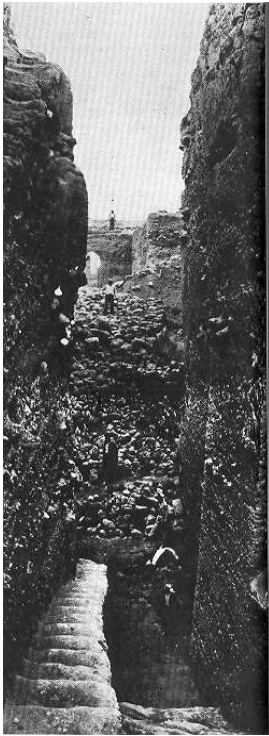


## Jericho and Domestication<sup>1</sup>

The people of your village, numbering some two thousand men, women and children, have built a massive stone wall. The wall is 2.7 meters thick, 3.2 meters high and perhaps seven hundred meters in circumference, completely enclosing the village. At one point along the wall a massive stone tower, some 10 meters in diameter, has



been built. An internal flight of stairs ascends to a panoramic view of the surrounding countryside. The project took tremendous coordinated effort--planning, gathering the various materials, construction, maintenance, all of which means considerable time spent away from subsistence activities. The wall may be the first of its kind ever built. And what that wall encloses is certainly the first of its kind.



Within the walls – your people live year around, not traveling with the seasons nor following the nomadic herds of wild gazelles, goats and boars. Within the walls – your relatives engage in extensive trading with distant peoples for salt, obsidian, shells and bitumen. Within the walls – the burials include some bodies adorned with jewelry and buried with valuable tools while other bodies are without jewelry. Within the walls is the meager harvest of cultivated wheat and barley, stored for the winter and spring meals. The gazelle is still hunted; but you also eat of the grains you plant, harvest and store yearly. Within the walls there is a sense of protection from those from without who desire what is now within.

The time is some 9,400 years ago at a site that would later be called Jericho in the Jordan Valley.

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For more than ninety-nine percent of its history, humanity has lived by gathering the wild plants and hunting the wild animals of the land. Beginning some 10,000 years ago all this changed. In the Hwang Ho (Yellow) River valley of China, in the Tehuacan and Oaxaca regions of Mexico, in the Nam Teng River valley of Thailand, and in the Jordan valley wild plants were domesticated. Although at slightly differing times, all these sites where domestication first took place occurred independent of each other. Millet, rice, maize, yam, wheat and barley, soon followed by dog, goat, cattle, pig and turkey, became inalterably tied to humanity. What first occurred only 10,000 years ago has dramatically altered how humanity relates to itself and to the natural world.

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<sup>1</sup>For additional ethnographic background, see Fagan 1989.

With the domestication of plants and animals, humanity becomes sedentary. Near the springs and along the water ways, permanent villages begin dotting the landscape where nomadic bands of people once traveled with the wild herds in their seasonal cycles. With domestication, significant craft as well as task specialization emerge. New, more function-specific, types of tools are made, helping produce a wealth of new material goods. With domestication, access to and distribution of resources is socially differentiated. Some receive more, while others receive less. Political authority is centralized. A few make the decisions for many. Social class distinctions emerge. Society is no longer egalitarian. New religious orders, such as priesthoods and temple complexes, emerge. Humanity begins to relate to the sacred in new ways.

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This new way of relating to the land was quickly adopted by gatherer-hunter peoples. By 2,000 years ago, domesticated farmer or herder ways of life characterized most of the world's societies and could be found in virtually every ecological niche of the earth.

As significant as domestication and all the associated changes are, as with the creation of the first stone tools, the human's conceptualization of the process and the associated changes is as significant. Some 10,000 years ago, humanity's view of the natural world was momentarily altered. To domesticate, a conscious effort is required. The human deliberately interferes with the natural cycles of a plant or animal, rendering that plant or animal dependent on the human. But in the process, the human is also rendered dependent on that plant or animal. And as a result, the desired attributes of the plant or animal eventually yield higher productivity.

Domestication renders something once "wild" dependent on the human for its continued existence. Or rephrased, domestication is a measure of loss of fitness in something to survive on its own. After years of selective planting, maize (corn) seeds became larger and clustered on its cob. The yield of this food source increased as a result. But maize could no longer effectively disperse its own seeds. Humans must now do what once was done naturally. Maize can no longer survive on its own.

### The Gatherer-Hunter Natufians: Setting the Stage

Long before the walls and tower of Jericho would be built, a people struggled for their very existence and, in the process, stumbled upon a new form of ecology. They would domesticate their wild plants. But how did such a radical transformation in their relationship with the landscape first occur?

The Mesolithic gatherer-hunter peoples of the Jordanian region between 12,500 and 10,200 years ago were part of the Natufian culture. Though they practiced a transhumance gatherer-hunter ecology, they did live in caves, rock shelter and small semi-sedentary villages with stone and mud-walled houses. They buried their dead in nearby communal cemeteries of shallow pits, though without grave goods, and constructed pits beneath the floors of their houses for storing gathered wild grains. They used of sharp stone-blade sickles for procuring reeds for mats and baskets, and for cutting wild grains, and grinding stones for processing the grain seeds into flour.

The Natufians lived at a time a dramatically changing climate. This was the end of last glaciation and the landscape was significantly warming up. It was marked by extreme seasonal changes, with longer, hotter summers and increased evaporation. The many shallow lakes were drying up, leaving just three in the Jordan Valley.

Over time many of the plant species were altered dramatically as a result. Those species best adapted to the drier climate were the cereal grains and legumes (including peas, lentils, chickpeas and bitter vetch). As they complete their reproductive cycle over a year's time, such plants evolve more rapidly under these unstable conditions. As their seeds can remain dormant for prolonged periods of time, they also have the capacity to store their reproductive abilities for the next wet season.

Those Natufians, in the most severe of these drought-ridden regions, modified their ecological-cultural subsistence adaptation in a number of ways. In their attempt to continue their hunting ways, they would regularly set fire to the landscape, in order to promote the browsing of such game as red deer and grazing of gazelles. Interestingly, this activity unintentionally promoted an increase in grasslands suited for wild grains. With more grasslands and less game to hunt, the Natufians began relying on the gathering of wild seeds. And as these plants were the wild cereals and legumes, such plants could be effectively stored through the dry season. Already utilizing a technology to effectively harvest the wild grains, the sickles and grinding stones were put to greater use. Keep in mind that the sickles were not originally invented to facilitate domestication of plants – an unintentional application. Coupled with the general scarcity of water sources, the need to store the cereals and legumes promoted a more fully sedentary life-style. Nevertheless, these early groups were still fundamentally, gatherer-hunter, simply shifting their focus away from their priority foods to rely on secondary wild seeds and legumes.

### The Wild Rendered Domesticated

In the course of harvesting these wild grain seeds and legumes, much of the harvested seeds would be lost at the gathering sites, as the seeds would be easily-dispersed from the plant stock. But as part of the range in variation of the plant's gene pool, there would be some plants that would not readily scatter their seeds upon being gathered. It would be these plants would more likely be carried back to where the people processed and stored them. Unintentionally, it would be a reliance on this variation of the species, a species rendered less able to survive on its own as a wild species, without the helping hand of humans (part of definition of domestication).

Given a more sedentary life-style of these gatherers, the soil conditions around the settlements were becoming greatly disturbed, as dump heaps, latrines, and areas cleared of trees for firewood and building materials, became more expansive. It is this type of disturbed soil that is prime ground for the rapid growth of "weeds" and "colonizers." A rudimentary form of "plowed fields" was unintentionally being created.

All the precursor, albeit, unintentioned conditions were in place. For some Natufians, struggling to gather enough food stuffs and inadvertently scattering in the nearby disturbed soils surrounding their settlement those grain seeds that kept their kernels through the dry season, they found that could anticipate a harvest in the predicable location the following year. Domestication

was born. These Natufians were in essence selectively manipulating the genetic code of certain plants who could no longer survive on their own, as a wild species, all without realizing what they were doing so.

For the people of Jericho and other Natufian communities, the story of why plants were first domesticated reveals five intriguing observations about the human condition.

First, consider the locations where domestication first occurred. These were sites that the gatherer-hunters considered as “ghettos,” the least desirable for gathering and hunting, marginal gatherer-hunter niches. In a sense these are populations of Natufians that couldn’t make it as successful gatherer-hunters. They didn’t so much elect to pursue domestication, but were forced into it by the changing climate, were forced into an alternative, albeit less desirable, ecological strategy. Keep in mind that the initial domesticated foods were understood originally by gatherer hunters as third choice foods, that were simply gathered to complement and supplement more desirable foods.

Second, the process of plant domestication took a very long time. It was in fact a slow incremental process. Take the example of barley. In its wild state, of some 12,000 years ago, can be tremendously productive but difficult to harvest and process. By 9,000 years ago, it had evolved into tougher stems making it easier to harvest, but also less productive. By 8,000 years ago, the “naked” barley emerged, which is easier to process. And by 7,500 years ago, six-row barley, which is more productive than the original two-row, was widespread. Only then did barley begin to be as productive as it once was in the wild state, as well as more easily harvested and processed. It took some 2,500 years of change to accomplish this plant transformation! During this long time span, the Natufians incrementally shifted from a reliance on foods obtained from gatherer-hunting to agricultural foods; not an over-night jump into agriculture.

Third, during its initial 2,500 year process, the road to domestication was tough going. Domestication does eventually produce higher yields in the plant or animal. But the emphasis is on the “eventual.” In the instance of plants, the higher yield could not have been the motivation for domestication. Higher yield is an eventual, though not foreseen, consequence of domestication. For hundreds of years after the domestication of plants, plants were, in fact, less productive per capita than the harvest from gathering wild plants. Given the unpredictability of seasonal climatic changes and the crude horticultural techniques available, domesticated plants were also a far less secure food source than wild plants. Because of the poor yield, the quality of human health actually deteriorated immediately after the domestication of plants. The size of the human anatomy decreased. And the populations of the farming villages did not immediately increase. Gatherer-hunters always had a diversity and relative abundance of food stuffs to select from. All of their eggs were never placed in a single basket. In comparison with their gatherer-hunter neighbors, early farmers lived a very unstable and precarious existence. Domestication can certainly not be considered an inevitable evolutionary truth. The road pursued by the people of Jericho could not have anticipated what domestication would eventually provide. In their vision of the world, domestication was a poor second to the former gatherer-hunter way of life.

Fourth, to domesticate a species a number of infrastructural antecedents or precursor conditions must first be in place. The deliberate burning of one’s landscape, the use of sickles, the establishing a semi-sedentary life, the selecting for less wild stains of seeds, the creating disturbed habitats, all were consequences of actions directed at events that, in fact, had nothing to

do with domestication of plants. And then there was the fact of a drastically altered climate. All these unintentioned factors were needed to facilitate the domestication of plants. The question remains, would we have domesticated plants if all these infrastructural supports had not been in place?

And fifth, domestication was certainly an “unintentional consequence,” anything but a deliberate, conscious manipulation of the environment in order to improve the way of life. The Natufians pursued this primitive domestication of cereals and legumes initially in order to complement their less than successful gatherer-hunter life style, to continue as gatherer-hunters, and not to embark on some new adventure. There is no way the villagers of Jericho deliberately sought and consciously chose to follow the road to domestication – they had foresight of what it would eventually spawn. If anything, they likely consciously desired to continue as gatherer-hunters. They brought forth an innovation for one purpose, in order to continue as gatherer-hunters, that had an altogether different consequence. How many accidents or discoveries intended for one purpose, are precursors and foundations for another discovery?

### Consequences of Domestication

Nevertheless, domestication does eventually produce higher yields in the plant or animal food stuffs. And with the higher yield from the plants comes craft specialization, class distinctions, and population growth. The act of domesticating plants and animals had a number of quintessential consequences on the human condition.

Domestication forms a symmetrical relationship. As a domesticated plant becomes dependent on the human, the human becomes dependent on the plant. To continue to break bread together, wheat must continue to be grown. As the human population grows, the wheat harvest must necessarily grow. More natural lands must be brought under cultivation. The productivity of the domesticated plant or animal must be refined and increased. As a consequence, the domestication of the natural world extends the boundaries of the culture-created world. Humanity becomes the caretaker of an ever-increasing garden of its own creation. Hence the rise of “civilization.”

As the cultural boundaries expand, there is less direct contact with the natural world, though this is certainly not apparent in the early stages of domestication. Nevertheless, domestication is as a barrier between humanity and nature. If the human garden is the domestic garden, then the natural garden is the wild garden. Domestication distinguishes between “domestic” and “wild.” The world is divided into exclusive camps. What is “domestic” is valued as “good,” and is rendered as a “natural resource” and “commodity,” for the exclusive use of mankind. Redistributing those resources is based on “principle of competitive accumulation,” i.e., you become a “rich man” via successfully competing for and acquiring material goods. One seeks to maximize one’s gains and minimize one’s losses. In the gatherer-hunter world, no such distinctions are made. All plants and animals, and humans are part of a singular garden, as equals, all part of one’s “kinsmen.” A “rich man” is one who gives to those in need, practicing an ethic of sharing. The idea of “wildness” and “wilderness” becomes ingrained in the thinking of farmers and herders. Domestication separates the natural, the “wild,” from the cultural, the “civilized,” and the walls of Jericho are built.

Domestication not only separates, but it presupposes actively keeping the wild out of the cultivated fields and domestic herds. Without constant vigilance, the domestic returns to the wild. And any wild qualities that surface within the domestic must be purged. The domestic must be controlled if it is to be predictable and productive. If the domestic is the constructive and beneficial, then the "wildness" is not only something other than the cultivated, it is also an adversary of the domestic. The wild is potentially destructive of the domestic and thus harmful to the farmer or herder. Domestication attempts to control, take dominion over and dominate the natural, the "wild," by the cultural, the "civilized," and the tower of Jericho is built.

Domestication not only attempts to separate and control wild plants and animals, but "wildness" is extended to other humans. Those who do not cultivate the fields or herd the cattle are thought of as a potential threat and must be kept at bay. History has repeatedly portrayed the nomadic peoples as dire threats to farmers. But it may not have been such experiences that first categorized the nomadic peoples as wild. It may simply have been guilt-by-association. As the wild plant and wild animal is the enemy of the domestic plant and domestic animal, those who live by the wild plant and wild animal are the enemies of those who live by the domestic plant and domestic animal. As their plants and animals are wild, so too are these peoples. "Wild" peoples are separated from and dominated by the "civilized" peoples. The social categories of separation and exclusivity, and differential roles of privilege and power are applied not only to the enemies of the fields, but also to class distinctions and gender roles, to evolving prejudices and hatreds of all kinds.

Within the walls and under the watch from the tower of Jericho, the wilds are kept at bay and the domestic is kept under dominion.

### Population Growth and the Culture of Consumption

While not immediately significant, the human population eventually and radically increases after the domestication of plants and animals. It is important to point out that this growth in population is as much a result of the increased yield in food production as it is the requirements for increased labor input to sustain that mode and level of production. Preparing the soil, planting, irrigating, weeding, harvesting and storing the harvest necessitate intensive amounts of human labor. The increased yield allows larger families, yet larger families are needed to produce that yield. The one influences the other that influences the one.

It is estimated that 500,000 years ago, humanity numbered five million individuals throughout the inhabited world. The human population remained stable, at five million, up to the domestication of plants and animals. By 5,000 years ago, the population had grown twenty-fold to 100 million. In 1600 A.D., with the advent of the industrial revolution, the world population was 500 million. And, by 1992, in less than 400 years, the human population has grown more than ten fold to 5.5 billion people. According to the United States Census Bureau the current world's population is estimated to be 6.5 billion people (as of 2007). The United Nations Population Division has projected that the world's population will likely surpass 9 billion in 2050. Each year, approximately 60 million human beings are added to the world's population.

And with the ever-expanding growth of a domesticated population, ever thrusting for more natural resources and commodities for consumption, the culture of consumption is born.

