

Diamond-Chap. 10

The "Geographical Axis" Argument: the Americas are 9,000 miles long but only 3,000 miles wide [in North America] & only 40 miles (in the Panama Isthmus), therefore it is primarily vertical (as is Africa) p.176, whereas Eurasia is wide horizontally [& so is Australia, which he does not emphasize, probably because it is an island continent & by definition difficult of access, p. 177, Figure 10.1]. For ex., Horizontal regions "Localities distributed east and west of each other at the same latitude share exactly the same day length and its seasonal variations. To a lesser degree, they also tend to share similar diseases, regimes of temperature and rainfall, and habitats or biomes (types of vegetation). For example, Portugal, northern Iran, and Japan, all located at about the same latitude but lying successively 4,000 miles east and west of each other, are more similar to each other in climate than each is to a location lying even a mere 1,000 miles due south" (p.183).

Independent domestication=when more than 1 local variety have the natural mutations necessary to provide the raw material for a domesticate, if so that probably means that they were domesticated [via "independent invention" or "parallel invention"] in multiple places, which demonstrates relative isolation. As predicted, the New World shows this pattern of multiple spatially-isolated domestications: Lima beans, common beans & chili peppers all independently being domesticated in Mesoamerica & again in South America (p.179).

Preemptive domestication="Evidence for just a single domestication ...suggests that, once a wild plant had been domesticated, the crop spread quickly to other areas throughout the wild plant's range, preempting the need for other independent domestications of the same plant" (p.179) very common in Southwest Asia.

Age-Area Hypothesis [Culture-Circle Theory], a Germanic "Culture History" theory=[used, but not acknowledged by Diamond as he charts the increasing rings of adoption of Fertile Crescent crops into southern & then northern Europe (p.181, Fig. 10.2); here actually "concentric crescents" rather than concentric circles because of the geo-ecological barriers of the Sahara] + spread was very rapid (p.183). This theory is the notion that one could reconstruct time by plotting the spread of inventions in space. That is, inventions occur at point sources and tend to spread outwards (if the world were a featureless plain) to all points of the compass equally, rather like a pebble tossed into a pond producing a series of concentric ripples that spread outward from the point of impact to the outer margins of the pond. That is at "Time-One," when a given invention or innovation is made at the center and passes outward via diffusion. At "Time-Two" (sometime later), when a new invention or innovation is made at the center it too will pass outward concentrically as a

new set of material cultural ripples. But, the old innovation still exists at the periphery as an old-fashioned hold-out, whereas at the center (often a "high information density" central place like an urban-city environment) the new innovation of "Time Two" exists--the old innovation, now *paseé*, is extinct in the center. As I mentioned in class, "beehive" hair-dos from the 60s are still worn by middle-aged women in the upper Midwest! The argument was, just as today the periphery retains old "provincial" inventions, which tend to hang on in these "low information environments" for a long time, so too the urban center is characterized by a rapidly changing kaleidoscope of novel fads & fashions, each quickly replacing the older. So, if you want to know what happened at an earlier time in the center, go to the current periphery, the provinces! Space does equal time in this simplified model. Such a model does work well for those items that spread over a featureless domain, such as a desert or an ocean, like the spread of the rickshaw which spread by water from Japan to first nearby Hong Kong in China and then to Singapore on the Malay Peninsula, and its extinction in the same order. But the trouble is "General Geography," the fact that mountains and other obstacles like jungles tend to canalize diffusion and break the nice concentric ripples in most cases (see what happened to the "Fertile Crescent" crops in Diamond when they tried to "lap" beyond Egypt & Ethiopia in Africa). Thus, while the Germans elaborately map-ped everything in the 19th century, hoping to find their places of origin, the "interference pattern" of geo-ecological obstacles producing multiple colliding eddies of patterns makes people reluctant to do that today (save Diamond).

This produced Cultural Revolutions="The sphinx and pyramids [of Ancient Egypt] were built by people fed on crops originally native to the Fertile Crescent, not to Egypt" (p.182).

Old World Preemptive Crops="By the time of Christ, cereals of Fertile Crescent origin were growing over the 8,000-mile expanse from the Atlantic coast of Ireland to the Pacific coast of Japan. That west-east expanse of Eurasia is the largest land distance on Earth" (p.185).

Mediterranean Climate=Optimal=[versus tropical rain forest] "On all the continents the habitat type known as tropical rain forest is confined to within about 10 degrees latitude of the equator, while Mediterranean scrub habitats (such as California's chaparral and Europe's maquis) lie between about 30 and 40 degrees of latitude" (pp.183-184).

Humans also prefer habitats of origin="In recent centuries overseas colonists from cool northern Europe have preferred to emigrate to the similarly cool climates of

North America, Australia, and South Africa, and to settle in the cool highlands within equatorial Kenya [+ Rhodesia] and New Guinea. Northern Europeans who were sent out to hot tropical lowland areas used to die in droves of diseases such as malaria, to which tropical peoples had evolved some genetic resistance" (p.185).

World Culture Domesticates & Cultigens="A typical American fast-food restaurant meal would include chicken (first domesticated in China) [or "hamburger" from beef, first domesticated in Europe] and [french-fried] potatoes (from the Andes) or corn (from Mexico), seasoned with black pepper (from India) [or ketchup, made from tomatoes, first domesticated on the desert coast of Peru] and washed down with a cup of coffee (of Ethiopian origin)" (p.185).

North-South Diffusion Impossible in Africa & New World North-South Axis

"Most of the Fertile Crescent founder crops reached Egypt very quickly and then spread as far south as the cool highlands of Ethiopia, beyond which they didn't spread. South Africa's Mediterranean climate would have been ideal for them, but the 2,000 miles of tropical conditions between Ethiopia and South Africa posed an insuperable barrier. Instead, African agriculture south of the Sahara was launched by the domestication of wild plants (such as sorghum and African yams [+ African dry rice]) indigenous to the Sahel zone [where stimulus diffusion could act] and to tropical West Africa, and adapted to the warm temperatures, summer rains, and relatively constant day lengths of those low latitudes. [p]. Similarly, the spread southward of Fertile Crescent domestic animals through Africa was stopped or slowed by climate and disease, especially the trypanosome diseases carried by tsetse flies ["sleeping sickness"]. The horse never became established farther south than West Africa's kingdoms north of the equator [built by the horse & then, later, the gun in the "triangle slave trade"]. The advance of cattle, sheep, and goats halted for some 2,000 years at the northern edge of the Serengeti Plains, while new types of human economies and livestock were being developed. Not until the period A.D. 1-200, some 8,000 years after livestock were domesticated in the Fertile Crescent, did cattle, sheep, and goats finally reach South Africa. Tropical African crops had their own difficulties spreading south in Africa, arriving in South Africa with black African farmers (the Bantu [expanding out of West Africa in one of the great migrations of World History]) just after those Fertile Crescent livestock did. However, those tropical African crops could never be transmitted across South Africa's Fish River, beyond which they were stopped by Mediterranean conditions to which they were not adapted" [the indigenous Khoisan "Bushmen" were driven beyond that river by the Bantu pastoralists & agriculturalists where they were caught in a vice] "...when European settlers [Boers=Dutch] arrived by sea [in the south] in 1652, bringing with them their Fertile Crescent crop package" (pp.186-187).

-In the Americas, the same problem, the distance between the cool highlands of Mexico & Ecuador is some 1,200 miles, but despite being suitable for the same suite of crops & animals, only corn spread [& even then the South American versions are local races]; llamas, guinea pigs & potatoes never spread north [nor did peanuts, avocados, lima beans & tomatoes--nor did the Mexican turkey or edible dog spread south. The same goes for "industrial crops"=each area developed its own kinds of cotton independently] (p.187). [The same constraints faced the Mexico-north axis]="The mere 700 miles of north-south distance prevented Mexican corn, squash, and beans from reaching the U.S. Southwest for several thousand years after their domestication in Mexico, and Mexican chili peppers and chenopods [a grain rich in protein] never did reach it in prehistoric times [only later, with the Spanish conquistadores]. For thousands of years after corn was domesticated in Mexico, it failed to spread northward into eastern North America, because of the cooler climates and shorter growing season prevailing there. At some time between A.D. 1 and A.D. 200, corn finally appeared in the eastern United States but only as a very minor crop. Not until around A.D. 900 [some 3,000 years after it was domesticated in Mexico], after hardy varieties of corn adapted to northern climates had been developed, could corn-based agriculture contribute to the flowering of the most complex Native American society of North America, the Mississippian culture-a brief flowering ended by European-introduced germs arriving with and after Columbus" (p.188).

Mechanical Technology obeys the same constraints=[just like the "bio-machines" of domesticates & cultigens] "...around 3,000 B.C. the invention of the wheel in or near Southwest Asia spread rapidly west and east across much of Eurasia within a few centuries [which makes it difficult to pin-point its exact origin place], whereas the wheels invented independently [on little animal toys for children--remember Basalla] in prehistoric Mexico never spread south to the Andes. Similarly, the principle of alphabetic writing, developed in the western part of the Fertile Crescent [by the trading Phoenicians of the Levant] by 1500 B.C., spread west to Carthage [in Tunisia, North Africa] and east to the Indian subcontinent within about a thousand years, but the Meso-american [heiroglyphic] writing systems that flourished [independently] in prehistoric times for at least 2,000 years never reached the Andes" (p.190).--[again as a result of the intervening constriction at Panama & the latitudinally different environments to be vertically traversed].

[General Geography] as Important as Latitude="Topographic and ecological barriers...were locally important obstacles to diffusion. [p] For instance, crop diffusion between the U.S. Southeast and Southwest was very slow and selective although these two regions are at the same latitude. That's because much of the

intervening area of Texas and the southern Great Plains was dry and unsuitable for agriculture. A corresponding example within Eurasia involved the eastern limit of Fertile Crescent crops, which spread rapidly westward to the Atlantic Ocean [and then stopped until Columbus] and eastward to the Indus Valley [in what is now western India, the border area with Pakistan] without encountering a major barrier. However, further eastward in India the shift from predominantly winter rainfall to predominantly summer rainfall [the Monsoon] contributed to a much delayed extension of agriculture, involving different crops [& animals-the heat-tolerant humped zebu cow replacing the cold-tolerant European auroch-derived humped cow] and farming techniques, into the Ganges plain of northeastern India. Still farther east, temperate areas of China were isolated from western Eurasian areas with similar climates by the combination of the Central Asian desert, Tibetan plateau, and Himalayas. The initial development of food production in China was therefore independent [Asian rice & millet] of that at the same latitude in the Fertile Crescent [wheat, barley], and gave rise to entirely different crops. However, even those barriers between China and western Eurasia were at least partly overcome during the second millennium B.C. when West Asian wheat, barley, and horses reached China [inaugurating the 1st literate empires of the Shang & Chou dynasties] (p.189).