo-European, with much greater success than was evident in the Indo-European applications. The use of palynological data represents a significant innovation.
4. There has been a much greater tendency to control for interlanguage borrowing in recent studies than was true earlier.

For recent language splits (generally less than five millenia), then, the main trend is toward increased sophistication in proposing migrations and language movements. In language groupings of greater time depth, however, primary reliance has been placed on diffusion and on hypothetical language universals as bases for the explanation of linguistic distributions. These trends will be discussed below.

Areal Linguistics

The major challenge to proposals of genetic relationship and migration as an explanation for language distribution has come from proponents of linguistic borrowing or diffusion. Such challenges have usually arisen when the proposed genetic relationships were remote. However, the claims of borrowing have in many cases been as poorly documented as were the genetic relationships which they were intended to challenge. Too often proposals of diffusion or of genetic relationship have been seen as mutually exclusive propositions, when in fact both must be considered in addressing the linguistic history of any region. Haas (109) has given a good overview of this and other problems.

A number of recent studies have avoided the false polarization between migration and diffusion theory and have succeeded in integrating both genetic comparison of languages and linguistic borrowing; in so doing they have greatly enhanced our understanding of linguistic history in a number of regions. Studies of this type can be arranged logically in three groups. First, there are those which concentrate on the relationships of languages spread over a wide expanse of territory, and which outline linguistic areas logically equivalent to the culture areas of the ethnologist. A second type of areal study is concerned with the borrowing by one language of lexical and phonological material from neighboring languages. A third type of study centers upon the discovery of different historical strata within a given set of languages, one stratum being due to genetic relationship and another to intimate contact with and linguistic borrowing from some related language at a later point in time.

Sherzer's "Areal linguistics in North America" (197) attempts the definition of language areas for the continent as a whole, using a number of phonological and grammatical resemblances derived from both genetic relationships and interlanguage borrowing. Sherzer defines traits characteristic of whole culture areas as well as traits limited in their distribution to smaller subareas within each culture area. One criticism of Sherzer's work that may be offered is his a priori adoption of culture areas as units of analysis, rather than attempting to let the linguistic data themselves suggest the boundaries of areal units.

Aoki (14) has used both genetic and diffusional data in assessing the interrelationships of languages in the eastern portion of the Columbia Plateau. He finds a substantial number of loans between Salishan and Sahaptian languages in the area and is able to arrange many of these in chronological sequence and to determine the direction of borrowing. Known genetic relationships and detailed knowledge of the phonological histories of the two language families play a decisive role in the determination of chronological and directional parameters.

Recent studies of the second type mentioned earlier include Callaghan's (46) analysis of phonemic borrowing in Lake Miwok. This language has considerably expanded its phonemic inventory by borrowing of lexical items from the Patwin and Pomoan languages. Newman's (165) study of Bella Coola faunal and floral vocabulary is another good example of the extensive borrowing of lexical items. Bella Coola has borrowed so many lexical items from the neighboring Bella Bella that it shares more faunal and floral vocabulary with this genetically unrelated Wakashan tongue than with genetically related Salishan languages. Kroeber (139) has identified parallels between Athabascan languages and Yuki, which may be attributed to borrowing of structural rules rather than lexical items.

Two recent studies in the Austronesian field demonstrate the third type of areal strategy mentioned earlier. Biggs (30) has outlined the phonological history of the Rotuman language and discovered in it two distinct historical strata. These are manifest as two distinct sets of correspondences obtaining between Rotuman and other languages of the Eastern Oceanic subgroup of Austronesian. One set of correspondences reflects words inherited directly from a common ancestor, while the other results from fairly extensive lexical borrowing at a later date from other Eastern Oceanic Polynesian languages. The donor languages seem to be both Samoan and Tongan. A similar study is Dyen's analysis of speech strata in Ngaju Dayak (78).

All of the above studies are progressive in that they successfully integrate the study of linguistic borrowing and the study of genetic relationships, in contrast to traditional studies which selected one or the other approach exclusively.

Typological Comparison

There has been great interest recently in the development of typological comparison of languages. Typology had previously lain dormant as a field of linguistic inquiry since the heyday of evolutionary typologies in the early part of the nineteenth century. Recent work in this field is largely ahistorical and nonevolutionary in orientation. Greenberg (100) has developed some quantitative techniques for typological comparison, but the main thrust of research has been in the study of grammatical resemblances between languages having putatively a remote relationship. It is now suggested that many points of grammatical resemblance which were once adduced as evidence of remote genetic affiliation may be attributable to linguistic universals or to the existence of broad typological categories of language. The number of possibilities in grammatical structure appears to be limited enough so that parallelism cannot be dismissed as an explanation for resemblances.

Klokeid (134) has undertaken a review of the Mosan hypothesis of Swadesh (204, 205), who had argued for a grouping of Wakashan, Salishan, and

Chemakuan languages on the basis of lexical and grammatical comparisons. Klokeid demonstrates that a number of the grammatical features proposed by Swadesh as indicative of genetic relationship are in fact language universals, or features commonly associated with certain language types which have a wide distribution throughout the world. Kuipers (141, pp. 401–5), arguing from a somewhat different perspective, shows that Squamish, a Salishan language, shares many features of both grammar and lexicon with Indo-European languages. Kuipers' evidence seems to be qualitatively and quantitatively as reliable as that of Swadesh; as such it deals the Mosan hypothesis a severe blow.

Further investigation both of language typology and of the distribution of language types is clearly indicated. Many currently held theories of remote relationship undoubtedly can be subjected to this sort of criticism.

Substratum Theories

Perhaps the area of historical linguistics which has suffered most in recent times is the use of substratum theories to account for linguistic diversity among members of a language family outside of the supposed original homeland. Such theories are the functional equivalent of invasion theories in archaeology. The usual scenario pictures a group of relatively "primitive" peoples speaking a number of distinct languages receiving a sudden massive infusion of lexical and grammatical material from a more "civilized" group of migrating peoples who move rapidly through their area. Very often these arguments seem to stem from notions of racial difference between the "civilized" migrants and the "primitive" recipients of linguistic material. Today, however, it is generally accepted that areas of greatest diversity represent the original homelands of linguistic families, and theories of linguistic invasion are no longer necessary to account for distributional patterns.

A classic earlier example of substratum theory involved the attribution of Papuan substrata to the Austronesian languages of Melanesia in an attempt to account for the diversity of Austronesian languages in this area. Many recent workers have argued against such an interpretation, and some have gone so far as to identify Melanesia rather than Indonesia as the most probable locus of the Austronesian homeland (47, 234).

Another case is Thalbitzer's (210) assertion of an Eskimo substratum in Aleut. Most current theory favors a genetic relationship between Eskimo and Aleut.

Conclusions

The overall trends in historical linguistics involve not so much an assault on the well-established tradition of migrationism but rather the adoption of

multicausal explanatory models for linguistic similarity. The simultaneous application of the concepts of language universals, typology, and genetic relationships, the strategies of areal linguistics, and sophisticated procedures for determining homelands have lent a new credibility to theories of language spread. All of these trends bespeak an increasing sophistication in historical linguistic studies. While one might argue that there have been retreats from migration theory in a number of specific instances, the net result is a strengthening of method and technique which bodes well for the future of migrationism in historical linguistics.

PHYSICAL ANTHROPOLOGY AND THE RETREAT FROM MIGRATIONISM

Theories of migration and diffusion of human populations have been at the confluence of method and theory in physical anthropology, particularly in the analysis of human skeletal remains. In this area of analysis there was a pervasive impact from historical particularist ethnology of the 1920s. Bennett characterized this approach by the following paradigm:

> phenomena with a common origin subsequently separated in space (and time), tend to develop formal and functional differentiation. And further, if two sets of phenomena, widely separated in space, show significant formal and/or functional similarity, it can be assumed that they have had a common origin (25).

Thus historical relationships were seen as fundamental to the process of cultural differentiation. To the extent that spatial relationships varied as a function of migration and diffusion through time, geographical distributions were a primary measure of temporal (historical) affinity.

The analysis of human skeletal remains found both method and rationale in this view of the historical process. Particularly where theories of migration prevailed (whether from ethnology or archaeology), the skull became a principal source of historical analysis. The structural complexity of human crania provided a wealth of morphological criteria from which types and intermediate categories could be abstracted. If the spatial (and temporal) distribution of cranial types could be assumed to result from the movement of culturally and biologically distinct peoples, both biological and cultural history could be reconstructed from similarities and differences in cranial morphology. In this sense there has been great concordance between theories of biological and of cultural change.

Current trends in the analysis of human cranial remains reflect a retreat from migrationist explanations both in ethnology and archaeology. This retreat has often left the historical tradition of morphological analysis in physical anthropology to continue without methodological and theoretical

rationale. At the same time, recent theories of cultural continuity and in situ cultural evolution have provided a new context for morphological analysis (219). Thus while assessments of migration and genetic flow based on the distribution of so-called racial or nonadaptive traits have continued, alternative interpretations based upon natural selection and biocultural adaptation have assumed increasing importance.

Rather than attempt to consider the consequences of the retreat from migrationism wherever human remains have been unearthed, the discussion here will focus on two areas of investigation: North American Amerindians, and Ancient Nubia and its indigenous peoples. It is an interesting pairing because while the theoretical effects of migrationism have been generally similar, the contrary reaction has involved different analytical constraints in the two areas.

Amerindian Craniometry

In terms of method and rationale, Hooton's (117) analysis of the Pecos Pueblo remains exemplifies a historical migrationist genre in physical anthropology. The rationale for this approach is clear. While debate continued as to the time and circumstances of man's entry into the New World, it was generally accepted that native Americans had migrated across the Bering Straits at least once and perhaps several times. The people of Pecos Pueblo, therefore, did not emerge at some point in time—they arrived. A basic problem of prehistory at Pecos and elsewhere became one of determining the time and circumstances of arrival.

From Hooton's analysis of the Pecos crania, "Pseudo-Australoid," "Pseudo-Negroid," and "Basket Maker" types were abstracted. The constellation of racial traits from which these types were defined provided prima facie evidence for the migration of ancient races. Hooton states:

> I do not for a moment suppose that any large body of Negroes or Negroids ever migrated into America in pre-Columbian times. But I do think that the earlier invaders who worked their way up to Northeast Asia, across the Bering Straits and down the New World carried with them some minor infusion of Negroid blood which had trickled in from the tropical parts of the Old World (117, p. 356).

With regard to the "Basket Maker" type Hooton states:

> . . . I cannot doubt that that same fundamental stock of mankind which is predominant in North Africa and in Southern Europe, contributed in some considerable degree to the more ancient peoples of the New World . . . the Basket Maker type . . . (117, p. 357).

The key to this approach was a belief in the objective reality of primary racial types. Such types, though modified by migration and admixture, provided a key to historical reconstruction as a result of the atavistic reappearance of their constituent elements (120).

Beyond the question of racial origins, the reconstruction of historical sequences also involved the extensive application of anatomical evidence. While Hooton (117) and Hrdlička (118) found no significant correspondence between cultural periods and cranial types among Pueblo Indians, the degree of heterogeneity within groups was disputed. Hrdlička (118), for example, identified "brachyoid" and "dolicoid" types, as well as their intermediates, cross-cutting the Pueblo sequence. Seltzer, on the other hand, argued for a single "Basket Maker" type (195; see also 61).

The application of cranial typology to history and migration on a continental scale is apparent in Neumann's (163) classification of Amerindian remains. As with the analyses of Hooton, Hrdlička, and Seltzer, questions both of origin and of subsequent differentiation were addressed. In regard to origins, Neumann abstracted three chronological types: "... 1) earlier phylogenetically more primitive Paleoamerind, 2) more recent derived or modified Mesoamerind, and 3) most recent immigrant Cenoamerind series" (164). Historical differentiation of these chronological types is reflected in their division by geographical location, cultural association, and morphological similarity. Accordingly:

> ... such varieties as the Southwestern desert or Otamid variety, the Southwestern Basketmaker or Ashiwid variety, the Eastern Woodland or Lenid variety, and the Southern Archaic or Ishwanid variety, would fall into the Paleoamerind series. The classical Maya and related Central American groups or the Uinicid variety, the later Great Basin Shoshonean or Walcolid variety, the Central Algonquian or Ilinid variety, and the Plains Siouan or Dakotid variety would fall into the derived or Mesoamerind series. Finally, such groups as the Northern and Southern Athabascans or the Deneid variety, and the Eskimo or Inuit variety would fall into the Cenoamerind series (164, p. 67).

The implications of this interpretation for culture history are most apparent where the cultural record is unclear and immigration can be presumed. Aiken's (10) assessment of the Plains relationships of Fremont Culture provides an excellent example. The purpose of Aikens's analysis was to suggest a northern Plains origin for the Fremont culture of east-central Utah as an alternative to the traditional interpretation of Fremont as a culture "primitive and peripheral to the Southwest." While archaeological evidence was utilized, Aikens's discussion of cranial morphology involves a significant use of Neumann's typological approach to prehistory.

Under the heading "evidence from physical anthropology" Aikens asserts that the Fremont skulls are "... not Southwestern—not merely not Anasazi, but definitely outside the range of the Southwest Plateau or Ashiwid type ..." (10, p. 200). The author goes on to state that "the Fremont type thus described resembles the Deneid and Dakotid (163) varieties, as well as other Plains and northern groups" (10, p. 200). While Aikens

acknowledges that final demonstration of the validity of his hypothesis will require much more skeletal evidence, the perceived role of anatomical analysis in the reconstruction of culture history and migration is apparent.

It is by departing from this type of analysis that archaeology's retreat from migrationism has had a profound impact on current trends in Amerindian craniometry. The retreat has shifted the center of gravity in culture historical studies such that in 1967 Genovés worried "we have somehow drifted farther and farther away from prehistory" (93), while on the other hand, Elliot Chapple in 1970 suggested that physical anthropology had become the "hand-maiden to human history" (144). In 1961 Giles & Bleibtreu (95) advocated the application of multivariate statistics to cranial data used in archaeological reconstructions, but in 1966 Fry (92) worried that our analytical methods had gotten in the way of our most basic concerns and insights.

There has clearly been a parting of the ways among anthropologists, reflecting in part the different directions that research has taken in the retreat from migrationism. Inasmuch as the retreat has not led to a complete abandonment of older concerns and procedures, one response has been to continue in the old tradition through the application of increasingly elaborate quantitative techniques.

Bass's (20) analysis of the relationships among Plains population represents an early step in the quantitative elaboration of Neumann's typology. In an attempt to determine the biological distances among five Plains cranial series, Bass applied an uncorrelated Student's t test to his craniometric data. Biological distances were then statistically assessed through a series of derived t^2 and T^2 statistics. While the statistics were crude, new methodological ground had been broken. Neumann's classification could be pursued, through the application of statistical techniques and the incorporation of new skeletal remains, with no major shift in theoretical orientation. An increasing availability of computers and multivariate statistics led to even further quantitative development of Neumann's approach.

Long (146) analyzed Neumann's cranial types by means of multiple discriminant functions and accordingly proposed six revisions of the classification. Included in his revisions was a rejection of Neumann's migration theory. According to Long, "All relations discovered in this study can be explained by microevolution, occasionally involving genetic drift but more frequently involving the mixing of groups" (146, p. 462). Long did not, however, reject the concept of cranial type; in fact, he proposed a new "Iroquoian" type. Although gene flow was substituted for migration, historical assessments continued to be made according to morphological similarity.

In addition to the elaboration of statistical method, a second aspect of the retreat from migrationism has been to refocus a migrationist approach on those areas where it can still be applied in light of current cultural and biological evidence. Turner's (218) analysis of three-rooted mandibular first permanent molars (3RM1) addresses the question of Amerindian origins and diffusion from such a balanced, biocultural perspective. Turner's primary concern is for the genetic biology of the three-root pattern and its distribution in human populations. While three migrations are proposed to account for the trait's distribution among Native American populations, the analysis is not offered as an essential means to historical reconstruction. In fact, linguistic as well as archaeological evidence provides an independent historical context from which Turner presents his hypothesis. Turner states:

> Three migrations into the New World seem to best explain 3RM1 variation in this hemisphere. Pre-Indians, pre-NaDene Indians, and pre-Aleut-Eskimos are the three suggested ancestral groups. Importantly, these coincide with major New World linguistic divisions recognized by Greenberg and Swadesh (218, p. 239).

More importantly, however, there has been a shift toward the analysis of in situ biological evolution in the context of established archaeological sequences. The result has been a biocultural approach wherein skeletal variation is viewed as dependent upon environmental factors both mediated by and resulting from patterns of cultural adaptation. The role of physical anthropology, according to this approach, is to determine the impact of cultural developments on population biology. Unfortunately, few archaeological investigations have provided skeletal remains adequate for this approach. As Jantz points out: ". . . skeletal populations are usually so widely separated in space or time that selection, flow, and drift have all variously contributed to existing morphological differences, and their effects have become inextricably woven together" (122, p. 15).

Jantz's own studies of Arikara crania (122) constitute a partial exception to this generalization. He analyzed Arikara crania from five sites in South Dakota spanning a time period of approximately 230 years (A.D. 1600–1830). During that time there was a change in Arikara culture involving primarily a transition from endogamous village life to increasing external contact, first with the Mandan and later with Europeans. Such expanding contact presumably increased the opportunity for and likelihood of genetic flow. Jantz states: "There is ample archaeological evidence that considerable exchange of ideas occurred during the prehistoric and early historic period between Mandan and Arikara groups occupying contiguous areas" (122, p. 16). Later in time: "The Arikara had established themselves as middlemen in the fur trade, which brought them into more frequent contact

with Whites and neighboring tribes, increasing the opportunity for intertribal gene flow" (122, p. 16).

Such historical documentation provides a context from which specific evolutionary hypotheses can be framed and tested. In this case the effects of gene flow on Arikara cranial morphology are assessed using discriminant function and canonical analysis. Based on these techniques, Jantz is able to identify a diachronic pattern of craniometric change which he attributes to increasing contact between Arikara and others, and consequent genetic flow. According to Jantz: "The regular change reflected in canonical variates I and II in males and females respectively, suggest that systematic effect of evolutionary processes . . . gene flow is the most likely candidate for the evolutionary process responsible" (122, p. 20).

Perzigian (168) has recently analyzed patterns of dental evolution in remains from the Larson site, one of the five Arikara sites in Jantz's analysis. Directional and/or stabilizing selection in molar size is assessed by the comparison of mean crown size differences and variance differences between juveniles (age 6–15) and adults (age 16–30). According to Perzigian: "The adult dentition is shown to be larger and less variable than the juvenile dentition. The t-test and F-test for homogeneity of variance suggest, respectively, that directional and stabilizing selection were both operating" (168, p. 66). Perzigian further observes that the "results of this study tentatively suggest that a large dentition, i.e., masticatory apparatus, may be of some survival value especially where attrition is very pronounced as in the case of the Arikara" (168, p. 68).

As with Jantz's analysis, Perzigian has considered one aspect of Arikara evolution from a biocultural perspective. In both analyses, diachronic variation in Arikara biology is viewed as a response to patterns of cultural adaptation. Such an approach promises to broaden the scope of craniometric analysis beyond the assessment of racial affinities as an adjunct to migrationist theories of Amerindian history.

Nubian Craniometry

Nubia is the name given to that portion of the Nile valley extending approximately from the First to the Fourth Cataract, a region which today is politically divided between the United Arab Republic and the Republic of the Sudan. Although now largely inundated by the Aswan Reservoir, it has been important throughout much of the historic period as the principal corridor through which cultural influences from the Mediterranean basin were transmitted to Black Africa and vice versa. Thus, as in America, factors of history and geography lead early researchers to theories of migration (82, 86, 181). Nubian history emerged as a series of disconnected episodes, each characterized by the migration, displacement or hybridiza-

tion of differing racial stocks (21, 22, 72, 82, 84, 86, 160, 181). As a result, the analysis of skeletal remains became an important element in the reconstruction of culture history.

Systematic analysis of Nubian skeletal material began with the First Archaeological Survey of Nubia (1907–1911) under the direction of Reisner (181). Analysis of the anatomical remains from these excavations was undertaken by Elliot Smith, who concurred with Reisner that culture change in Nubia took place primarily as the result of invasion by alien races. According to Elliot Smith:

> Nubia has for long ages been the vessel in which the black and red races of Africa have been mixed and blended: in the course of the fluctuations of the human stream in the Nile valley, Nubia has been occupied at one time by the Egyptian, another by the Negro: the dregs of one receding human tide mingled with the oncoming wave of population, and so, from time to time, produced racial mixtures in which now the Egyptian, or at other times the Negro, element predominated (81, p. 23).

Although some measurements were taken from cranial and postcranial remains, Elliot Smith's approach was primarily subjective. He argued that the best way to assess the true racial character of an individual was to rely upon experience and selective observation. In this manner, burials were described according to physical type as "Nubian," "Egyptian," "Negro," or "Foreigner" (82).

Most unfortunately, such racial designations were associated with cultural capacity. Elliot Smith stated that even ". . . the smallest infusion of Negro-blood immediately manifests itself in a dulling of initiative and a 'drag' on the further development of the arts of civilization" (81, p. 25). Periods of cultural advance or enrichment were attributed to Caucasian migrations; "dark ages" were the result of Negroid migrations (219).

The concern for a dichotomy between Negroids and non-Negroids is still evident in the work of Elliot Smith's successors. Morant, for example, (159, 160) suggested an occupation of Nubia by an "Upper Nile type" and later by a "Lower Nile type." The former exhibited a high concentration of "Negroid traits" while these traits were largely absent in the latter. Morant noted a decrease in Negroid traits from Badarian populations (ca. 4000 B.C.) in Upper Egypt, and from later Pre-dynastic populations in both Egypt and Lower Nubia. This decrease was interpreted as evidence for admixture between the two basic types, Negroids in the south and Caucasoids in the north (160).

Ahmed Batrawi (21, 22) studied the collections from the Second Archaeological Survey of Nubia (1929–1934) and initially endorsed the conclusions of Elliot Smith (21). While his position with regard to race and cultural achievement was later modified (22), his concern for racial corre-

lates to cultural differences continued. According to Batrawi (21), the Nubian A-Group people (ca 3400 to 2400 B.C.) were not Negroes, but were closely akin to what one might expect from the admixture of two pure races as suggested earlier by Morant (159). The following C-Group population (ca. 2300 B.C. to 1200 B.C.) showed a continuation of A-Group characteristics, while at the same time revealing an increased degree of admixture. The Meroitic period (350 B.C. to A.D. 350) witnessed a continuing hybridization of Negroes and non-Negroes while the X-Group people (A.D. 350--550) were apparently new alien migrants from the south. For Batrawi, as for his predecessors, race was the driving force behind culture history.

In Nubian research the retreat from migrationism began in 1960 with construction of the Aswan Dam and the associated International Campaign to Save the Monuments of Nubia. Archaeological analyses resulting from this campaign failed to support earlier interpretations of Nubian history as a series of disconnected episodes, each resulting from the arrival of new populations. In summarizing the cultural record revealed during the Nubian campaign, W. Y. Adams has proposed that we regard the course of Nubian history from Neolithic to Islamic as a continuum of biocultural evolution:

> We are conscious now of a continuum of cultural evolution within the borders of Nubia, heavily influenced by events and ideas from abroad, but involving the same basic population from beginning to end. There is no reason why the Nubians of today should not claim to be the direct descendants, culturally as well as racially, of their Neolithic, and perhaps even of their Paleolithic, forebears (4, p. 29).

As with the analysis of Amerindian remains, the retreat from migrationism in Nubia has produced three divergent responses among physical anthropologists. One response has been the continued assessment of racial affinities through the application of new and more sophisticated statistical techniques. Thus Mukherjee, Rao & Trevor (162) reanalyzed the Nubian cranial material studied originally by Elliot Smith and later by Batrawi. They found no statistically significant differences among any of the Predynastic and Dynastic populations from Lower Nubia and Upper Egypt, and concluded that all of the Nubian populations, most notably the A-Group and C-Group, could be considered one biologically homogeneous population. According to these researchers, such morphometric differences as do exist are not sufficient to warrant hypotheses of biological replacement.

Crichton (65) undertook an investigation of crania from three temporally distinct Egyptian series and a fourth cranial series from East African Negroes. The purpose of the research was to reevaluate Morant's (159) hypothesis that there was a stronger Negroid affinity among populations

from the Upper Nile during the Pre-dynastic period than in the Dynastic. Crichton concentrated on those areas of the skull which previous studies had shown to be most effective in determining Negroid affinity, and therefore presumably Negroid admixture, in the Egyptian populations (65). Univariate and multivariate analysis of the craniometric data revealed that the East Africans had a broader nasal aperture, more pronounced bulging of the occipital region, and a wider, lower cranial vault than did the Egyptian series. Although the three Egyptian series were very similar to each other, the earliest group fell closest to the East African sample. On this basis Crichton concluded that Morant's assessment of a significant decrease in Negroid elements in the Upper Nile region beginning in Pre-dynastic and continuing through Dynastic times was correct.

Burnor & Harris (43) approached the problem of Nubian prehistory in a similar manner, proposing that the living Nubians are the result of massive penetration of Negro Africa by Caucasoid genes during the last 14,000 years. In support of this hypothesis they describe the Nubian Mesolithic populations as possessing bun-shaped occiputs, massive brow ridges, sloping foreheads, extreme facial flattening, large teeth, and deep mandibles. This and other evidence is proposed to indicate that Africa north of the Sahara was originally inhabited by non-Caucasoids who in general could be described as Negroid.

Strouhal (201–203) has also sought to determine the degree of Negroidness in early Nubian populations. A great deal of his discussion is reminiscent of Elliott Smith (81), who spoke of a "human stream in the Nile valley" and an "oncoming rush of the other wave of population" to explain the morphology of early Nilotic populations. Using a similar metaphor, Strouhal suggests that ". . . the original Europoid stock of the population [of the Upper Nile] was several times overrun by Negroid waves, flowing in from the south" (203, p. 1). Like Morant (159, 160), Batrawi (21), Crichton (65), and Burnor & Harris (43), Strouhal sees no evidence for major Negroid admixture subsequent to the Pre-dynastic period. Instead, Caucasoid migrations from the north into Nubia have caused a "dilution of Negroid features" (203, p. 8) over the last 5000 years. Strouhal (202) does, however, conclude that the X-Group represents an invasion by predominately Negroid peoples from the south. Specifically, he notes that 58 X-Group crania excavated by the Czechoslovak Institute are predominately Negroid. According to Strouhal, "the Negroid element prevails over the Caucasoid elements 3:1" (202, p. 546).

Another aspect of the retreat from migrationism has been an evaluation of diachronic patterns of genetic variation in the Nubian population independently of a priori racial categories. Greene (101) made an exhaustive assessment of genetic variability among Meroitic, X-Group, and Christian

populations using 16 discrete dental variants, and found no significant differences among the three populations. In fact, he (103) noted the occurance of rare cusp variants, such as split hypocone, not only in the Meroitic, X-Group, and Christian dentitions but also in the Mesolithic remains from Wadi Halfa. Such data constitutes strong evidence for genetic continuity in the area, possibly over a 10,000 year period. Studies of noncontinuous cranial traits also support an interpretation of biological continuity (28, 29). Berry et al (29), for example, note a remarkable homogeneity among Nilotic populations over a considerable period.

Thus, several independent analyses of anatomical remains provide results that are remarkably consistent with the historical record derived from cultural remains. According to Greene, there is an extremely "high degree of populational stability along the Nile corridor during Pre-dynastic and presumably earlier historic time" (103, p. 322).

As in Amerindian craniometry, a third aspect of the retreat from migrationism has been the analysis of in situ biocultural evolution in Nubian populations. Unlike the case of Amerindian remains where temporal and spatial disjointedness is extensive, the spatial boundedness of Nubia as well as the historical continuity of its peoples is ideal for such an approach. To cite one example, Greene has proceeded from his description of genetic variation in Nubian dental remains to discuss the question of evolutionary change and adaptation. Greene et al (105) noted that the Nubian Mesolithic population had an extremely large, complex dentition; larger in fact than that of the Skhul Neanderthal population. According to Greene (104, 105), this most probably reflects an adaptation to heavy masticatory stress and associated dental wear. The transition from a gritty Mesolithic diet to a higher carbohydrate diet in Neolithic times resulted in a selective shift in favor of smaller, morphologically simpler, caries resistant teeth (102, 103, 105, 106). This adaptive shift would explain the reduction in size and morphological complexity of the molar dentition from Mesolithic through Christian periods in Nubia.

Recent multivariate analyses by Carlson (48) and Carlson & Van Gerven (49) were undertaken in order to account for craniofacial variation in the populations of Lower Nubia over a 10,000 year period (Mesolithic through Christian). This research revealed one principal diachronic pattern of change, whose major feature was a substantial and continuous reorientation of the cranial vault and face. The earliest Nubian populations can be characterized by a relatively flat, elongated cranial vault associated with a rather obtuse median cranial base angle, associated with pronounced glabellar and occipital regions. Through time, the vault became more rounded and anteriorly placed, the face more inferiorly placed, and the skull relatively shorter, with more posteriorly located masseter and temporalis muscles. In view of

Greene's earlier analysis of the dental evidence, the total pattern of dental reduction and reorientation of face and vault strongly suggests a reduction in masticatory stress associated with the transition from Mesolithic to a Neolithic subsistence pattern.

Conclusion

In anthropology our theories grow primarily from our data, and in skeletal analysis the data is by nature historical. Thus whether one views physical anthropology as a "handmaiden to human history" or worries that "we have somehow drifted farther and farther away from prehistory," our views of history continue to effect the methods and goals of our research. After all, people have migrated, cultural traits have diffused, and people and their cultures have evolved according to the conditions of time and place. The character of our research, whether in America, Nubia, or elsewhere, is bound to change as our evaluation of these circumstances changes. The only constant in this process should be our holistic perspective. As Fry has eloquently stated: "Archeologists and Physical Anthropologists need to recognize that our central problem is the many faceted (and splendored) one of human behavior through space and time. All else is peripheral" (92, p. 200).

CONCLUDING REFLECTIONS: THE BEGINNINGS OF SCIENTIFIC MIGRATIONISM

Perhaps the most severe criticism that can be leveled at migration theory in anthropology is that, in the strictest sense, it does not exist. What we have been discussing are, properly speaking, not migration theories but distribution theories which presuppose migration. Yet anthropologists have shown little interest in addressing the movement of peoples as a subject for study in its own right. On the contrary, there has been an almost perverse refusal, alike on the part of archaeologists, linguists, and physical anthropologists, to consider the social, technological, and logistic mechanics of human movement. How were seeds and clones transported? How were livestock ferried over rivers and across seas? Were pottery traditions carried in the heads of the migrants, or in the form of actual vessels? What did the wanderers eat along the way, and how did they procure it? How long did journeys last, and how many persons were involved? Above all, how was social cohesion maintained under the conditions of movement and dispersal? These and like questions have seldom been forthrightly confronted, even by the most enthusiastic champions of migrationist explanations.

In accepting migration as a subject for study and theorization in its own right, both sociologists and cultural geographers have been considerably in

advance of anthropologists. Almost a hundred years ago the demographer E. G. Ravenstein attempted to set down some "laws of migration" (177, 178), although a contemporary critic remarked that the field was "rather distinguished for its lawlessness than for any definite laws" (178, p. 302). This seems to have been the prevailing view among sociologists and demographers during most of the present century (145, p. 48; 151), despite an enormous proliferation of case studies and also a number of statistical studies of migration in modern Europe and America (cf 150). As recently as 1966, E. S. Lee attempted to compensate for the lack of general theory-building with a "theory of migration" (145) which in fact largely restated the original "laws" of Ravenstein. Like most sociologists, Lee treated migration essentially as an individual phenomenon and focused on motivational and cognitive factors affecting the decision to move or not to move.

Mangalam & Schwarzweller have taken a more systemic approach with a model in which migration, prompted by a sense of deprivation, is seen as restoring equilibrium within social systems (152). This functionalistic explanation is of course appropriate only to intrasystemic migration. Kingsley Davis has developed the same idea further in a sweeping historical survey in which migration is linked to technological and resource inequality between regions (70). Of the various theories proposed by sociologists and demographers, this appears to be the only one capable of comprehending both individual migrations and the kind of *völkerwanderungen* which are the stock-in-trade of prehistorians.

While the sociologists have been moving from motivational toward systemic analysis, cultural geographers have apparently proceeded in just the opposite direction. Kershaw writes that

> Until the mid-1960's there was a tendency to emphasize the description of landscape phenomena and to concentrate on the coarser scales of analysis. . . . More recently a trend has developed for concentration upon processes operating at the individual and local levels largely in response to Hägerstrand's (110, 111) development of a deductive approach to the diffusion of technological innovations and his use of stochastic methods in modelling the process of diffusion. The increased interest in the role of the individual in the diffusion of innovations has been mirrored by a growing awareness of the importance of the decision maker in the context of migration (128).

To the very limited extent that anthropologists have been willing to consider migration nomothetically, the overwhelming preference until recently has been for environmental explanations: deterioration of old habitats or the enhanced attraction of new ones, mostly as a result of climatic change. Within the last decade, however, there has been a flurry of studies emphasizing the concepts of population pressure and of carrying capacity (cf 235). This school of analysis owes much to the pioneering work of Ester Boserup, who in 1965 turned Malthus on his head by suggesting that

population growth must be treated as a first cause in the explanation of social and cultural dynamics (42).

Population-growth theories have thus far been invoked mostly to account for the expansion of settlement into newly colonized areas, particularly by early farming peoples of the Old and New Worlds (3, 94, 192, 199, 214). Obviously such theories are most applicable to localized, community-level migrations of the kind that are attested by anomalous site distributions. Population pressure in and of itself cannot account for the simultaneous movement of whole peoples, when an old area is abandoned as a new one is settled. In the Southwest, however, Plog had attempted to explain the widespread population shifts of the fourteenth century by a model involving both population pressure and a general tendency for movement from an area of stagnating economy to one of "leading" or growing economy (153, pp. 318–33). Although it is proposed only on a local level, this theory bears a demonstrable relationship to Davis's theory of resource inequality between regions (70).

While most "scientific" migration theory has thus far been applied only to the movement of communities, and within geographically restricted areas, Ammerman & Cavalli-Sforza (11) have developed a "wave of advance" model, linked implicitly to population pressure, to account for the spread of Neolithic farming throughout Europe. In contrast to Renfrew they accept both the Near Eastern origin of the European Neolithic and its spread primarily by migration rather than by diffusion. Dolukhanov (75) likewise continues to envision the spread of Neolithic culture by a complex series of migrations, very much on the Childean model. His theory is based on attraction rather than compulsion: the spread of Neolithic peoples in search of greener pastures ahead (the result of postglacial environmental change) rather than due to population pressures behind. This approach is evidently far from the mainstream of Soviet culture history, in which, according to Klejn (131, p. 169), migrationism is still roundly castigated.

In the recent past, Cowgill (63, 64) has reacted strongly against population-pressure models of explanation, asserting that the tendency of population to expand to and beyond the limits of carrying capacity cannot be safely assumed, as Boserup and her followers have done. Bartel, in discussing Meacham's (156) theory of the Neolithic spread in China, goes further in questioning the validity of any systems-theory approach to migration and diffusion. "Questions of culture change can only be answered on a microlevel of culture-bearing units, not on the level of . . . large technocomplexes or ceramic horizons . . ." (18, p. 430).

In sum, migration theory in anthropology reached its peak of scientific respectability three quarters of a century ago, and since that time has been in more or less steady decline. Since race, language, and culture have come

to be viewed as independent variables, however, the retreat from migrationism has not proceeded at a uniform pace in the subdisciplines of archaeology, linguistics, and physical anthropology. The doctrine undoubtedly retains its greatest respectability in linguistics, for many language distributions still defy explanation in any other terms. It has suffered most in physical anthropology, many of whose practitioners have abjured typological studies altogether. For archaeologists migration has been and remains largely a convenience for the explanation of anomalous trait distributions, but it has been weakened by the inroads of alternative models of explanation. Nevertheless, even the most doctrinaire of cultural materialists are not yet ready to dismiss the migration principle altogether. On the contrary, a few of them are attempting to give it scientific rehabilitation by placing migration within a framework of causal explanation, though so far only a small beginning has been made in this direction.

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CONTENTS