

- HAMILTON, A., J. JAY, and J. MADISON (1941) *The Federalist*. New York: Modern Library.
- JENSEN, M. (1950) *The New Nation*. New York: Knopf.
- JENSEN, M. (1974) *The American Revolution within America*. New York: New York Univ. Press.
- LANGTON, J. (1979) "Darwinism and the behavioral theory of sociocultural evolution: an analysis." *Amer. J. of Sociology* 85: 288-309.
- LANGTON, J. (1984) "The ecological theory of bureaucracy: the case of Josiah Wedgwood and the British pottery industry." *Admin. Sci. Q.* 29: 330-354.
- LEBERGOTT, S. (1985) "The demand for land: the United States, 1820-1860." *J. of Econ. History* 45: 181-212.
- MARKS, F. W., III (1973) *Independence on Trial*. Baton Rouge: Louisiana State Univ. Press.
- McCOY, D. (1987) "James Madison and visions of American nationality in the confederation period: a regional perspective," pp. 226-258 in R. Beeman et al. (eds.) *Beyond Confederation*. Chapel Hill: Univ. of North Carolina Press.
- McDONALD, F. (1985) *Novus Ordo Seclorum*. Lawrence, KA: Univ. Press of Kansas
- MCGUIRE, R. A. and R. L. OHSFELDT (1984) "Economic interests and the American Constitution: a quantitative rehabilitation of Charles A. Beard." *J. of Econ. History* 44: 509-519.
- MCGUIRE, R. A. and R. L. OHSFELDT (1986) "An economic model of voting behavior over specific issues at the Constitutional Convention of 1787." *J. of Econ. History* 46: 79-111.
- NETTING, R. McC. (1972) "Sacred power and centralization: aspects of political adaptation in Africa," pp. 219-244 in B. Spooner (ed.) *Population Growth*. Cambridge: MIT Press.
- OLSON, M., Jr. (1971) *The Logic of Collective Action*. New York: Schocken.
- WOOD, G. S. (1969) *The Creation of the American Republic, 1776-1787*. Chapel Hill: Univ. of North Carolina Press.
- WOOD, G. S. (1987) "Interests and disinterestedness in the making of the Constitution," pp. 69-109 in R. Beeman et al. (eds.) *Beyond Confederation*. Chapel Hill: Univ. of North Carolina Press.

The Circumscription Theory

Challenge and Response

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When the circumscription theory of state formation was first proposed (Carneiro, 1961, 1970), it was set forth as a general theory. Its aim was to account for how the state had emerged wherever it had arisen. I rejected the notion that each instance of state formation was so distinct from all others that it needed a special explanation. Rather, I felt that state formation was fundamentally so uniform a process that one theory should fit all cases.

Anyone nurtured at the breast of historical particularism might find this a bold assertion. But it should be no more than a commonplace to any toiler in the vineyards of science. Science, after all, aims to formulate propositions of the highest probability and the widest generality. The circumscription theory means to explain all instances of state formation with just one set of propositions, and this is as wide as the net can be cast.

But merely because a theory aims at maximum applicability and universal validity does not make it true. The medieval scholastic philosopher St. Anselm entertained a notion of God as the most perfect and encompassing being imaginable, and argued—in his famous "proof" of the existence of God—that since he was thinking of the most perfect being conceivable, and since such a being would be more perfect if it existed than if it did not, God, therefore, must exist! Charming and ingenious as it was, philosophers of a later day dismissed this argument by saying that "existence is not a predicate." And, of course, one can no more *predicate* the truth of the circumscription theory than one can the existence of God.

Whatever its pretensions, then, every theory that gains a certain currency must expect to be submitted to the acid bath of scientific

scrutiny. The preceding pages of this journal contain the results of a symposium designed to do just that—to examine and test the circumscription theory in every way possible. And how has the theory emerged from such close examination? In part accepted, in part amended, and in part resisted. On the whole, though, it seems to me that the theory has elicited more support than opposition. Let me try to assess the results of this scrutiny.

Circumscription theory contains three major elements—environmental circumscription, population pressure, and warfare. In dealing with the treatment accorded the theory by its critics, it seems convenient to consider what was said about it under these three headings.

CIRCUMSCRIPTION: THE ENVIRONMENTAL ELEMENT

Let us begin with the environmental element. Schacht and Webb seem to feel that I have never sufficiently made clear that environmental circumscription is a question of degree rather than a matter of all or nothing. When I originally proposed the theory, I chose to present environmental circumscription in its sharpest form in order to highlight its effects. But I was well aware then, as I still am, that geographic circumscription is not always knife-sharp. If we look at inhabited areas of the world that are more or less self-contained, many of them present us with a *gradient*. As we move out from some central point, we find arable land becoming progressively less available, or less productive, until finally we reach a zone that—under the existing technology—may be completely barren and unproductive.

I am perfectly aware, then, that environmental circumscription is often a matter of degree. Indeed, I gave evidence of this when I introduced the notion of resource concentration (Carneiro, 1970: 736-737) to explain why, in pre-Columbian times, people were drawn to the banks of the Amazon from adjacent, less-bountiful areas, and gave rise there to imposing chiefdoms. No sharp break in agricultural potential existed between the choice *várzea* lands along the banks of the Amazon and the hinterlands on either side of it, only a gradient of productivity.

In his article in this volume, Malcolm Webb maintains that I devote "insufficient attention . . . to the possibility that, at critical points in the evolutionary sequence, such factors as size of the circumscribed area and the nature and severity of the circumscribing conditions might significantly influence the course of political development." On the

chance that this charge may be true, let me try to correct the oversight.

Both the size of a circumscribed area and the tightness of its circumscription will indeed greatly affect the rate of political evolution that can be expected to occur there. And it will also affect how far that evolution will carry the societies involved. First of all, the more sharply circumscribed an area, the more rapidly it will become politically unified. In this regard, sharpness of circumscription acts in two ways. First, it makes it difficult to expand the area of cultivation, and second, it impedes people from leaving the region and moving to a less populated zone. With these two alternatives effectively prevented, or at least curtailed, it becomes easier for population pressure on an island or valley to build up, thus precipitating warfare over land, and leading eventually to the rise of chiefdoms and states.

It should be pointed out, though, that the circumscription theory allows for the emergence of states in areas that are not geographically confined. If, in an unconfined region, population growth is rapid or prolonged enough to produce overcrowding despite a certain amount of outward "leakage" of the surplus population, warfare over land may eventually ensue and states may thereupon arise. This is apparently what happened in the Maya lowlands and in West Africa. However, with environmental circumscription absent and only social circumscription operative, the process of state formation, if it occurs at all, will proceed more slowly and take much longer (Carneiro, 1972: 73-76).

Let us look now at the *size* of a circumscribed area as it affects state formation. Size plays a dual role. It may quicken the pace of state formation on the one hand, but it may restrict the results of it, on the other. Holding degree of circumscription constant, we can say that the smaller an area, the faster it will be unified politically. However, if the area is small enough, its unification may produce nothing more than a small chiefdom, as happened on several islands in Polynesia and Micronesia. To give rise to a full-fledged state, an island or valley must be of a certain minimum size.

How large would this minimum size have to be? Schacht (this volume) has proposed that "the area be at least several hundred square miles and have the potential to support at least 30,000 people." These figures seem reasonable to me, but it is, of course, an empirical question, to be decided by historical facts.

Combining these various factors, we can say that the optimal environment for the early emergence of a state would be an island or valley that was (1) tightly enough circumscribed to prevent people from

moving out and relieving population pressure as it was building up, (2) small enough to permit relatively rapid and easy unification, but yet (3) big enough so that once politically unified, the polity created would be large and complex enough to constitute a state.

A good example of an area manifesting these three conditions, which thus facilitated the rise of the state, was the island of Crete. Crete may well have become a unified state as early as 2000 B.C., making it very likely the earliest state to develop in Europe (Renfrew, 1976: 211).

How do archaeologists explain state formation on Crete? According to Grahame Clark (1969: 136), the process "was a combination of wealth gained by trade and inspiration derived by contact with the civilized peoples to the south and east [Egypt and the Levant]." In expressing this interpretation, which is essentially a diffusionist one, Clark is echoing what other archaeologists have said before him, from Sir Arthur Evans, the first excavator of the Minoan civilization on Crete, to V. Gordon Childe. Recently, though, a sea change seems to have begun, and there is a greater readiness to look for evolutionary interpretations, and to regard Minoan civilization as an indigenous development on Crete rather than an importation or inspiration from Egypt or Sumer. The leader of this new school of thought is Colin Renfrew (1976: 234), who writes as follows:

Instead of thinking primarily in terms of diffusion and the adaptation of innovations from outside, we should consider increases in population density, changes in farming pattern, technological advance and developments in social organization, which can be studied and explained in Aegean [i.e., autochthonous] terms.

But when Renfrew actually tries to account for Minoan cultural development, he tends to fall back on the shibboleth of chiefly redistribution (1976: 214, 230-232), a factor whose explanatory value is today seriously questioned (Carneiro, 1981: 58-63; Peebles and Kus, 1977). And though Renfrew (1976: 216, 224, 225, 230, 231) cites evidence of warfare in early Aegean prehistory, he is unwilling to use war as an explanatory mechanism, thus depriving himself of what to me seems the key to Minoan political development. Let us see how we can use this key to unlock the door.

Being an island, Crete was tightly circumscribed. And because of its mountainous terrain, its arable land was much broken up and thus even further circumscribed. Moreover, being relatively small (one-third the size of Sicily or Sardinia, which were not politically unified before

Roman times [Gallin, 1987]), it did not prove to be extraordinarily difficult or time-consuming to unify the entire island. At the same time, the island was not so small (3,199 square miles) that, once unified, it could not support a population sizable enough to permit the development of a state. To repeat, then, Crete provides a perfect example of how the factors of state formation, combined in optimal magnitudes, can yield rapid and impressive results.

I should point out, though, that during the apogee of Minoan civilization, Crete seems to have basked in internal peace. Is this peacefulness a challenge to our coercive theory of state formation? Let us listen to the opinion of Peter M. Warren (1985: 103), a classical archaeologist who has specialized in the prehistory of Crete:

What was the source of the relative harmony of Minoan society? At the height of the Age of Palaces in 1450 B.C. no Minoan settlement was fortified. All of them were in easily accessible, scarcely defensible positions. Crete's location may account for its peaceable relations with the mainland powers but it cannot account for the apparent absence of armed conflict within Cretan society during the palace period.

Warren then continues his discussion of the problem:

At the heart of what we call civilization is the sublimation of aggressive impulses: their redirection toward higher and more abstract purposes than killing other human beings. Why that capacity appeared in a highly developed form among the seafaring inhabitants of a small, sunbaked island in about 2000 B.C. remains a profound and intriguing mystery.

But is this mystery really so profound? I venture to say that it is not, that it is readily explainable if we follow the simple scenario I have outlined above. The peacefulness of the Minoan state during its zenith was the fruit of political unification. Once the island was completely unified, no longer would there have been contending armies, and no need to protect one settlement from another with strong walls. It is to this fact that we can attribute the absence of fortifications (Renfrew, 1976: 216). But this peaceful polity, I maintain, masks the existence of an earlier period characterized by a score or more of warring chiefdoms, and before that, by dozens or even hundreds of warring villages. Over time, by the familiar process of conquest warfare, initiated and spurred on by a shortage of arable land, one village succumbed to another, and then one chiefdom succumbed to another, until the island was forged

into a single, large, strong, wealthy, and complex state. This state controlled the entire island and, at its height, built magnificent palaces for its rulers, such as the famous one at Knossos.

Thus I strongly suspect that if archaeologists were to turn away from the imposing palaces and devote more time to painstaking site surveys of the entire island, they would begin to discover the remnants of ancient fortifications attesting to an early period of Cretan prehistory marked, not by harmony, but by strife. Should that prove true, then, ironically, the peaceableness that so impressed Professor Warren would have been the predictable end-product of an evolutionary process whose major element was war.

There is still another ingredient in the mix of factors that affect political development—time. Like any natural process—hydration in chemistry, radioactive decay in physics, mountain building in geology, and so forth—state formation takes *time*. Starting from some basal conditions—including island or valley size, number of people, rate of population growth, and so forth—centuries or even millennia may be required before autonomous villages give way to chiefdoms and chiefdoms to states.

Thus the mere fact that no state, or even a chiefdom, had arisen in the valleys of Highland New Guinea, even though some of them were fairly heavily populated—a fact sometimes raised against the circumscription theory—is not necessarily a mark against it. It may simply indicate that insufficient time had elapsed for the fusion of villages into chiefdoms to have begun. As a matter of fact, evidence exists that the first steps in this direction had already been taken when colonial authorities intervened and put an end to the process. Thus certain Highland groups, such as the Dugum Dani (Heider, 1970: 121-122, 131-132), had begun to fight over arable land, often driving defeated groups off their territories and taking possession of them. Who is to say that the next step in the process—that of a victorious group incorporating a defeated one, along with its territory—might not have been in the offing?

Patrick Kirch, in this volume, shows very neatly how the factors of island size and elapsed time served to advance or retard chiefdom or state formation in Polynesia. Take, for example, Tongatapu and New Zealand. Tongatapu, the principal island of the Tonga chain, has an area of only 86 square miles, compared to 44,280 for North Island of New Zealand and 59,130 for South Island. Moreover, Tongatapu was settled around 1200 B.C., while the first migrants did not reach New Zealand until A.D. 800-1000. We would expect, then, that political

evolution would have proceeded further on Tonga than on New Zealand, and this was, in fact, the case.

However, just because New Zealand's large size inhibited political development does not mean that it curtailed it altogether. As Kirch (this volume) observes, "in the millennium or so that North Island had been inhabited, the archaeological record shows that substantial socio-political change did take place, and that the pace of change had started to accelerate greatly after about A.D. 1400." Had European contact not interrupted the process, Kirch predicts, an early state would have evolved out of the ancestral chiefdoms of the nineteenth century within one or two millennia.

CIRCUMSCRIPTION: THE POPULATION PRESSURE ELEMENT

Let us turn now to the role of population pressure in state formation. First of all, some preliminary considerations. The growth of population during the Paleolithic period was exceedingly slow. If we take the total human population of the world to have been, say, 40,000 at the beginning of the Paleolithic, some 2 million years ago, and to have risen by the beginning of the Neolithic (ca. 8000 B.C.) to something between 5 and 10 million (Carneiro, 1978: 219n.), then the average annual rate of increase during that long period would have been about 3/10,000 of 1 percent, or about 1/6,000 of the world's current rate of growth!

The coming of agriculture gave a sharp impetus to the increase in human numbers. Although I think I know why this increase occurred (Carneiro, 1981: 78-79), the circumscription theory is not obliged to explain it. The theory simply takes this increase as *given*, and uses it as one element in accounting for state formation. The importance of population growth for state formation has already been set forth: When population growth leads to population *pressure*, it triggers a series of events that culminate in the surmounting of local autonomies and the creation of large, multivillage polities.

At the Neolithic level, the growth of population took two forms. First of all, it led to an increase in the size of individual villages. Then, when villages grew too large to hold together, they split apart, creating two villages where one had existed before. Repeated over and over again, this process resulted in a great *proliferation* of villages (Hauer, this

volume). Naturally, the new villages required land on which to sustain themselves, and as they sought to obtain it, land became scarcer and scarcer until territorial warfare ensued.

Speaking of this increase in human numbers, Schacht (this volume) charges me with using "the exponential equation for unconstrained population growth," and of thus failing to see that population "oscillated and did not grow exponentially." And he further believes me to have "explicitly rejected models involving equilibrium or homeostasis."

Now, I freely admit that simple societies, especially those existing at an early Neolithic level, often strive for and achieve a certain degree of homeostasis or equilibrium with environing conditions. However, as I have argued before, "when we look at the full sweep of culture history, the most striking thing we see is not that equilibriums were maintained but that they were overthrown" (Carneiro, 1978: 209). And who can dispute this? Were it not so, we would all still be living in nomadic bands, or at least in autonomous villages. And I further maintain that the root cause of this overthrow of societal equilibriums was population growth.

Beginning with the Neolithic, human population did take a big spurt upward. Indeed, at the beginning of the Christian era the world's population was some 40 times larger than it was at the dawn of the Neolithic (Gérard and Wunsch, 1973: 124). To account for this dramatic increase, I adopt the explanation put forth by Robert Sussman (1972), that the sedentism made possible by agriculture permitted a reduction in the practice of infanticide and other forms of population limitation. Infanticide, we can be sure, had readily been resorted to during the Paleolithic, when a nomadic way of life made raising more than one infant at a time very difficult. And only a slight lessening of the Paleolithic rate of infanticide was needed to enable the world's population, essentially static up to 8000 B.C., to increase some forty-fold in the next 8,000 years.

Schacht quotes, with approval, George Cowgill's argument that if population pressure had ever really arisen anywhere in the world, people would have restricted their numbers rather than going to war over land. In theory, they might have done so; in practice, they did not. Examine any major area of the world where states arose and you will find, without exception, an enormous multiplication of people from the introduction of farming to the development of states and empires. And I repeat again that it was increasing population pressure that led, irresistibly, to those higher levels of political development.

The growth of human numbers that I have referred to can be regarded

as an independent variable in the equation of state formation. This is not the same as saying, though, that the rate of population growth is fixed, inherent, and unalterable. After all, as I have noted, population growth is indeed subject to cultural influences. But cultural influences can work either to increase population growth or to decrease it. And the effect of the new element of sedentism allowed by agriculture was to loosen restraints on child raising, not to tighten them. Thus, with the coming of agriculture, the cork was out of the bottle.

Insofar as the circumscription theory is concerned, the major effect of population pressure was, as I have often stated, that it led to conquest warfare. And conquest warfare is the only demonstrated means in human history by which village autonomy has been systematically transcended and larger and larger political units established.

But now a caveat. I have never said that warfare began with Neolithic population pressure. Its origin is much older. Indeed, it goes back deep into the Paleolithic. War was thus already present and familiar to human societies when the Neolithic commenced. Now, archaeological evidence from many parts of the world, such as China (Chang, 1977: 144) and central Europe (Childe, 1967: 74), consistently shows that the earliest farmers, who were settled pretty sparsely on the land, were generally peaceful. However, with the passage of time, populations grew and crowding ensued. And, as the archaeological record amply shows, Neolithic villages then became progressively more militant. With this greater militancy came fortified villages, social stratification, luxury goods, differential burial, and a host of other characteristics that point unmistakably to a growth in political complexity.

All this is established fact. It can hardly be denied. And if it cannot be denied, it must be explained. And I still maintain that the circumscription theory explains it better than any other.

Let me say a bit more about early forms of warfare. In areas like Amazonia, where arable land is still freely available, warfare is waged largely for such "Paleolithic" reasons as avenging witchcraft, murder, and wife stealing, rather than for the taking of land. And the same was true, no doubt, in other parts of the world at the same early Neolithic level of development. But as conditions changed, so did the causes of war. When arable land came into short supply, warfare became *redirected*. For the first time in history, it began to be waged primarily for land acquisition, and, shortly thereafter, for the subjugation of people. The general effect of population growth on warfare was to

increase its frequency, heighten its intensity, redirect its aims, and magnify its consequences. Thus it became the instrument that precipitated a transcendent change in the structure of human society.

Another point to be made is that warfare over land began *before* there was a complete saturation of human settlements. Indeed, it took only a moderate amount of population pressure to set it off. Fighting was not, of course, the only response to the onset of land shortages. As crowding developed, people began to cultivate their land more intensively, even if, at first, this only involved a shortening of the fallow period. But it is always easier to dispossess your neighbors of their land than to spend long and tedious hours trying to extract more food from your own. Both of these remedies were no doubt resorted to, but not necessarily to the same degree. The taking of a neighbor's land by force came well before a maximum effort was expended to increase the yield of one's own land.

Nonetheless, despite what I have argued, a good deal of resistance remains to the notion that population pressure really existed where states first arose, and that it provided the major impetus to state formation. Naturally, opponents of this view seek out counterexamples, and the case most often cited against it is Southwestern Iran, described by Henry Wright and Gregory Johnson (1975) in a well-known article.

Wright and Johnson base their argument against the circumscription theory on archaeological evidence from the Susiana Plain, where both have excavated. The relevant data are summarized in Table 1. Wright and Johnson take the number of levels of settlement size in a region as indicating the number of levels of political administration present there. This in turn, they say, reflects the type of polity in existence: They appear to equate two levels with a chiefdom, and three or more with a state.

Having assembled the data, Wright and Johnson (1975: 274) pose the issue as follows:

The plains of Southwestern Iran are certainly circumscribed agricultural areas. If such an argument were an adequate explanation for state development, then we would expect an unprecedented increase in population to a certain point, after which there would be state development in this region.

And they come (p. 276) to the following conclusion:

The available data show that there was a period of population decline prior to state formation. States emerged perhaps during a period of unsettled conditions as population climbed back toward its former level. As Carneiro suggested, warfare may have a role in state formation, but in this case, increased population in a

TABLE 1
Settlement Characteristics of the Susiana Plain

Period	Approx. Dates	Total Area of Sites in Hectares	Levels of Settlement
Middle Uruk	3300 B.C. ↑	127.6	three or more
Early Uruk		97.0	three or more
Terminal Susa A		33.0	two
Susa A	4500 B.C.	59.3	two
Susiana d		94.1	two

SOURCE: Wright and Johnson (1975: 270, 272, 273, 276, 284).

circumscribed area cannot be the sole or direct cause of such warfare. If the hypothesis that population increase was the primary cause of state formation were correct, the state should have emerged in Susiana d times, because population in that period seems to have been as high as population in Early Uruk times.

But are these conclusions really warranted? Let us look more closely at the facts. The population of the Susiana Plain—reflected in the figures for total site area—does appear to have been substantial during the Susiana d period. And during that period, as a result of warfare (I would suggest) political organization rose from autonomous villages to chiefdoms. Now, Wright and Johnson seem to feel that for the circumscription theory to be sustained, political development during Susiana times would have had to jump all the way from autonomous villages to the full-fledged state. But there is nothing in the theory that mandates such a rapid evolution. As I have said before, it takes *time* for conquest warfare to give rise to a state, even in a circumscribed area. However, the first and most difficult step in state formation—that leading from autonomous villages to the chiefdom—certainly seems to have been taken during Susiana d, to judge from Wright and Johnson's own data.

Some time after chiefdoms had arisen, but before states had emerged, there was a marked decline in population in the Susiana Plain. And for a time this decline inhibited further political development—just as one would expect. Needless to say, the circumscription theory is not obliged to account for this decline; nor, of course, does it suffer because such a decline in population kept states from arising out of chiefdoms.

Despite the decrease in human numbers, though, political organization in the Susiana Plain seems to have remained at the chiefdom level. Indeed, political complexity may even have increased a bit. What suggests this possibility is that during the Susa A period, immediately

following Susiana d, the site of Susa not only came into existence, but, say Wright and Johnson, became a "central place." This they infer because the area covered by Susa, 10 hectares, made it the largest site known in the Susiana Plain up to that time.

During the succeeding period, Terminal Susa A, the population of the Susiana Plain declined further. Nevertheless, there were still two levels of settlement size, including "a few cases . . . [in which] centers dominate villages" (1975: 273). Chiefdoms, then, appear to continue; once established, they seem to be resistant to decay—again, as one might expect. Individual chiefdoms may fall, but the chiefdom, as the characteristic political form, lingers.

In the next period, Early Uruk, a big jump takes place in population. This jump coincided with—and, I would say, led to—the emergence of the state. This emergence is attested, say Wright and Johnson, by the fact that there were now three or more levels of settlement size in the Susiana Plain. The Middle Uruk period, which immediately followed Early Uruk, saw a further growth in population and a corresponding increase in the complexity of the state or states that occupied the Plain.

Now, where in all of this is there a refutation of the circumscription theory? Nowhere. In the first place, Wright and Johnson affirm the existence of environmental circumscription. Moreover, they do not deny the occurrence of warfare, nor its importance as a consolidative mechanism. And their own figures attest to a tripling of population from Terminal Susa A to Early Uruk, the very period when chiefdoms were giving way to states. The three basic ingredients of the circumscription theory were thus all present and active, and produced the expected results. How, then, can we regard Southwestern Iran as an exception to the theory? On the contrary, it seems to be an exemplification and confirmation of it.

CIRCUMSCRIPTION: THE WARFARE ELEMENT

Schacht alludes to another purported challenge to the circumscription theory, that posed by David Wilson's (1983) archaeological survey of the Lower Santa Valley on the Peruvian North Coast. Wilson argues that the earliest warfare in the Santa Valley was not fought among villages lying within the valley, as we would expect from our theory, but was waged against some unknown enemy coming from without. Moreover—and here lies the real challenge to the theory—the political

units with which the Santa Valley met attackers from other valleys were already chiefdoms that had attained this level of organization, Wilson says, not through conquest warfare, but through some unspecified peaceful means.

Quoting Wilson's own words, in the lower Santa Valley, "from the start of irrigation agriculture in the Early Horizon Period (ca. 1000 to 350 B.C.), people were organized at a supravillage level both for subsistence and for defense against raids from outside the valley" (Wilson, 1983: 215). And what had led to the rise of these supravillage chiefdoms? Could the circumscription theory help explain it? No. In Wilson's (1983: 215) opinion, "none of the assumptions of Carneiro's model related to within valley conflict appears to characterize the prestate sequence of Santa."

But the evidence Wilson adduces for this assertion is open to a different interpretation. What his survey showed, in fact, is that during the Cayhuamarca Period (ca. 800-300 B.C.) several clusters of settlements existed in the Lower Santa Valley, each of which included a number of "citadels." Indeed, one cluster had no fewer than 14 such citadels (1983: 233). These structures, he argues, were built to protect the residents of these multivillage clusters from attack by enemies from other valleys, not from each other.

But is this contention really plausible? If Santa Valley societies were trying to protect themselves from outside attack, would they have done so by building so many small citadels? Would they not, instead, have built a lesser number of larger forts? The citadels Wilson describes strike me as remnants of a time when warfare over arable land between the villages of the Lower Santa was frequent and intense, and the prime need of these villages was to protect themselves from each other's attacks. Later, when multivillage chiefdoms emerged from this recurring strife between autonomous villages, the citadels would have been used to defend one Santa Valley chiefdom from another. Nothing in Wilson's data—as opposed to his surmises—in any way contradicts this different interpretation. So again, an example put forward as disproving the circumscription theory turns out to be perfectly consistent with it.

CONCLUSION

Other areas of the world, such as the Valley of Oaxaca and the Nile Valley, are sometimes cited as, in one way or another, posing challenges

to the circumscription theory. Unfortunately, space does not permit me to consider these other cases here. But I have examined a good number of them and have not found among them a single genuine exception to the theory.

I do not consider myself dogmatic and unbending in theoretical matters regarding state formation, but I must say that since first proposing the circumscription theory I have found no reason to diminish its scope or to file down its sharp edges. This does not mean that I have resisted any modification of the theory. Indeed, I have modified it myself—first, by introducing the factors of social circumscription and resource concentration, and, more recently, by completely reassessing the role of resource concentration, curtailing it here, expanding it there (Carneiro, 1987). But I continue to believe that the theory of circumscription, along with its auxiliary hypotheses, accounts more fully for the known instances of state formation than any other.

Finally, I must say how much I welcomed this symposium, not only for the corroboration it offered the theory, but just as much for the refinements, extensions, and objections it raised to it. By so doing, it helped to move the theory closer to its ultimate aim, the explanation, under a coherent set of propositions, of the single most important step ever taken in human history.

REFERENCES

- CARNEIRO, R. L. (1961) "Slash-and-burn cultivation among the Kuikuru and its implications for cultural development in the Amazon Basin," pp. 47-67 in J. Wilbert (ed.) *The Evolution of Horticultural Systems in Native South America, Causes and Consequences*. Antropológica, Supplement Publication No. 2. Caracas: Editorial Sucre.
- CARNEIRO, R. L. (1970) "A theory of the origin of the state." *Science* 169: 733-738.
- CARNEIRO, R. L. (1972) "From autonomous villages to the state, a numerical estimation," pp. 64-77 in B. Spooner (ed.) *Population Growth: Anthropological Implications*. Cambridge: MIT Press.
- CARNEIRO, R. L. (1978) "Political expansion as an expression of the principle of competitive exclusion," pp. 205-223 in R. Cohen and E. R. Service (eds.) *Origins of the State*. Philadelphia: Institute for the Study of Human Issues.
- CARNEIRO, R. L. (1981) "The chiefdom: precursor of the state," pp. 37-79 in G. D. Jones and R. R. Kautz (eds.) *The Transition to Statehood in the New World*. New York: Cambridge University Press.

- CARNEIRO, R. L. (1987) "Further reflections on resource concentration and its role in the rise of the state," pp. 245-260 in L. Manzanilla (ed.) *Studies in the Neolithic and Urban Revolutions*. Oxford: BAR International Series 349.
- CHANG, K.-c. (1977) *The Archaeology of Ancient China*. New Haven: Yale Univ. Press.
- CHILDE, V. G. (1967) *What Happened in History*. Harmondsworth, UK: Penguin.
- CLARK, G. (1969) *World Prehistory, A New Outline*. Cambridge: Cambridge Univ. Press.
- GALLIN, L. (1987) "The prehistoric towers of Sardinia." *Archaeology* 40: 26-33.
- GÉRARD, H. and G. WUNSCH (1973) *Demografía*. Madrid: Ediciones Piramides, S.A.
- HEIDER, K. G. (1970) *The Dugum Dani*. Chicago: Aldine.
- PEEBLES, C. S. and S. M. KUS (1977) "Some archaeological correlates of ranked societies." *Amer. Antiquity* 42: 421-448.
- RENFREW, C. (1976) *Before Civilization*. Harmondsworth, UK: Penguin.
- SUSSMAN, R. W. (1972) "Child transport, family size, and increase in human population during the neolithic." *Current Anthropology* 13: 258-259.
- WARREN, P. M. (1985) "Minoan palaces." *Scientific American* 253(1): 94-103.
- WILSON, D. J. (1983) "The origins and development of complex prehispanic society in the lower Santa Valley, Peru: implications for theories of state origins." *J. of Anthro. Archaeology* 2: 209-276.
- WRIGHT, H. T. and G. A. JOHNSON (1975) "Population, exchange, and early state formation in southwestern Iran." *Amer. Anthropologist* 77: 267-289.