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Keeping the Balance: Ancient Greek Philosophical Concerns with Population and Environment

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Not until the rise of the Greek city-States do we see a civilization more than passively concerned with the delicate balance between food supply and population. Ancient Athens was especially troubled by demographic pressures. Thus the ancient Greek philosophers, particularly Plato and Aristotle, were more than sensitive to the relationship between population and resources when postulating the ideal size for a city-state of their day. Cold reality, not metaphysics, was the inspiration for their writings.

Contrary to popular opinion, the concern over "overpopulation" (being defined as a state in which population and resources move into disequilibrium) is not a new one. Ancient societies were also aware of the Malthusian dilemma of population expanding beyond the limited agricultural means of the community.

The early Babylonian epic of Atrahasis (1700 B.C.), the forerunner of the Noah story of Genesis, presents the great flood as a conscious effort on the gods' part to control the growth of the human population as "the land was bellowing like a bull" under the stress of mankind. The epic concludes with the observation that barrenness, stillbirth and natural disasters were all part of the cosmic order to balance humankind's numbers with the land's

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bounty (Kilmer, 1972). Nearly a millennium later, in the Homeric poem *Cypria*, Zeus is said to have brought on the Trojan War so “the load of death might empty the world,” and thus “relieve all nurturing earth.”

While such myths indicate that ancient communities had some realization that there was a limit to the carrying capacity of the land on which they lived, not until the rise of the Greek city-states do we see a civilization more than passively concerned with the delicate balance between food supply and population. The ancient Greek philosophers, especially Plato and Aristotle, often warned their readers of the dangers posed by overpopulation and were strong advocates of the stationary state—one committed to zero population growth. In fact, Robert Malthus was so taken with the Greek experience that he devoted an entire chapter to the Hellenic world in his classic study, *An Essay on the Principle of Population* (1872, Seventh Edition).

Recently, some scholars have come to question the assumption that the ancient Greeks, mainly the Athenians, were caught in a Malthusian dilemma. Breaking with traditional wisdom, Garnsey argues that the productive capacity of Attica has been persistently underrated, while Mulhern holds that metaphysical, rather than economic or political factors, dictated the philosopher’s preference for a small, autonomous, distinctly bounded state (Garnsey, 1988; Mulhern, 1975).

Did Athens truly “suffer” from what we define today as overpopulation? And were the Greek philosophers sensitive to the relationship between population and resources when postulating the ideal size for a city-state (*polis*) of their day?

Before we can answer these questions, it is necessary to first turn to the demographic and societal conditions of ancient Greece at the beginning of the classical period.

POPULATION EXPLOSION: GREECE ENTERS THE CLASSICAL AGE

Most scholars agree that by the end of the preclassical Dark Ages—eighth century B.C.—the Mediterranean underwent significant demographic change. Although we have no definite statistics for Greece, we know that between 1000 and 400 B.C. the population of Europe doubled, increasing from 10 to 20 million, while for the same period the population of Greece tripled (Jones & McEvedy, 1978). The population increase of Greece during this period may have approached two to three percent per annum.

In the eighth century we witness the first great waves of Greek colonization to Africa, Asia and Europe. Correspondingly, we see a dramatic rise

in the number of recorded settlements within Greece itself. Land which had been abandoned or never settled came under the plow. Incorporating new techniques, technologies and crop species, agricultural productivity radically improved, and the triad of cereals, vines and olives took hold across the Greek world as the main staples of existence. Cattle, sheep and goats gradually lost pasture to cultivated land (Hanson, 1995, pp. 36–43).

The switch in diet from one of meat to one based on cereals is best reflected in the literature of the day. As French points out, “the sacrifices of cattle in the Homeric poems are on a lavish scale, scarcely conceivable in fifth-century Athens. On the other hand, neither lentils nor peas, familiar enough to the peasant of Aristophanes’ comedies, are even mentioned in Homer” (1956, p.12).

After centuries of strict agrarian control, the old estates of the aristocracy broke up under new economic and social pressures. By the seventh and sixth century, we therefore see a far greater dispersion of landed property among the Greek populace. The growth of an independent, small land owning class of farmers did not come without major political upheaval. Fortunately for Athens and Sparta, wise leadership prevailed and a peaceful compromise was reached between the people (*demos*) and ruling land owners (*oligarchy*) over the canceling of debt and the redistribution of land.

When the fifth century opens—the so called “golden age” of Greece—the mainland is fairly well populated. As a result of increased productivity and the international grain trade, there are few recorded cases of famine and food shortages. By the mid-fifth century demographic pressures began to take their toll on the stability of the city-states as the Greek peninsula and archipelago contained nearly 3 million people, some 60% of the Balkan total of 5 million (Jones & McEvedy). If there was a problem with the city-states feeding themselves, it now had more to do with the carrying capacity of the land and less to do with its unequal distribution.

Is it any wonder then, that in the political writings of one of Greece’s most famous philosophers, Plato, one encounters a heightened concern with self-sufficiency and the balance between population and territory? While Mulhern argues that Plato’s best known work the *Republic*, “has comparatively little to do with numbers and food supply” (1975, p. 280), this is not entirely true.

PLATO’S REPUBLIC AND LAWS: SEEKING A BALANCE

In the first part of the *Republic*, where the dialogue focuses on the ideal commonwealth, Plato immediately turns his attention to the nexus

between population dynamics and state growth. Men come together to create a self-sufficient society, he notes, a society based on the division of labor as "more things will be produced and the work more easily done." When all the occupations for a self-sufficient society are created and all the physiological needs are met, men "will live pleasantly together and a prudent fear of poverty or war will keep them from begetting children beyond their means" (2.375). But as most men rebel against living in such a simple "primitive" society and want to have fine furnishings to lay on and meat to eat, the community says Plato, will have to be enlarged as it "must be swollen up with a whole multitude" of people catering to the creation of luxuries. "The country will now be too small," he adds, and "if we are to have enough pasture and plow land, we shall have to cut off a slice of our neighbor's territory . . . so we shall be at war" (2.372-75).

Although this part of the dialogue simply supports Plato's favorite ethical doctrine, that all conflict originates from "desires untempered by reason," there is the additional political maxim that population increases—especially if they include "unproductive" members of society—clearly bring with them either "poverty or war." In short, societies wary of "begetting offspring beyond their means" avoid conflict, while those societies bent on expanding their population without regard to their added burden, invite violence and chaos into their lives.

To guarantee that the actions of the state and its people remain in the "realm of temperance," Plato calls for the creation of a special ruling class, the Guardians—who are to hold mates and property in common—and instructs them to put limits on the population and territory of the state. "The state should be allowed to grow only so far as it can increase in size without a loss of unity . . . [and that] it shall be a self-sufficient state and one" (4.422). Thus Plato gives his principle of optimum size; implying as it does that societal harmony, unity, and self-sufficiency comes with the balancing of resources to people. By putting limits on growth, Plato obviously seeks to avoid the terrible class and interstate warfare which haunted Greek communities for hundreds of years.

In a later and less known political work, the *Laws*, Plato again concerns himself with the relationship between population and resources. This treatise takes the form of a discussion between statesmen, one of whom has been drafted by his countrymen to write legislation for the founding of a new colony, a colony which is the direct result of demographic pressures. As one of the characters poses the question: "Tell me this, will the settlers comprise all that wish to go from any part of Crete, supposing that there has grown up in every city a surplus population too great for the country's food supply?" (4. 707).

To Plato, famine was something to be feared as it leads to civil unrest. As he notes, "owing to a scarcity of food, people are in want, and display a readiness to follow their leaders in an attack on the property of the wealthy." In such a case says Plato, the wise statesman will act like a physician and "purge" the "body politic" of a "plague" of rebellious, hungry people by shipping them abroad and giving "the euphemistic title of emigration to their evacuation" (5. 735).

That colonization was actually used as a means to balance population with food supply we need turn only to Herodotus' narrative on the colonization of Cyrene from the island of Thera during the sixth century. Facing a major famine as a result of a series of droughts, the people passed a decree "to send brother from brother, chosen by lot" (*Histories* 4. 150). According to an inscription discovered in Cyrene, the terms of settlement were quite harsh as the decree called for compulsory enlistment, severe limitations on the right to return, and strong threats against defaulters.

This fear of poverty and the accompanying unrest leads Plato to advocate the creation of a stationary state. Thus he would have his colony's families and territory locked together in a formalized, rigid, land tenure system; one where the selling or division of landed property is strictly forbidden and only one son can inherit the family estate (5. 737-739). Plato even goes so far as to firmly set the number of households at 5,040. Why this number? Perhaps because it is a number easily divisible, as taxes, property, etc. are to be divided equally.¹ Assuming that each household is made up of some ten people—mother, father, a few children, relatives and slaves—the colony's population could reach 50,000; an average mid-sized Greek city-state of the classical period.

As "the number of households must remain unchanged," Plato mentions the use of adoption to equalize male heirs. But, he admits, stronger measures may be necessary. "In case we are in absolute desperation" and are "faced with a superabundance of citizens, owing to the mutual affection of those married which drives us to despair, there still remains . . . the sending forth of colonies." Or, if the state be "attacked" by disease or war, Plato recommends—but only under protest—the naturalization of foreigners (5. 740).

¹Why did Plato suggest 5,040 households in his *Laws*? Perhaps because it has the greatest number of divisors (59) including all the digits from one to ten thereby making for convenient subdivisions. Moreover, because the main divisor is 12, this would serve to provide the state with twelve tribes, twelve state council committees, etc. Plato by adopting the duodecimal system was departing from the Athenian tradition, which was largely decimal. Athens had ten tribes and ten divisions of the council, each acting for one-tenth of the year; this, of course, conflicted with the division of the year into 12 months.

POPULATION AND ENVIRONMENT

There can be no doubt when reviewing the *Laws*, that Plato was more than aware of the Malthusian dilemma of population outstripping the productive capacity of the land. In short, that there was indeed a limit to how many people the environment could support until famine and/or civil unrest reared its head. Thus Plato's preference for a stationary state; one where people and territory are carefully balanced together in order to achieve a well-ordered, stable, prosperous society. To Plato, overpopulation, not foreign invasion, is to be feared most by the wise statesman.

The issue remains as to whether Plato was directly influenced by the social, political and economic conditions of fifth and fourth century Greece. There are some scholars who believe that philosophy or political theory can be reached independently by the thinker without reference to specific, prevailing conditions. "The history of ideas," says Mulhern, "is not a history of ages and their particular products" (1975, p. 278). No one, however, writes in a complete vacuum. Plato's emphasis on population "control" is undoubtedly the result of what was happening all around him, especially in his home town of Athens.

CLASSICAL ATHENS: CARRYING CAPACITY AND DEMOGRAPHIC PRESSURES

Although there is a lack of precise and detailed information relating to the population size of Athens during the classical period—Attica being some 2,400 square km—most scholars agree that from the time of the Persian invasion (480) to the start of the Peloponnesian War (431), the country was totally transformed as a result of demographic trends. During this fifty year period, says Garnsey, Attica's population density doubled, from around 50 persons per square km to 105 (1988, p. 90). As to the size of the general population, estimates range from around 120,000-150,000 persons in 480, to a high point of 250,000 to 315,000 just before the great war (Garnsey; Gomme, 1933).

Generally speaking, Athens was one of the most densely populated cities of the western world during this period. Being the hub of Hellenic commerce and culture, people flocked to her for employment and other activities. The question that arises is, how did Athens feed herself? We know the soil and climate was more than suitable for olives and vines, but what of cereals?

The debate over the carrying capacity of Attica has yet to be resolved. On the one hand, Carry believes that the soil was ill-suited for the intense cultivation of grain and that only one-third to one-quarter of the Athenian

requirements in cereal production were home grown (1949, pp. 74-75). Garnsey, on the other hand, believes that the productive capacity of Attica has been vastly underrated and suggests that Athens generally never had to find grain from outside Attica for more than one-half of its resident population. As he concludes, "Athens was less dependent on foreign grains, and in particular on distant sources of grain, than is generally assumed" (1988, p. 105).

The typical Athenian grain farmer, however, could spare little to sell in the marketplace. The size of the average peasant farm in classical Greece was between 4 to 6 hectares, with subsistence requiring anywhere from 3 to 4 hectares of cultivated land (Gallant, 1991 pp. 82-86). The size of the farm that an ordinary Athenian might have worked during this period has been estimated at around 2 to 4 hectares, just barely big enough to be viable (Garnsey, 1988, p. 46). According to Gallant's calculations, in the 24-year life cycle of a Greek farm, the 4 hectare estate would have failed to meet its production goals in 4 out of 12 years (33%), and in 7 out of the last 18 (39%). "With alarming regularity," concludes Gallant, the Greek peasantry "would have found themselves running short of food" (1991, p. 110). That the farmers portrayed in the Greek comedies—especially those of Aristophanes and Menander—should complain bitterly of their lot in life should come as no surprise.

Even if the average farmer was able to supplement his food supply in a variety of ways—including hunting and fishing, gathering wild flora, and turning to kinsmen and patrons for assistance—the bigger the population, the less able was the individual farmer to turn to these other means to support himself and his family.

It should be noted that as more of Attica came under the plow, so too did deforestation and soil erosion. The loss of trees to both commerce and cultivation came with ecological costs. In comparing the environment of his day to the past, Plato lamented, "What is left now is like the skeleton of a body wasted by disease; the rich soil has been carried off and only the bare framework of the district is left" (*Critias* 111). Is it any wonder then, that the heavens of the blessed—the Elysian Fields—were thought of as lush, green meadows?

Overall, the strain created by a growing citizen and equally large foreign resident population—which only added pressure on food stuffs and employment opportunities—gravely affected Athens' standard of living. Advances in agriculture and commerce were simply absorbed by population increases. "When one compares however roughly the material standards of sixth and fifth century Athens," says French, "one is struck by the lack of positive evidence for any real advance in creature comforts" (1964,

p. 162). Fortunately, Athens' mighty fleet, large silver reserves, great port and stable markets made it easy for her to get the food supplies she needed, whether from domestic or international sources.

As to the other Greek city-states, most likely they faced similar demographic problems. Other than Athens and Sparta—which commanded some two-fifths of the Peloponnesus—most states on the Greek mainland had to survive on less than 1000 square km, being hemmed in by both political and geographic factors. Thus Thebes, Corinth, and others relied on trade and commerce to feed their rather large, growing populations. At least when the great war broke out between the Athenian and Spartan empires in 431, there was plenty of manpower around for the nearly thirty years' worth of fighting.

To be expected, the Peloponnesian War did have a direct effect upon the population of Athens. Besides the combat casualties, the plague in 425 carried off a large number of citizens, many of whom came within the city walls for protection. While Athens' overall population did recover by the fourth century, its ability to close the gap between home production and consumption of cereals, unfortunately, did not. Due to the loss of its fleet, other states—especially Macedonia—were now gaining a stranglehold on the Athenian grain supply. By the time the philosopher Aristotle settled in Athens in the mid-fourth century, it was already showing some of the essential features of the typical Greek city of the Hellenistic period, "above all, a chronic tendency to food crises" (Garnsey, 1988, p. 163).

ARISTOTLE: LINKING OVERPOPULATION WITH CIVIL UNREST

The Greek concern with the balance between population and resources therefore did not end with Plato. His student, Aristotle, also became an advocate of the stationary state. In his *Politics*, Aristotle especially warns his readers of the civil unrest that can occur "if the number of offspring exceeds what the amount of property will support."

In his discussion of Plato's *Laws*, Aristotle even criticizes Plato for not doing enough to "prevent reproduction from exceeding a certain level." As he notes, "If no restriction is imposed on the rate of reproduction, and this is the case in most of our existing states, poverty is the inevitable result; and poverty produces in its turn, civic dissension and wrongdoing" (2.6.12). Any land equalization scheme, concludes Aristotle, "ought to be accompanied by the regulation of the number of children in the family," as "it is a sorry thing that a large number of persons should be reduced from that of comfort to penury" (2.7.5).

On whether any actual state or statesmen had a conscious policy of

regulating fertility so as to prevent the population from expanding beyond the means of subsistence, Aristotle gives the example of Crete. The legislator there, he explains, "included a provision for the segregation of women to prevent them from having too many children; for which purposes he also instituted homosexual relations" (2.10.9).

Aristotle's concern with overpopulation is more than tied to his concern with poverty and the resulting political conflict. If a state be as big as Babylon or the whole Peloponnesus, how could it have, he asks, a "true constitution" (i.e., a democratic legislative body)? "A great state," he notes, "is not the same as a populous state" (7.4.6). "Who can give it orders, unless he have the voice of fifty men?" And how can the citizens judge wisely in the courts and elect the best candidates if they do not "know one another's characters?" (7.4. 7-14).

With these political considerations in mind, Aristotle concludes that the "optimum standard of population is, in a sentence, the greatest surveyable number required for achieving a life of self-sufficiency." What he means by "surveyable" is that the number of citizens be easily comprehended, definable, able to gather together in one spot to pursue political and social activities. As Aristotle no doubt noticed, the city and territory of Athens was so big that gathering all the citizens *en mass* to debate and vote on legislation in the Assembly was nearly an impossible task. "Athens is so large and the multitude of people living here so great," complained Isocrates in the mid-fourth century, "that the city does not present to the mind an imagine easily grasped or sharply defined" (*Antidosis* 171).

As to how Aristotle would limit family size, he recommends abortion over the use of exposure, i.e., the abandonment of infants. There should be a law, he suggests, "in all states where the system of social habits is opposed to unrestricted increase, to prevent the exposure of children to death merely in order to keep the population down." The proper thing to do, he says, "is to limit the size of each family, and if children are then conceived in excess of the limit so fixed, to have miscarriage induced before sense and life have begun in the embryo" (7.16.18).

Aristotle's condemnation of exposure as a way to limit family size is a first for ancient Greece, as exposure was the standard method of getting rid of unwanted children and was sanctioned by both Greek law and religion (Feen, 1983a). Scholars are still debating whether exposure, especially of girls, had an impact on the size of the Athenian population. According to Engels, the exposure of children was "of negligible importance," while to Golden, as nearly 10% of girls were exposed at birth, exposure played a significant role in managing population pressures (Engels, 1980; Golden, 1981).

In regard to abortion in ancient Greece, all available evidence indi-

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cates that techniques for inducing a miscarriage were well advanced by Aristotle's day. But whether abortion was resorted to primarily for medical or family planning purposes is unclear (Feen, 1983a). As for the Hippocratic Oath and its famous pledge forbidding the physician to assist in an abortion, it seems to be a late development in the history of medical ethics (Feen, 1983b). While Aristotle did assume that at some point in the mother's womb, the fetus, if not actually human life, was worthy of respect and should not be aborted, he did not believe in the sanctity of human life. After all, he notes, "there should certainly be a law to prevent the rearing of deformed children" (7.16.18).

That Aristotle should go so far as to endorse abortion—still a risky procedure in the fourth century—as a means of family planning, clearly demonstrates how desperate he is to retain the delicate balance between "offspring" and what the "property will support." Like Plato before him, Aristotle fears what overpopulation would do to the unity and self-sufficiency of the state. As he explained earlier, when people exceed carrying capacity, civil unrest is the direct result. To Aristotle then, the "good life" can be achieved in the polity only if population and resources are in harmony.

It is ironic that as Aristotle was lecturing in the Lyceum, one of his earlier students, Alexander, was busy replacing the city-state with vast empires in the East. Once the fertile and spacious lands of Asia Minor and Egypt became open to settlement, the Greeks came in large numbers, abandoning Hellas forever, especially as much of the land was now concentrated in the hands of the wealthy few. The ideal of the small, unified, self-sufficient city-state was soon forgotten in the quest for conquest and empire.

CONCLUSION

As we have seen, the ancient Greeks were the first to be overtly concerned with the balance between population and carrying capacity. Their philosophers, especially Plato and Aristotle, often warned their readers of the dangers posed by overpopulation; of how it would adversely affect community life by creating poverty and rebellion. Thus both Plato's and Aristotle's obsession with the creation of a stationary state: one governed by zero population growth.

As for the Greek city-states themselves, there can be no doubt that many of them, especially Athens, faced the Malthusian dilemma of population outstripping the productive capacity of the land. Athens in the classi-

cal period simply could not support a growing population on her given territorial base. Attica was just not fertile enough to feed even half her people.

Both Plato and Aristotle's emphasis on population "control" is no doubt the result of what they saw happening in Athens and elsewhere; too many people on too small and unproductive a land mass. Cold reality, not metaphysics, was the inspiration for their writings. The only answer for survival then, was either war, export and commerce, or population control. As war and commerce to the philosophers did not provide for a life of "virtue," the only way to avoid expansionist and aggressive tendencies between people and states they held, was to limit the size of the population to fit the productive capacity of the land. Unfortunately, few statesmen heeded Plato's and Aristotle's advice.

That most nations today ignore the ancient Greek warnings that civic happiness depends on balancing population size and resources should come as no surprise. After all, modern society is basically geared to the ancient Roman maxim that a great state is a large populous state. As the early Italian statesman and political theorist Giovanni Botero summed up the situation back in 1588, in his book, *The Causes of the Greatness of Cities*:

If the World would be governed by Reason, and every man willingly rest content with that, which justly belongs to him, then would, assuredly, the judgment of the ancient lawmakers be worthy to be embraced. But experience, which sheweth us, that by the Corruption of Humane Nature, Force prevaileth above Reason . . . teacheth us also that the judgment of the Romans deserves to be preferred before the opinions of the Grecians (Hutchinson, 1975, p. 377).

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