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Before Columbus

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George F. Carter

*I*t is fitting here for me to take note of the work of The Church of Jesus Christ of Latter-day Saints in American archaeology. Their work in Mesoamerica is exemplary, an observation illustrated by the papers of the New World Archeological Foundation. I was alerted to this work early when cylinder seals from western Mexico were sent by this group¹ to W. F. Albright at the Johns Hopkins University, where we were both on the faculty at the time. Albright called me to his office to look at those items with him. He recognized a letter or two and concluded that these were degenerate cartouches of Mediterranean inspiration. He was roundly denounced for such a heresy, but, as usual, Albright was right.

Another pleasant memory grows out of my correspondence with then Dean George H. Hansen concerning the Utah Lake skull. It was found during the droughts in the 1930s, and Dean Hansen had the insight to see that it was quite an unusual skull. Neither of us has been able to get the anthropologists to give it the attention that it deserves. But I recall with pleasure his insight as well as his good-humored resignation to patiently enduring through the time that it takes to get new ideas accepted. His publication on this appeared in 1934,² just over fifty years ago!

George F. Carter, Department of Geography, Texas A&M.

Dr. Paul Cheesman and I not only share an interest in American prehistory, but both of us attended San Diego State College, though separated in time. And finally, this is not my first visit to Brigham Young University, for decades ago I was here to interview one of your biochemists, with the hidden hope that we could recruit him for the McCollum-Pratt Institute that we were then forming at the Johns Hopkins University. I have most pleasant memories of the hospitality extended to my family at that time. This is, then, a happy occasion for me, and one to which I am honored to have been invited.

The title "Before Columbus" gives me wide latitude in time, and suitably keynotes my interests. Did effective contact across the broad oceans begin with Columbus? Or was he a Johnny-come-lately? Was he preceded millennia before by many people who crossed both the Atlantic and the Pacific Oceans? Such is now my view, but it is one to which I have come reluctantly. It is not what I was taught.

It is hard for me not to begin with Columbus. Ever since his discovery, there have been persistent rumors about Columbus concerning both his person and his discovery. What might be called the Spanish version runs as follows. The so-called Columbus was actually Juan Colon from the island of Mallorca. He assumed the Christopher Columbus identity for religious reasons (he was part Jewish) and political reasons (he had fought against Spain). He married a Portuguese woman of good family, and her connections placed him in the Madeira Islands. There he met a ship captain who was returning from America. The captain died in the Madeiras, and Columbus inherited his papers. He also inherited two men who had been on the voyage, the Pinzon brothers, and they served as pilots on Columbus' voyage.

There is much more, and Morison,³ the authority on Columbus, sweeps all of this under the academic rug. Having read the Spanish version and having considered several odd things related to Columbus' voyage, (such as his keeping two logs of the trip and his certainty of the length of the voyage), I suspect that the Spanish version may be correct. The importance of this lies less in what Columbus did or who he was than in how little one can trust history

as it is usually presented. One should be critical of another's view of history, including mine.

The Carter Background

In listening to anyone on any topic you really need to know something about that person. Who is he? What ax does he have to grind? What school of thought does he represent? What tools does he employ to get at the particular problem under discussion? And a lot more. For these reasons, I shall be autobiographical in this presentation—not from ego, but to help the reader better understand what I was raised to think, and how my thinking became so radically different.

I was raised in archaeology. I started by collecting arrowheads and progressed to volunteer work in the San Diego Museum of Man. I went to the University of California at Berkeley and earned an A.B. degree in anthropology under such notable men as Kroeber and Lowie. I learned an immense amount about ethnology. I was immersed in cultural history, but it was a very particularized ethno-history: a people-by-people study with little emphasis on the spread of ideas. That anyone at any time had sailed to America and influenced Amerindian cultural growth was unthinkable.

I was thereafter employed by the San Diego Museum of Man as an assistant curator, and worked happily at archaeology. When my thinking slipped too far out of line with that of the chief curator, who thought that the antiquity of man in America was about 4,000 years (my thinking was that it was more like 40,000), I left the museum job. By a happy accident I landed in geography—first at San Diego State College and very shortly at Berkeley, where I came under the influence of Carl Sauer, a giant in the field.

When it came time to start the research for a doctoral dissertation, I was given Southwestern Indian agriculture as my research topic. So I started by reading about the crop plants of the Southwest; and this set the line of research which I was to develop and which was destined to mark my scholarly life.

I discovered that there are several kinds of corn:

flint, flour, dent, and sweet. There are also several kinds of beans: *vulgaris*, *lunatus*, *acutifolius*. Pumpkins and squashes (*Cucurbitas*) are botanically *pepo*, *moschata*, and *maxima*; the common names do not match the botanical realities. These botanical designations represented initial perceptions which were to become keys to cultural history when illuminated by later work.

When I went into the Southwest, I collected the corn, beans, and squash that the Indians grew. I also ran into black-eyed peas, watermelons, wheat, and peaches—plants that the Spanish had brought. I collected names and usages; and at one pueblo I was given some strange squash seeds and told that the name of this squash was *mormonvatna*, Mormon squash. The names themselves were important in providing knowledge about the who, what, when, and where.

By the end of the summer I had a collection of corn, beans, and squash unlike any other that had been gathered. Most anthropologists study one tribe and are interested in things other than plants. They usually give only quite general descriptions of the crops. "They have corn, beans, and squash" would be a typical description. But what I had was corn and beans and squash from nearly every tribe from the Mexican border to the Mesa Verde, and from the Colorado to the Rio Grande. When attention was paid to the races of maize and the species of squash and beans, and their varieties, it immediately became apparent that there were two quite separate agricultures in the Southwest. Today it is obvious that the picture is even more complex. But my discovery of separate agricultural origins, with varied plants that had reached the area by different routes and at different times, was quite a radical finding for that time.

The Role of Plants

More important for the discussion here is what I had learned to do, and where it led me. I had learned to use plants as cultural tracers. The plants themselves were wonderful evidence. The dull-coated beans of Hohokam (modern Pima) came up the west coast of Mexico, as did

the strange little tepary bean. The brilliantly colored and glossy-coated beans of the Pueblo region reached that area via the Mississippi valley and had their origin on the Caribbean coast of Mexico. The Pueblo corn was many-rowed and multicolored. By contrast, the Pima-Papago corn exhibited limited colors and few rows of kernels. Even the names for the plants told volumes: *mormonvatna*, for instance.

My dissertation was published, and this led to my being drawn into the transpacific controversy via *gossypium* (cotton).⁴ The cottons of the world were a taxonomic mess. Hutchinson, Silow, and Stephens⁵ set out to reorganize the genus by examining the chromosomes under a microscope. They then found that the picture was simple. All Old World cottons, wild or domestic, had one set of chromosomes; all American wild cottons had a different set. But American domesticate cottons had both sets. The explanation for this was that the differentiation was due to the cottons being separated, on a multimillion-year basis due to the drifting apart of the continents. This separation would automatically lead to such differences. The problem was that of reuniting these long-separated plants, leading to a hybridization so differentiated that a viable hybrid would have to carry both sets of genes. This, they suggested, must have happened relatively late, and must have been due to man's carrying Old World cotton to America. In the following decades the picture has become more complex, but the basic insight remains.

As a very properly trained anthropologist, I was scandalized. I knew with sophomore certainty that no one at any time had reached America across the wide seas to influence our American Indians. But I had by now become something of a plant geographer, and I fully understood the significance of plants as evidence of contact. On the other hand, I was not a geneticist, and was not skilled in microscopic analysis of chromosomes. So I forwarded a manuscript that Stephens⁶ had sent me in which he suggested transoceanic transport of Old World cotton to the Americas to the genetics department. They reported back that Stephens had proved his case about as definitely as one could in science. (And I always remark that this was a

very sage observation. Science never proves things in absolute terms; it only arrives at very high degrees of probability.) The cotton picture has changed, and an African origin for the Old World cotton that was carried to America now seems more likely than an Asian type; it appears to be transatlantic rather than transpacific.

I felt compelled to look further. Hutchinson, Silow, and Stephens had pointed the way by noting that cotton was not the only plant in question. They noted the presence of *Cucurbita maxima* (the South American pumpkin) in Hawaii,⁷ and the American sweet potato in Polynesia. Pumpkins and squash were familiar to me and I looked first into the pumpkin in Hawaii. That was a case of erroneous identification. The plant in question was *Lagenaria siceraria*, the dipper gourd, an Old World plant of African origin. Perhaps I should have stopped right there.

The Pacific: The Sweet Potato

Instead, I looked up the sweet potato. This had a long and controversial history which has since grown a bit longer. The first botanists into the Pacific noted that the sweet potato was deeply embedded in the culture of the Polynesians and noted with some surprise that the same plant was important in America and was known in one area by the same name that it had in Polynesia. The literature is extensive, but the upshot is interesting.⁸ The sweet potato is certainly American. Botanically and linguistically it is clear that it has been carried out of America probably three times, and at least two of these are pre-Columbian. The sweet potato has been carbon-dated to before the time of its discovery on Easter Island and on Hawaii. This opens Pandora's box. You cannot let people carry plants out of America and simultaneously deny cultural contact.

The sweet potato alone indicates some kind of important contact. Consider the problem. Any domestic plant has a lot of knowledge associated with it; and without that knowledge, the plant is useless. For instance, one has to know how to plant it, how to tend it, when to harvest it, how to cook it, how to preserve it, and how to transport it. One even has to learn to like it. None of these steps is

easy. We have good records of bitter resistance to new plants. The Peruvian potato (Irish potato) was first introduced in France when French royalty dined on potato soup, potato salad, and potato dessert. In Germany riots had to be put down when the potato was introduced there. So even the introduction of one agricultural plant indicates very considerable contact and extensive learning. These things never go one way. If someone in America was learning about sweet potatoes, one can be sure that the proprietors of the sweet potatoes were also learning of things from America.

Mountains of evidence that the people of America learned from transoceanic travelers have been put forward intermittently for over a century.⁹ But such observations have always been knocked down by the argument that because anyone can invent anything, cultural parallels are simply classic cases of independent invention. That, of course, was my opinion until the plant evidence was thrust upon me. For the independent invention argument fails completely when one is dealing with biological items.

After I had become converted to the idea that contacts were made across the world's great oceans, I became what is known as a *diffusionist*—one who believes that ideas travel, and that parallel cultural items are more likely to be the result of the spreading of ideas than of independent invention. The opposite position is that of the *inventionists*. They view man as possessing unlimited inventive ability, and hence believe that the presence of similar things in widely separated regions is simply the result of independent invention.

To these people I say, "I invoke Kilmer's Law—'Hypotheses are made by fools like thee, but only God can make a sweet potato (peanut, maize, chicken, hibiscus).'" The list is now becoming very long.

I shall not try to write a definitive statement for the plants whose transpacific carriage well before A.D. 1500 is now in question to one degree or another. The sweet potato is hardly argued any longer, for it was carried out of America more than once, and well before 1500.

Other Plants

The peanut is very interesting. It appeared in China by at least 2500 B.C.¹⁰ This gives us some idea of what kind of time we are dealing with. The case for the peanut was first seen by an economic botanist, Oakes Ames, at Harvard.¹¹ He noted that Chinatown had peanuts that were obviously not American commercial peanuts. The Chinese merchants were importing Chinese peanuts—a bit of nostalgia. Ames looked into peanuts in America and found that this kind of peanut was raised on the coast of Peru before A.D. 600, having disappeared long before the Spanish arrived. Decades later, peanuts turned up in Chinese archaeology, verifying Ames's insight.

There is a parallel case. Maize¹² of a type formerly grown on the coast of Peru, but having long disappeared from that region before 1500, is one of the kinds of maize found in the interior of China. The date of its introduction there is totally incompatible with a post-1492 introduction of maize into Spain and its diffusion down the Mediterranean, to India, over the Himalayas, and into China, where it would have become an established crop about fifty years after the discovery of America by Columbus. What begins to become obvious is that Columbus *was* a Johnny-come-lately.

Another plant that I read about intermittently over a long period is *Hibiscus rosa sinensis*. The plant in question is the hibiscus with the very showy, red, trumpet-shaped flower. The name is amusing. The plant is not a rose, and it is not native to China. You may find a taxonomist pugnaciously stating that this plant is an ancient endemic of Southeast Asia, but the facts are otherwise. A Dutch ornithologist interested in bird pollination of plants noted that this plant was seldom pollinated in Southeast Asia. And considering the shape of the flower, he concluded that the plant was dependent on a hovering, nectar-seeking bird. This describes the hummingbird, and hummingbirds are strictly American.

I picked this up and directed queries here and there. It quickly became a Catch-22 question. The plant was Asiatic until proven otherwise. If I proved that it was not

Asiatic, then I had to prove that it was in Asia before Magellan, but that it was not native there. Botanically, it is now conceded *Hibiscus rosa sinensis* would better have been named *rosamericanus*. It is an American plant that was taken early to China from Fu-sang (America). In Han dynasty accounts of the spread of the northern Chinese into south China, one finds ecstatic accounts of the wonderful flowers found in the south. Among these, the red-flowered hibiscus is described. The Chinese were exporting this flower to Persia in the second century B.C. That wraps up the *Hibiscus rosa sinensis* question.¹³ It also throws an interesting light on what was carried by early travelers—an ornamental plant, forsooth! It had been argued that if anything was carried, it would be useful plants. But the evidence is all against that. What, for instance, went around the world as if jet-propelled? Maize? Not at all. It was that obnoxious weed called tobacco. Indeed, it went around the world so fast as to be quite suspicious in my view of things.

The Chicken

I turn now to another biological item, the chicken. Like the hibiscus, this was a long-term project. I accumulated notes and observations for a few decades and then, when asked for a paper, I put the whole thing together.¹⁴

The chicken is a pheasant and comes from Southeast Asia. It was domesticated somewhere east of India and south of China. A 15 April 1985 letter from William Plant in Australia tells me that he has a paper from Sally Rodwell in England that reports on the work of Professor Zhou Ben Xiong in northern China. This in itself is an interesting example of research: Texas, Australia, England, and China. The span of my interest in the question runs from 1940 to the present. From Cisham and other sites in northern China, quantities of chicken bones have been recovered and carbon-dated to 5,000 B.C. Since this is far from the homeland of the chicken, the original domestication must have taken place a good deal earlier. One has interesting biological checks on this. These Chinese chickens are very distinctive, indicating a long period of special

breeding and selection. They are heavy-bodied, poor flyers, loose-feathered, low-combed, often feathered on their shanks. This race of chickens is distinctive to China.

Chickens can be viewed racially, and most usefully so. Mediterranean chickens lay white-shelled eggs. Most other chickens lay brown-shelled eggs. Mediterranean chickens are at the opposite spectrum from the Chinese chickens. They are great flyers, tight-feathered, spare-bodied, high-combed, and bare-legged. Malay chickens include another very marked race: naked-necked, nearly naked-breasted, very large, very erect, exceedingly strong, and very disease-resistant. And there are other equally marked races.

What first caught my attention with regard to chickens in America was the presence in Chile of chickens that laid eggs with blue shells. They are the only known examples in the world. The Spanish surely brought chickens to America, but they were Mediterranean chickens, for they were the only kind of chickens known to the Spanish. We have the good fortune to have a book written by an Italian scientist¹⁵ describing all the kinds of chickens known to the Mediterranean world a hundred years after the discovery of America. He does not describe the chickens that the Indians had and, to a considerable degree, still have. From the scarce descriptions in the literature and from lengthy traveling in Mexico to view the chickens in the possession of the Indians, I can certify that even today, once one leaves the main roads, one will see mostly Asiatic races of chickens, and in the Indian markets one will see the brown-shelled eggs. Of course, this picture is being blurred now, for the egg and chicken factories are invading all areas, and with them go the Mediterranean white leghorns with their white-shelled eggs.

But among the Indians one finds brown-shelled eggs as well as naked-necked chickens of Malayan derivation and fluffy hens with feathered shanks, obviously of Chinese origin. Even melanotic silkies are found, the magical and religious chickens *par excellence* from India. Thus one has the odd picture that the Indians do not have the races of chickens that they would have if the Spanish alone had brought them. They have chickens that are appropriate for Asiatic introductions.

I made a survey of the names for chickens around the

whole world. This was an attempt to see whether we had any clues as obvious as *mormonvatna*. We do. The name for the chicken all over the Amazon basin is a variant of the Hindu name for the melanotic silky. *Karaknath* becomes in the Amazon basin, *karaka*, *kalaka*, and so on. These are very simple and obvious linguistic shifts. On the west coast of Mexico among the Tarahumara, the name for the chicken is *totori*, with variants thereof. This duplicates the Japanese word for domestic fowl. Curiously, this name seemingly was transferred to the domestic turkey in Mexico. *Cihuatotollin* obviously contains *totoli*. The modern Mexican word for the turkey is *guacalote*, but this is a Spanish introduction and its origin is unknown to me. The Aztec name for turkey at the time of the conquest, *totoli*, was preserved by Sahagun,¹⁶ that marvelous compiler of Aztec history, economics, and religion. Someone should follow up this Tarahumara-Japanese link. By accident, I met a young anthropologist, Don Burgess, who had been in Japan and had married the daughter of missionaries among the Tarahumara. He had noted such parallels as the following:

<i>Japanese</i>		<i>Tarahumara</i>
kina sai	come here	kina simi
torikai	place of chickens	torichi
tori	chicken	otori

That there are no linguistic relationships between the Old and New World is dogma. That this dogma, like so many others, is "going to the dogs" is indicated by such studies as Mary Ritchie Key's "Polynesian and American Linguistic Connections" which appeared in 1984 in *The Edward Sapir Monograph Series in Language, Culture, and Cognition*, no. 12. Using modern linguistic methodology, she points to very extensive parallels between Polynesia and America. The work is introductory, but probably marks a turning point in our understanding of linguistic relationships between the Old World and the New.

Once interested in chickens I began to note such strange things as the fact that the American Indians who

had chickens would not eat them or their eggs. This was not invariable but was very common. When one asks why they bother to keep chickens since they make no use of them, they expostulate, "But señor, you have to have chickens for sacrifice, divination, and prayer." This was something that the Indians would not have learned from the Spanish—at least not from the sixteenth-century Spanish; but it was still blandly assumed that the Spanish had brought the chicken to America. In Greco-Roman times one finds such sacrificial usages, but not a thousand years later. More interesting, when the particular religious usages are investigated and compared with the worldwide usages of chickens, one finds the whole set of American Indian usages in Southeast Asia.¹⁷

Notice now the compounding of the evidence. The races of the chickens point to Southeast Asia; the prohibitions and ceremonial usages point to Southeast Asia; and the names for chickens in America also point there. But let me illustrate how ideas influence scholars. When one reads in the handbooks about the economics of the tribes of South American Indians, chickens are often mentioned but seldom indexed. How odd! Not really odd, just an excellent example of the subtle (and sometimes not so subtle) working of ideas. If one sincerely believes that the chicken is a late introduction, then in attempting to describe the Indian culture one tends to slight the role of this latecomer, even to the extent of slighting it in the index.

When one goes back to Asia and inquires about origins and uses of the chicken, an interesting pattern emerges. Chickens were first domesticated for religious reasons: divination, sacrifice, and prayer. Later, cockfighting came along. Still later, eating of chickens and eggs. The American case fits into the early end of this spectrum of uses, for I know of no evidence for cockfighting among the Indians prior to the Spanish arrival with their fighting cocks. Chickens seemingly were introduced more than once, as the races and linguistic evidence indicate, and quite early, as the religious prohibitions and the absence of cockfighting suggest.

It would be possible to go on for many pages giving more biological evidence for transfers across the Pacific,

both ways. This can even be extended into the human population. Blood groups especially indicate that sufficient racial contact occurred and, further, that the racial makeup of some parts of the Americas was strongly influenced by Asiatic arrivals. Similarly, one can present voluminous detailed evidence for art, architecture, and technological introductions across the Pacific, but one can consult Covarrubias, Heine-Geldern, Ekholm, and Shao for this.¹⁸ What few seem able to grasp is the total complex picture, everything from alphabets and arts to zodiacs, literally A to Z. The literature will allow anyone to pursue this further. So I shall now turn to the Atlantic.

The Atlantic

The very early interest in the Pacific and the Asiatic influences in America led to a neglect of the Atlantic. Beginning about twenty-five years ago, I began to direct my students' attention to the Atlantic.

D. R. Beirne¹⁹ made a study of axes. He found that in America there were only one or two axes of the Asiatic type, but that about 90% of the ax forms of the American Indian had parallels in Mediterranean and European, and one Peruvian ax shown has very specific Egyptian similarities, a fact also noted by Rowe, a vigorous anti-diffusionist. Even among the Old Copper culture, dating as far back as 3,000 B.C., one finds Mediterranean forms. Beirne's very detailed study indicates some early and important Old World influences affecting wide regions of America.

The Atlantic Ocean is small when compared to the Pacific. The winds and currents from the Strait of Gibraltar drive directly to America with great steadiness. Any mariner venturing out to sea beyond the ancient Pillars of Hercules and not having any mishap would arrive in America in a very short time. If he were making a deliberate voyage, then he would arrive even more quickly. We know that by the early Bronze Age, say about 3,000 B.C., there was a lively trade with Britain to obtain Cornish tin and Irish gold, among other things.²⁰ We also know that some of this shipping went by sea around Spain. It may have been about this time that the Madeiras and the Canar-

ies were occupied, though perhaps earlier. But certainly by that time there was sufficient shipping exposed to the perils of the sea that contact with America was certain to occur, even if only by drift voyages.

The usual criticism of this view is that a drifter would have been unable to get back. But that is a mere assumption. Who can really say that after landing on a Caribbean island, mariners could not repair their ship and return? If they attempted a return and the Gulf Stream swept them northward and they caught the westerlies, they could return rather easily. But beyond such argumentation, of course, one would like to have some evidence.

Decades ago I began to notice what appeared to me to be quite clear examples of alphabetic writing in the archaeological reports from America. I often tried to interest my colleagues, especially those familiar with the ancient alphabets of the Mediterranean. They would, after casual inspection, state that my examples were neither Greek nor Roman nor Semitic.²¹ But this did alert them to my interests, and one of the Latin scholars called my attention to a book on the centenary of the discovery of Pompeii. In it was a chapter by a botanist who identified the plants in the mural art at Pompeii. One of the things that he noted was the pineapple. He was fully aware that it is an American plant and, of course, that it cannot be grown in the vicinity of Naples. I noted this, and the usual furor erupted. When the smoke cleared, it was admitted that the pineapples were indeed portrayed at Pompeii,²² a city which was buried at the end of the first century A.D.

One would like to have more such evidence. But it must be sought and developed, and little energy has been expended on the Atlantic question in comparison to the Pacific. But we do have some bits and pieces. The royal purple dye in the Mediterranean was made from a shellfish.²³ The dye was not only greatly valued by royalty, but it was commonly thought to be a fertility aid. In America the same color was derived from a closely related shellfish and, while one might think that this is just natural, what is striking is that some of the same ideas, such as fertility, are attached to this shellfish dye in America. When pressed, the independent inventionists suggested that the Spanish

must have introduced it. However, textiles in Peru have been shown to have that dye as early as the second century B.C.

There is an interesting possible return flow. In America a brilliant red dye, cochineal, was made from an insect that grows on cactus. Cactus is strictly American, and the insect grows on nothing else. An American with a major dye business was in Mexico and admired the colors in the textiles of the Mexican Indians, and later he was in Palestine and was struck by the similarity of the colors in the clothing of the ancient Bar Kokhba people, some of whom had died in the desert and whose clothing had been preserved by the aridity in the caves of that region. He had his chemists investigate the dyes and they found that one of the chemicals was cochineal, the dye from the insect that lives on American cactus. The time of Bar Kokhba is the first half of the second century. But a difficulty exists with this bit of evidence. Chemists tell me that to make the identification certain, the analysis would have to be carried one side chain of molecules further.

Would dyestuffs be expectable? Most certainly. The economics of long-distance carriage of materials is such that high-value, low-bulk materials are those that can stand the transfer costs. In the sixteenth century it was dyestuffs that were avidly sought in America.

One would, of course, like to have further evidence. Ask and you shall receive. In an excavation in Mexico, under three intact layers of stone and cement, Professor Jose Garcia Payon found a small terra-cotta head that is easily identified as originating in Italy and dating to around A.D. 200. This is not often mentioned by the opponents of Old World influences in America, possibly because it was reported in German.²⁴ At the time, oddly, this find was viewed as more likely to have reached Mexico via the Pacific, though the Atlantic possibility was mentioned.

These finds cluster around the early centuries A.D. They are part of what, if gathered up, would be a strong case for Mediterranean, probably Roman, contact with America. Amphora-shaped vessels appeared at Teotihuacan near Mexico City at this time. Data on a classic amphora

found in Mayan archaeology and dating from about A.D. 40 have been published by the National Geographic Society.²⁵ As part of this set of data one should, of course, include the finding of an inscribed tablet in Tennessee that refers to Bar Kokhba,²⁶ the finding of coins that date to that era,²⁷ and the preservation of the Jewish harvest festival of *suk-koth* by the Yuchi Indians of the same region.²⁸ All of this clusters around the time of Christ, usually a century or so after. I hasten to add that there is evidence that points to far earlier contacts as well as much later ones. For the earlier, there is the Old Copper culture of the Upper Michigan area, which dates to 3000 B.C., with its clearly European-style spear points and other implements.²⁹

But to return to the Roman period, let us look at the maize situation. We have already touched on this in our discussion of the Pacific (see note 12 for the citations on maize), and I did not strain at the evidence there. There are two or more parts to this story. The Romans comment on the appearance of a new grain. It grows on a stalk like sugarcane but bears grain in an ear, and the individual grains are as large as peas.³⁰ I know of no plant other than maize that fits this description. What became of this introduction of whatever it was remains unknown.

Concerning later introductions we know more. Sauer and Jeffreys,³¹ in papers that appeared almost simultaneously but totally independent of one another, using the same documentary materials, concluded that maize preceded Magellan in the Philippines. Anderson had a student, Finan, work on maize in the great herbals that were produced in Europe about A.D. 1600 (see note 12 for Sauer, Jeffreys, and Finan). The interesting fact emerged that maize was not mentioned as coming from the Caribbean for almost a hundred years. It was uniformly attributed to the Turks and called *frumentum turkicum*. Among the herbals, two kinds of maize are shown in fine botanical detail. One is a tropical flint corn typical of the Caribbean, clearly the grain that Europe had been getting recently from the land found by the Spanish. The other is quite clearly a mid-latitude type of maize. In the herbals, it is identified as maize and as originating in Turkey. Far too little attention has been paid to these data.

M. D. W. Jeffreys devoted great energy to this question. He was convinced that the Arabs had reached America and had carried maize back to Africa. He eventually proved that the Portuguese were getting maize well before Columbus' voyage.³² Their source lay in West Africa, lands dominated by the Arabs. I am less certain of his claim that the Arabs spread maize into the Indian Ocean and on to the Philippines. It is quite possible that maize was carried across both the Pacific and the Atlantic before A.D. 1500, thus confusing the picture.

If I seem overly free in moving items across both oceans, let me cite another instance. This is the cylinder seal. Stamp seals are very ancient, and cylinder seals only a little less so.³³ They originated in the Near East and spread east and west. One set is found in Thailand. It has pure design, is deeply carved, and is often hollow. It is exactly this type of cylinder seal that appears in Central America. A distinctly different cylinder seal appears in Mexico. It is usually solid, the markings are engraved rather than deeply carved, and alphabetic letters of at least two separate alphabets flood the designs.³⁴

As I noted in the introduction, my first brush with these seals occurred when the Mormon excavations produced two from early levels in Mexico. Casts were sent to W. F. Albright at the Johns Hopkins University, where I then was, and Albright called me over to review them. He called them degenerate cartouches, and pointed to individual letters that he could recognize. This was later discussed by David Kelley, who noted that some form of developed writing was present (see footnote 33). Still later, after I had worked with Barry Fell and had become familiar with western Mediterranean alphabets, I belatedly recognized that at least one of the alphabets present was Libyan.

I have strayed a bit from the biological evidence. I did so deliberately in order to indicate that the diffusionist evidence is not lopsided; it is not just biological. There is also bio-cultural evidence. I have in manuscript³⁵ a study of *Cyprea moneta*, the money cowry from the Indian Ocean. In West Africa it is used in medicine bundles in a manner similar to the use of this shell in medicine bundles among some Algonkin tribes. One would tend to think

that this was some late introduction, improbable as that might seem. However, *Cyprea moneta* appears in an Adena (1000 B.C.-A.D. 500) mound in West Virginia. The presence of an Indian Ocean shell in an Adena mound is seldom mentioned, much less the cultural link it represents to the Old World.

Conclusion

The evidence of both Asiatic and European influences in Amerindian culture is exceedingly broad and deep. This refers both to time and to place. Currently, I would judge that contact with America across both the Atlantic and the Pacific began as early as 3,000 B.C. It is difficult to characterize the contact. I have come to call it intermittently continuous, and widely scattered as to place. When we come to understand it fully, we shall find it tied to the rise and fall of empires and dynasties of the Old World. We are very far from this understanding at present because of a certain fanatical resistance to the idea that there was any meaningful contact.

The issues here are large. We are dealing with the nature of man: either inventive or a very good learner. Clearly, I see man as relatively uninventive, but good at learning. We are also looking at the origins of civilization: one or many? Within my lifetime we have gone from assuming separate origins for the Egyptian, Mesopotamian, Indian, and Chinese civilizations to seeing them as stemming from a single beginning. In America we have also seen that the Mexican and Peruvian (really Andean) civilizations developed from shared roots. I see the probability that the Amerind civilizations stem from Old World contacts, and this seems to be leading to the notion of a single origin of civilization. This is not a small conclusion.

Finally, I offer a defense against the claim that the diffusionist is a racist, especially when he credits civilization in America to outside influences. Some claim that this amounts to saying that the American Indians were stupid louts incapable of developing civilization on their own. My reply is that no one developed civilization on his own. Civilizations grew up where there was an exchange of

ideas, leading to new combinations and a multiplication of innovations. I know of no exceptions. Indeed, I enjoy running this in reverse. Consider the noble British, until recently rulers of the earth (almost). What did they invent? Not agriculture, domestication of animals, metallurgy, printing, alphabets, arches, wheels, zeros—and the list can be made almost infinitely long. Surely by this measure they are among the most backward people on earth. They are also Johnny-come-latelys to civilization. Read Caesar's description of them sometime.

The lesson is obvious. No people did it all by themselves, and a people's genius is measured by what they did with what they were able to borrow. By this measure, the aborigines of Australia were not stupid. Given their immense isolation, their rich ceremonial life and ingenious returning boomerang indicates considerable ability. Thus, to attribute the Amerind civilizations to outside stimuli is to categorize the Amerinds as normal humans—able learners, gifted innovators.

This discussion could be extended indefinitely, but I shall end by saying that the plant and the chicken evidence proves in absolute terms that the great oceans were crossed, very early, and seemingly fairly easily, for plants and animals were carried so easily that they did not have to be eaten. I consider that the biological data has proved the case for diffusion. This, then, changes the odds and makes more admissible all the cultural evidence. To be sure, this cannot become an excuse for careless use of cultural data. But it should free us to use that data with no apologies.

Notes

1. See Thomas S. Ferguson, *One Fold and One Shepherd* (San Francisco: Books of California, 1958), pp. 22-24 for the letter sent to Albright and Albright's reaction.

2. "Utah Lake Skull Cap," *American Anthropologist* 36 (1934): 431-33.

3. Samuel Eliot Morison, *Admiral of the Ocean Sea* (Boston: Little, Brown and Co., 1942); and *Christopher Columbus, Mariner*, (Boston: Little, Brown, 1955).

4. G. F. Carter, "Plant Evidence for Early Contacts with America," *Southwestern Journal of Anthropology* (now renamed *Journal of Anthropological Research*) 6 (1950): 161-82; "Plants Across the Pacific," *Memoirs of the Society for American Archeology* 9 (1953): 62-71; "Disharmony Between Asiatic Flower Birds and American Bird Flowers," *American Antiquity* 20 (1954): 176-77; "Pre-Columbian Chickens in America," in *Man Across the Sea*, Carroll L. Riley et al. (Austin, Tex.: University of Texas Press, 1971), pp. 178-218; "Hibiscus Rosa Sinensis," *Anthropological Journal of Canada* 15, no. 4 (1977): 26-27; "The Money Cowry and the Medeingwin Society," *The Epigraphic Society. Occasional Papers* 15 (1986): 160-69.

5. J. B. Hutchinson, R. A. Silow, and S. G. Stephens, *The Evolution of Gossypium and the Differentiation of the Cultivated Cottons* (London: Oxford University Press, 1947); they observe (p. 53) that "the outstanding feature of . . . [cotton] . . . is the way in which diversification has accompanied geographical distribution."

6. S. G. Stephens, "Cytogenetics of Gossypium and the Problem of the Origin of New World Cottons," *Advances in Genetics* 1, ed. M. Demerec (New York: Academic Press, 1947), pp. 431-42. The cotton picture has advanced greatly and one must see later papers to keep up; see also Stephens' "Some Problems of Interpreting Transoceanic Dispersal of the New World Cottons," in *Man Across the Sea*, pp. 401-15.

7. *The Evolution of Gossypium*, p. 138, in which cucurbita and other plants are shown to have both Old and New World centers, which "supports the theory of a transPacific . . . link."

8. On the sweet potato see Donald D. Brand, "The Sweet Potato: An Exercise in Methodology," in *Man Across the Sea*, pp. 343-65; and Douglas Yen, "Sweet Potato Variation and Its Relation to Human Migration in the Pacific," in *Plants and the Migrations of Pacific Peoples*, ed. Jacques Barrau (Honolulu, Hawaii: Bishop Museum Press, 1963), pp. 93-117, as well as his "Construction of the Hypothesis for Distribution of the Sweet Potato," in *Man Across the Sea*, pp. 328-42.

9. Lists of traits shared by the Old World and the New World can be enormously long. See John L. Sorenson, "The Significance of an Apparent Relationship between the Ancient Near East and Mesoamerica," in *Man Across the Sea*, pp. 219-41, esp. 227-41 for lists. For a shorter and more specific list, see John Howland Rowe's "Diffusionism and Archaeology," *American Antiquity* 31 (1966): 334-37. Rowe views the comparisons as constituting "no proof of direct contact." For the opposite view see Stephen C. Jett and G. F. Carter, "A Comment on Rowe's 'Diffusionism and Archaeology,'" *American Antiquity* 31 (1966): 867-70.

10. Kwang-chih Chang, *The Archaeology of Ancient China* (New Haven, Conn.: Yale University Press, 1968), pp. 142, 157.

11. Oakes Ames, *Economic Annuals and Human Cultures* (Cambridge, Mass.: Botanical Museum of Harvard University, 1939), pp. 44-49.

12. Maize outside of America before A.D. 1500 has had some lengthy and controversial treatments. Some of the papers on the pre-Columbian evidence are: C. R. Stonor and Edgar Anderson, "Maize Among the Hill Peoples of Assam," *Annals of Missouri Botanical Garden* 36, no. 3 (1949): 355-405; Carl O. Sauer, "Maize into Europe," *Akten des 34. International Amerikanistenkongresses*, (1960), pp. 777-88; M. D. W. Jeffreys, "Milho zaburro = Milho de Guynee = Maize," *García de Orta* 2 (1963): 213-26; and M. D. W. Jeffreys, "Pre-Columbian Maize in Asia," in *Man Across the Sea*, pp. 376-400. Further bibliography on Jeffreys can be found in *Man Across the Sea*, p. 493. Also consult John J. Finan, *Maize in the Great Herbals* (Waltham, Mass.: Chronica Botanica, 1950).

13. G. F. Carter, "Hibiscus Rosa Sinensis," *Anthropological Journal of Canada* 15, no. 4 (1977): 26-27.

14. G. F. Carter, "Pre-Columbian Chickens in America," in *Man Across the Sea*, pp. 178-218.

15. Ulisse Aldrovandi, *Aldrovandi on Chickens. The Ornithology of Ulisse Aldrovandi (1600)*: vol. 2, book 14, trans. L. R. Lind (Norman, Okla.: University of Oklahoma Press, 1963).

16. Three Aztec names for the turkey were *totoli*, *quauhtotoli*, and *acoiotl*, as recorded by Fray Bernardino de Sahagun; see his *Florentine Codex: General History of the Things of New Spain*, Book 11 (Santa Fe, N. M.: School of American Research, University of Utah, and Museum of New Mexico, 1963), pp. 53, 29, 30, respectively.

17. Carl L. Johannessen, "Folk Medicine Uses of Melanotic Asiatic Chickens as Evidence of Early Diffusion to the New World," *Social Science and Medicine* 15D (1981): 427-34; and Carl L. Johannessen, "Melanotic Chicken Use and Chinese Traits in Guatemala," *Revista de Historia de America* 93 (1982): 73-89.

18. Of his many papers, see Gordon Ekholm's "Diffusion and Archaeological Evidence" in *Man Across the Sea*, pp. 54-65, and the bibliography therein, p. 478. Robert Heine-Geldern was associated with Ekholm and has written many important papers on diffusion. Consult the bibliography for Heine-Geldern in *Man Across the Sea*, pp. 487-88; for their joint works, see p. 488. Also see Miguel Covarrubias, *The Eagle, the Jaguar, and the Serpent* (New York: Alfred A. Knopf, 1954), esp. pp. 32-72; and Paul Shao, *Asiatic Influences in Pre-Columbian American Art* (Ames, Iowa: Iowa State University Press, 1976); and Shao's *The Origin of Ancient American Cultures* (Ames, Iowa: Iowa State University Press, 1983).

19. Daniel Randall Beirne, "Cultural Patterning as Revealed by a Study of Pre-Columbian Ax and Adz Hafting in the Old and New Worlds," in *Man Across the Sea*, pp. 139-77.

20. See, for example, Lionel Casson, *The Ancient Mariners* (New York: Macmillan, 1959), pp. 22, 71; at a later date, Herodotus mentions gold in northern Europe (Book III.116) and Caesar frequently speaks of European trade with Britain (e.g. IV.21). Compare Barry Fell, *Saga*

America (New York: Times Books, 1980), pp. 51-53, 60, in which he cites Arribas, who thinks Cornish tin mines were depleted by the fourth century B.C.

21. Much later I sent some of this material to Barry Fell, who was then centering his interest in the Pacific and forming the Polynesian Epigraphic Society. My tiny samples changed the emphasis; we now have the Epigraphic Society, and Fell's work is scandalizing the anthropologists who cling desperately to their anthropological Monroe Doctrine. See Fell's three books, *America, B.C.* (New York: Times Books, 1976), *Saga America* (New York: Times Books, 1980), *Bronze Age America* (Boston: Little, Brown and Co., 1982), and the volumes of the Epigraphic Society.

22. On the pineapple see G. F. Carter, "Plants Across the Pacific," *Memoirs of the Society for American Archeology* 9 (1953): 62-71, esp. p. 62; and Domenico Casella, "La frutta nelle pitture Pompeiane," *Pompeiane: Raccolta di studi per il secondo centenario degli scavi di Pompei* (Napoli: Gaetano Marchiaroli, 1950), pp. 355-86. Also Elmer Drew Merrill, in his *The Botany of Cook's Voyages* (Waltham, Mass.: Chronica Botanica, 1954), p. 367, had to concede that the pineapple did appear to be known at Pompeii, p. 367, but see also pp. 216, 251, and 267 for opposite opinions. He still suggests a possible African origin for the sweet potato (p. 195), a point now thoroughly refuted.

23. Phoenician "Tyrian purple," for example, came from a shellfish called the murex. See for instance *Collier's Encyclopedia* under "Phoenicia," article by T. B. Jonis (New York: Macmillan, 1986), 18: 728. Compare Barry Fell, *Saga America*, p. 50.

24. An English translation can be found in Robert Heine-Geldern's "A Roman Find from Pre-Columbian Mexico," *Anthropological Journal of Canada* 5, no. 4 (1967): 20-22.

25. See Luis Marden, "Dzibilchaltun: Up from the Well of Time," *National Geographic* 115 (1959): 125 for a photo of a broken amphora retrieved from an underwater mine.

26. Cyrus Gordon, *Before Columbus* (New York: Crown Publishers, 1971), pp. 179-87.

27. Gershon Jacobson, "Mataba'ot von Bar Kochbas Zeiten Gufunden in Teil von Kentucky," *Day Jewish Journal* 53, no. 22, (April 17, 1967): 220; cf. Barry Fell, *Saga America* (New York: Times Books, 1980), p. 168.

28. Cyrus Gordon, *Before Columbus*, pp. 89-90.

29. Barry Fell, *Saga America*, pp. 35, 358-61.

30. Peter Martyr in Italy in 1493 described such a grain; *ibid.* Compare Frederick J. Pohl, *Atlantic Crossings Before Columbus* (New York: W. W. Norton, 1961), who argues that Leif Eriksson brought Indian corn to the Old World from North America (p. 220) and that the Welsh knew of this grain (pp. 172-73). Jeffreys, in "Pre-Columbian Maize in Asia," *Man Across the Sea*, p. 397, cites Leonardo da Vinci (in 1495-97) making a list of commodities including maize (melica/miglio).

31. M. D. W. Jeffreys, "Origin of the Portuguese word 'Zaburro,'" *Bulletin de l'Institut Francais d'Afrique Noire*, vol. 19 (1975).

32. For the Arab-African and Portuguese maize question see M. D. W. Jeffreys, "Pre-Columbian Maize in Asia," *Man Across the Sea*, pp. 380-81.

33. Cylinder and stamp seals are part of the growing body of evidence of alphabetic writing in pre-Columbian America. See G. F. Carter, "Mexican Sellos: Writing in America, or the Growth of an Idea," in *Diffusion and Migration: Their Roles in Cultural Development*, Proceedings of the Tenth Annual Conference, the Archaeological Association of the University of Calgary (Calgary, Alberta, Canada: University of Calgary, 1978), pp. 186-201; G. F. Carter and Sol Heinemann, "Pre-Columbian Sellos: Another Artifact Showing Possible Cultural Contact and Transpacific Diffusion," *Anthropological Journal of Canada* 15, no. 3 (1977): 2-6; and David H. Kelley, "A Cylinder Seal from Tlatilco," *American Antiquity* 31 (1966): 744-46. On the topic of writing in America, the volumes of the Epigraphic Society are by now essential reading.

34. G. F. Carter, "Mexican Sellos: Writing in America, or the Growth of an Idea," in *Diffusion and Migration*, esp. pp. 187-88, 190-91, 197.

35. The manuscript is now published under the title "The Money Cowry and the Mideiviwin Society," *The Epigraphic Society. Occasional Papers* 15, 1986, pp. 160-69. Meanwhile, Thor Heyerdahl has published on the Maldiv Islands, pointing out that these islands, just west of the tip of India, were the major source for these shells. See Thor Heyerdahl *The Maldiv Mystery* (Bethesda, Md.: Adler & Adler, 1986).