

PRESIDENTIAL ADDRESS

THE ORIGINS OF SELF-CONSCIOUSNESS AS A SOCIAL
PHENOMENON:
THE HISTORICAL DEVELOPMENT OF HUMAN
CONSCIOUSNESS
BY THE END OF THE CLASSICAL PERIOD IN GREECE

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SECTION I: Self-Identity and the Development of Consciousness

If the more or less three-and-one-half billion years of the evolution of living things, as simple as algae and bacteria, is symbolized by one hour of time, then **primate evolution** took one-minute, and **human evolution** occurred in the last four-seconds of that hour.¹ More astonishing still, is that our particular species, homo sapiens, has entered on that one-hour stage, in only the very last second, of this hour-long saga which we might call "The History of Living Things"; that history documents a story unfolding for some three and one-half billion years. **Something** had begun to come together, and **interconnect** in such a way that the homo sapiens were able to transform their world -- their own context -- and in the process transform the conditions in which they came to grasp themselves. What is that something? I propose that the "something" that happened was the dawning of **self-consciousness as a social phenomenon**. With the development of individual self-consciousness, a transformation was effected in the collective mentality. The dawning of self-consciousness, as a socially current vision of human identity, led to the idea of an **interconnectedness** between **individual self-consciousness** and **consciousness of the community** so far as it found expression in social phenomena, such as the communities which sustained the efforts of Plato and Aristotle. In brief, it was the realization of this **interconnection** which made it meaningful for Pericles' in the funeral oration to identify the individual self-consciousness as **freedom** made possible by the **community** or polis,² for Socrates to investigate individual identity, in Plato's Republic, by examining the structure of the ideal state, since the community was supposed to reflect an enlightened individual self-consciousness,³ and for Aristotle in the Politics to insist that individual self-consciousness could be properly discovered only within the political consciousness of the

community.⁴ This enlightened individual self-consciousness consists in an understanding of one's nature as fundamentally **rational and self-reflective**; in a transformed context, human identity came to acquire a new meaning. The development of human consciousness underwent, as I shall go on to suggest, a **phase transition** in the social organization which transformed the internal organization of the social fabric, and in the process led humans to reformulate an approach aimed at discovering and unfolding their self-identity. The idea of a **phase transition**, unlike Renfrew's idea of the **multiplier effect** -- that many developments came together spurring on each others growth -- supposes a quantum-mechanical picture of communities, and the self-consciousness which characterizes it, rather than a classically modelled one.⁵ With successive **phase transitions**, human identity came to be recognized as a **problem**. We came to recognize that we are the only creatures whose meaning consists in the questioning of our own existence; the consciousness of our being-here is the consciousness of a problem. And not only a problem, our self-consciousness directs us to a **project**. Once our identity became questionable, in this sense, humans found themselves challenged by their predicament and at once compelled to address it.

The thesis being advanced is that, in the context of the growth and development of human consciousness, a new vision of human identity, which proved to be both novel and historically decisive for western civilization, became socially current by the close of the classical period; unlike other assessments of human identity which attained social currency, the dawning of **self-consciousness as a social phenomenon** is marked by confident declarations that nature has a comprehensible and organized structure which can be discovered, and in the process of that discovery reveals to the discoverer the internal organization of the **human mentality or human nature, interconnected** in the context of a wider view of nature. With regard to the development of hominids, in their long history, we can place that historically decisive discovery by the close of the classical period in Greece.

Self-consciousness was neither a social phenomenon in the archaic period, nor so far as we can tell, in any preceding civilization, so far as various anthropological investigations have been able to suggest. The dawning of the primacy of **self-consciousness** points to an individual's realization of an inner potential, an unfolding which already presupposes a kind of social equality made possible by the **polis**. In book XVIII of the *Odyssey* [130ff], however, Odysseus declares the predicament of

human nature, so far as the "Homeric" or "epic" mentality could grasp it. In the confrontation with a disorderly and chaotic world, the best advice, says Odysseus, most clever of all the Greeks, is simply to accept what has been given. The epic mentality supposes not merely a universe lacking in organization; it supposes that human nature lacks the capacity to discover an underlying order, even if there were such a structure. The mentality which we may call "Homeric," "epic," or even "mythic" was advanced, challenged, and transformed by various poetic enterprises -- most especially, Hesiod, the lyric and elegiac poets, the tragic and comic **mytho-poesis**.⁶ By the writings of Plato and Aristotle, the epic/mythic mentality proclaimed by Odysseus, had run its initial course. Nietzsche was right, however else we may consider his critique of classical antiquity: with Socrates and Euripides, we witness the **optimism of reason**, the supposition that very many things -- if not all things -- can be known,⁷ a position diametrically opposed to that of Odysseus, and one peculiarly descriptive of the newly articulated discovery of **self-consciousness**.

It seems that we can document no earlier time for this critical development of human cultural -- not biological -- evolution.⁸ By the close of the classical period, with the writings of Plato and Aristotle, we have documented the **elaborately articulated and historically decisive discovery of human identity as fundamentally intellectual and moral**.⁹ To the newly accepted self-reflective question: "Who am I?" came the new and socially current answer: "Human being is fundamentally "contemplative" and "obligatory" -- **to know the good is at once to do it**.¹⁰ In order to come to this realization, a great deal of time was required. A result was that human consciousness became conscious of itself as an object; subjectivity discovered itself as an object to be investigated like other objects. And self-reflection proved to be the method by which the subject investigates itself as an object, by which consciousness becomes conscious of itself.¹¹ I am supposing that our earliest ancestors were **not** self-conscious in **this** sense. This development did not come overnight, nor did it self-consciousness consist in **fits and starts**; and we can follow that development by observing some peculiar "starts".

The characteristic of each "start" may be profitably explored in the context of a **dialectical tension**, conceived in almost general way, between a mentality which operates under one context or **paradigm**, and that same mentality which comes to discover another more encompassing context which is not wholly

compatible with the first. (1) The origins of tool-making, for instance, testifies to a mentality capable of reinterpreting its world; the earliest Achuleian tool-makers express a grasping of the fundamental character of metaphorical thinking, of coming to envisage multiple identities of objects as they are considered within different contexts. A piece of stone, of the tool-maker, then and now, becomes a means to strike another piece of stone to, let's say, chip-off slivers of razor-sharp flint to be used in turn for some other function.¹² (2) The early control of fire was indispensable to transforming the conditions of early hominids, making available protection from hostile animals, better-chance for survival in colder winter months, and making possible the regular practice of "cooking."¹³ (3) Signs of the emergence of ritual burial, perhaps evidenced as early as fifty-thousand years ago in Shanidar where two bodies were found in a cave with fossilized pollen (burial with flowers?),¹⁴ and what apparently seems to have been ritual cave sanctuaries in southern France and north-western Spain -- belonging to the paleolithic period -- already suggests a consciousness of our own mortality,¹⁵ and a reaction to the challenge of our own finitude, a tendency in human nature which Freud treated in terms of the thanatos principle: what we have here is another stage in the development of consciousness to self-consciousness.¹⁶ Similarly, (4) the domestication of animals, (5) the domestication of agriculture,¹⁷ and (6) the discovery of metallurgy,¹⁸ among other accomplishments, also proved to be land-mark events -- all of which I shall entitle **phase transitions** in the development of human consciousness, in the progress from **consciousness to self-consciousness**, which come the close of the classical period, saw the discovery of a "philosophical" self-consciousness, which transformed the prevailing mentality or **paradigm**,¹⁹ and consequently opened a gateway to a myriad of new possibilities, entirely unforeseeable before that paradigmatic transformation. At each advance, then, a prevailing mentality or **context** finds itself giving way, being superseded by a new **context** -- not simply new parts -- which reinterprets their world, and thereby their own place in it. As the context changed, self-identity underwent a transformation, since the individual grasped a meaning, however vaguely, in that widest **context**.

The story we are unfolding follows a specific theme: the progress of consciousness to self-consciousness, when -- come the classical period -- the human came to identify its own nature with self-reflective activity; self-consciousness became a **social** phenomenon, a socially current idea to which great thinkers gave expression, which resounded in their communities. Like the

supersaturated solution ready to crystalize, to reorganize its own internal structure, the community of the classical period became ready to articulate a decisive and novel vision of human being as **intellectual and moral**, as fundamentally affirmed by contemplation and obligation. This social phenomenon -- the social currency of the view that human being is fundamentally intellectual and moral -- has not, and I suspect cannot, be documented any earlier.

SECTION II: History, Evolution, and the Idea of Time

The **context or mental paradigm or prevailing mentality** -- three expressions which here are employed interchangeably -- can be radically challenged by a change in the assessment for reckoning time and practically testing that measurement. In the dark ages and the archaic period of Greek antiquity, human identity is fundamentally **genealogical**, expressed by a family tree; that view is challenged through the archaic and classical periods. In book VI [145ff] of the Iliad, identifies humans often enough in their descent from the gods;²² Hesiod, in the Theogony, curiously omits mention of the origins of mortals, but a human understanding of the most powerful forces -- the divinities -- is comprehensible only within an "historical" dimension. The common-past, the "historical" as such for the Greeks of these periods, was transformed into a a-historical and timeless present -- the mythos. The prevailing mentality, come the close of the fourth century B.C., still saw nothing preposterous in supposing that Alexander the Great descended from Dionysius, as later Caesar could declare that he was descended from Venus.²³ The mythic context, which the Greeks turned to for an understanding of their world, provided a **timeless present** which somehow stood connected with the **temporal or historical present** of common experience.

The prevailing mentality of the period, mytho-poesis, evidenced little concern for what we call the "historical" proper. These Greeks troubled themselves little with the idea of archaeological reconstructions of their own history; those who read and memorized Homer seem not to have been much concerned with ascertaining "historical" fact.²⁴ Sometimes, as Snodgrass has shown, the archaic Greeks set up cult-sanctuaries at sites which they believed, for instance, were Mycenaean, but which in fact, we now know belong to an earlier period, the mid-Helladic.²⁵ What the Greeks of the archaic and classical periods wanted was **myth** not **history**. In fact, prior to the fifth century, we find no

epigraphical inscriptions even containing a date. The past was supposed to have a meaning which could be entirely derived from a reflection upon the myth. This point is made in a glaring way by simply selecting upon the very first page of Thucydides Histories where he makes the astounding statement that before his time (late fifth century B.C.) **no events of importance had occurred in the world [ou megala genesthai].**²⁶ Thucydides could not have dealt meaningfully with the history of the Persian wars, let alone a general history of Greece. An earlier survey of the human enterprise would have been entirely out of the question for a mentality like that of Thucydides, even as would be a general history of Egypt, which was much closer at hand. The earlier "history" was as inexplicable for a Thucydides, as an account of the first Punic War would have been for Polybius, or the reign of Augustus for Tacitus. What is lacking for Thucydides, and to a considerable degree for Polybius and Tacitus, is **temporal perspective.**²⁷ The atemporal, a-historical myth, provides the context in which **human excellence** comes to acquire a meaning, a meaning which the Athenians came to tie inextricably with **citizenship**, a right **biologically inherited** for all those born into a family comprising the Eupatridae.

That this is the background which Plato addresses become clear when we reflect upon his obsessive preoccupation with the question of whether or not virtue is teachable. In the presence of the sons of Pericles, in the Protagoras,²⁸ and with Lysimachus and Melesias in the Laches,²⁹ the Socrates of the dialogues is led to suppose that virtue is not teachable, otherwise the sons of supposedly virtuous men would themselves have been taught virtue -- but, alas, the sons invariably proved worthless. This obsession makes a great deal of sense if we consider that the prevailing mentality understood **human excellence** -- arete -- as the ultimate expression of "true" **human identity**, and that excellence was supposed to be **biologically inherited**, delineated by the genealogical catalogue. Plato's investigation of the teachability of virtue announces the conviction that **human excellence is not biologically inherited**, and at once is something which must be **realized** or developed.

Both Plato and Aristotle reject the view that human excellence is biologically delivered; human excellence -- philosophical self-consciousness -- must be **realized** through one's own efforts. Inheriting human anatomy is necessary but not sufficient to effect human realization: **to be entails a kind of doing**. The work of the dramatic poets, like Sophocles' "Ode on Man," in the Antigone, makes clear that **noble birth** is insufficient to guarantee excellence. The man whose birth is esthlos or "noble,"

might not properly achieve that "noble" character.³⁰ The writings of Plato and Aristotle develop Sophocles' poetic lead; they present a fully-articulated discovery of a "rational" and "atemporal" dimension to human experience, whose **realization and exercise** marks the definitive character of **human excellence**; this moment clearly reveals the great contribution they were able to effect, within a prosaically-expressed rational discourse. The ambiguity of their discovery, however, consists in this. On the one hand, human realization is a **historical** process; on the other, the historical process is illuminated by the mind's grasping of an **atemporal** or **a-historical** context -- not the myth, but now the form or idea -- and thereby announces that consciousness has become conscious of an **atemporal** dimension of its own identity. For both Plato and Aristotle, the **atemporal**, is not **mythically** interpreted, it is **rationally** interpreted.

Although abandoning the "genealogical/biological" model of identity, they nevertheless retained a quasi-genealogical dimension to their view of self-identity. **Biological inheritance** of excellence is dismissed; but now, a kind of **conceptual inheritance** becomes central to their discovery. The idea of conceptual inheritance is an expression of the consciousness of the community; it is a **social phenomenon**. For Plato, the method of dialectic leads to an enlightened understanding, but only by virtue of "conceptually" passing through stages of grasping. The Divided Line of the Republic³¹ articulates stages of ascension to intellectual clarity on the nature of the identity of things, as does the ascension passage in the Symposium³² in which Socrates takes us through a series of stages which unfolds a deeper meaning of human identity. For Aristotle, book A of the Metaphysics³³ exhibits the remarkable discovery of a meaning of identity which Aristotle grasps, by his own insistence, only by virtue of the **conceptual inheritance** he has both. If the "tongues" were, in fact, the "shark teeth" which had fallen out and became embedded in the sediment, and since it was stratigraphically current to recognize that levels of sedimentation take a great deal of time to accumulate, then the amount of time it took, not only to become deeply encrusted, but sufficient to change the entire geographical formations with a receding sea and the rise of land, in which the tongue-stones were found, would suppose an age of the earth staggering by any presently accepted estimates.

The prevailing mentality in the seventeenth, eighteenth, and nineteenth century progressively entertained the idea of a universe of astonishing antiquity. The prevailing mentality, however -- the **social phenomenon** -- envisaged an earth of some young age;

that idea characterized the context or mental paradigm. The work of Lyell, Lamarck, and Darwin, brought forth a phase transition in the prevailing mentality which progressively gave way to a new context. That context is characterized by a doctrine of evolution. We now turn to examine this metaphor of phase transitions to see how it might clarify the kind of transformation in the social phenomenon which we have mentioned in ancient and modern contexts.

SECTION III: Entropy and the Idea of a Phase Transition

"The law that entropy always increases -- the second law of thermodynamics -- hold, I think, the supreme position among the laws of Nature. If someone points out to you that your pet theory of the universe is in disagreement with Maxwell's equations -- then so much the worse of Maxwell's equations. If it is found to be contradicted by observation -- well, these experimentalists do bungle things sometimes. But if your theory is found to be against the second law of thermodynamics I can give you no hope; there is nothing for it but to collapse in deepest humiliation."³⁹

From the point of view of the laws of Thermodynamics, nature -- as a whole -- is envisaged as progressing toward increasing entropy, that is, disorder or randomness. The natural tendency of physical systems is toward chaos, expressed in terms of the amount of energy unavailable to do work. Clausius coins the term "entropy" and, chose to define it negatively.⁴⁰ It must therefore seem surprising -- because unsuspected given this context -- that we should at once discover that systems, although tending toward disorder, may naturally undergo internal organizations with exposure to an orderly system with which it interacts. Along with a tendency, then, toward randomness, closed systems are capable of expressing highly-ordered states by the application of a dis-proportionately small amount of order. By **PHASE TRANSITION** I mean three things: (1) The transformation of any physical system from randomness to a highly-ordered state -- from greater to lesser entropy, in such a way that the behavior of the community changes reflecting its changed state,⁴¹ (2) the transition from a "random" to "highly-ordered" state, tends to be effected by the introduction of orderly organization dis-proportionately small to the total random and disorganized population, and (3) invariably, certain preliminary conditions must be established without which the "phase

transition" will not proceed; the tendency toward radical and internal re-organization is a certain strategy by which a community of molecules or atoms will react to the specific conditions of the environment in which it finds itself. This is the specific meaning I attach to the expression **phase transition** is entirely dependent upon **certain conditions being met**. If the preliminary conditions are not met, no phase transition will be evidenced. And when those preliminary conditions are established, the introduction of even a tiny amount of order is sufficient to transform the otherwise more chaotic state into a highly-ordered one. I pursue this metaphor having already become convinced that the classical period displays a radical transition in prevailing mentalities; under the influence of a very few leaders, the entire disposition of the community -- certainly in Athens, and elsewhere -- was radically transformed.

The overall result to a system which undergoes a **phase transition**, then, is a loss of heat. This preserves the character of the second law of thermodynamics; to the overall system, there results an increase in disorder, for the release of heat in this fashion amounts to energy precisely unavailable to do work, a basic meaning of **entropy**. But, within the closed system, systems tend to high and low organization depending upon the **context** of the interactions which constitute the system. The curious point is that contrary to what one might first suspect, the amount of orderliness required to affect this change may be very tiny indeed. In order to affect an internal restructuring of individuals in a community, only a tiny percentage of the total population of the community may be very tiny indeed. In order to affect an internal restructuring of individuals in a community, only a tiny percentage of the total population of the community may be required to effect that transition. **Radical revision in community organization, even with enormous populations, may be accomplished by even the introduction of a single individual.**

Case 1: Crystalization. The idea of crystalization arises from an examination of a natural process in which the introduction of a tiny amount of orderliness can transform the entire structure of a siroganized community of molecules. First, let us begin with the preliminary or **necessary condition**, a supersaturated solution, a solution so entirely full that no more material will enter into that solution. Now, the introduction of a single crystal -- generally called a "seed" crystal -- is sufficient not only to force the contents of the solution to precipitate out of that solution, but to precipitate in the same crystal organization which the single seed crystal introduces. The seed crystal introduces the structure of a crystal

lattice; that lattice builds as the material precipitates from the solution.

The example is familiar in the chemistry laboratory, but it is also familiar at home to anyone who has ever tried to make candy. First, create a supersaturated solution of sugar and water. How do you do that? Place sugar in a pot of water until all dissolves into solution, and finally just a few bits of sugar can be seen, having fallen to the bottom. Now, you are ready to go. Heat the water, and the saturation point will increase, permitting the remaining sugar to dissolve. Stir, stir, stir; but all recipes warn to keep the box of sugar far from your supersaturated solution. Why? Because at this point, the conditions are **right** to ruin your candy -- but to make my point. The introduction of a single seed crystal of sugar will not only force all of the free moving molecules to give-up their disorganization (= their "freedom"?) in order to form a highly-organized crystal lattice, but will all form the order introduced by the single crystal of sugar. Under the "right" conditions -- as preliminary -- the introduction of a highly-organized but singular structure can transform a community of millions . . . of molecules, into precisely the highly-ordered state introduced by the single organizing element (i.e. the seed crystal).

Case 2: Ferromagnetism. Not every "object" -- a community of molecules -- has a high susceptibility or permeability of exhibiting magnetic properties. Ferromagnetic objects, like iron, are capable of exhibiting powerful magnetic moments. Not every community has the tendency to exhibit these properties because not every community is so susceptible to take on highly-ordered states, as determined by the presence of an accompanying magnetic field. Two points are worthy of note: (1) Given the presence of a community (i.e., molecules of ferromagnetic substances) capable of exhibiting a strong magnetic moment -- the "preliminary" condition, like the supersaturated solution for the possibility of crystallization -- that community is magnetized with an astonishing ease; the internal molecular structure is able to become transformed from randomness into a highly-ordered state by the mere presence of a strong magnetic field. when, perhaps, as little as one-percent of the molecules enter into a strict alignment, there is effected a phase transition whereby the remaining vast population of molecules spontaneously assumes that highly-ordered arrangement. The astonishing ease with which the magnetization occurs is known to every child who touches a magnet to a piece of iron. Plato too knows the phenomenon; in the dialogue called the *Ion*, for reasons we can leave aside for the moment, he notes that not only does the "magnet" or what others call "the stone of Heracles", have the power to attract an iron ring, but also has the power, the

dynamis, to empower the ring to attract other rings. And (2) ferromagnetic substances, like all communities of molecules, have an intrinsic property, called the "Curie temperature" - unaffected by mechanical means, there is a temperature which when reached, ferromagnetic properties are no longer exhibited. Therefore, just as various physical communities are capable of undergoing radical internal re-organization, that achieved highly-ordered state may be reversed back into randomness and disorder, under certain conditions which disturb that order. The technical point, in brief then, is that certain communities are capable, under the "right" conditions, of exhibiting tremendous increases in their internal orderliness, and under subsequent conditions -- for example the application of tremendous heat -- a disorderly or entropic influence -- those orderly structures can be lost once again.

Case 3: Superradiance: the Organic whole/the Atomic parts. If one grants that the behavior of an individual or community reflects a part of the **identity** of that individual or community, then a change in the ordinary or expected behavior might very well signal a change or transition in the identity of that individual or community. Under certain conditions, a collection of individuals constituting a community can behave -- not as we would expect from an individual acting independently -- but rather, **interacting** together, acquire different modes of behavior as if they are no longer identifiable by the properties of the individuals acting individually. Considered from one point of view, a community is a collection of independently acting entities; from another perspective, given certain "preliminary" conditions which stimulate the interaction of these [atomic] elements in the community, a phase transition is brought about in which the individuals or elements acquire a new meaning, expressed by their transformed behavior. In the case we shall now consider, the behavior of a single individual in the community is, under certain conditions, echoed by each and every member of that community; the conditions which prompt a singular and individual behavior leads the vast populations of individuals into common behavior; this event marks the **phase transition**. The key to this situation rests on the idea of **interaction** among the individuals.

Dicke, in 1954, published his now celebrated paper on **superradiance**. It had become a commonplace to calculate the spontaneous radiation of a gas as if each of the molecules radiate independently of the others. Following the classical model, the justification for this calculation reflected the supposition that, in a gas, the molecules radiate independently of the others. Following the classical model, the justification for this calculation reflected the supposition that, in a gas, the molecules are far enough apart -- unlike in a solid or liquid -- so that the interaction

among them is relatively weak; the probability of one molecule radiating a proton was, therefore, supposed to be independent of the states of the other molecules. Now, if this model were correct, we would come to expect that the radiation rate exhibited by a coherent spontaneous radiation should be proportional to the molecular concentration. If there were "N" molecules in the community or system, the calculation of the radiation process describing a coherent spontaneous radiation should be proportional to the number of molecules in that community or system; but experimental evidence demonstrated, on the contrary, that the radiation-rate is proportional -- not to the number of molecules, "N" but -- to the square of the number of molecules, "N-squared". The way Dicke suggested we account for the observed emission was to suppose a quantum-mechanical picture, and not the classical model of a community which calculates the radiation process for the individual molecules, each of which constitutes the community. When the molecules **interact**, at a certain level of **stimulation**, the community of molecules constituting the gas acts as if -- rather than being composed of single, individual molecules (the "classical-atomic" model) -- behaves as if it were a single whole (the "quantum-organic" model). The radiation emitted at a rate proportional to the square of the number of molecules, and not the number of molecules itself -- as would be expected if the radiation reflected the behavior of individual molecules -- suggested that a community, given a certain "preliminary" condition of stimulation, will radiate a **superradiant**-burst of energy. When the conditions are present for an individual atom to emit a proton, the body which is sufficiently stimulated will have each and every member of that community radiate a photon when the conditions are right for a single individual to do so. Dicke supposed the best way to account for this phenomenon was to suppose that under certain conditions, **inter-action** causes a transformation in the behavior of a community of atoms; the conditions which prompt the emission of a single photon now trigger the unified response of the community. It seems that the disposition of one member of a community, when that community is sufficiently stimulated, are resounded by the community at-large. If you please, the "desire" and actions of one member is reiterated by every member. The interacting individuals gain a new character when -- under certain conditions -- the pairs react as if they have a new identity, and that is the identity of the whole.

SECTION IV: Plato, Aristotle, and the Phase Transition in [Self-Consciousness]

Having considered the idea of **phase transition**, first in terms of social phenomenon, and then enriched by the metaphorical consideration of what I am calling **phase transitions** in physical systems, we finally turn to consider the proposed implications for the **phase transition** by the close of the classical period which results in **self-consciousness** becoming a **social phenomenon**. However their contributions may be assessed, individuals like Socrates, Plato, and Aristotle, were **seed-crystals** transforming the internal orderliness of their society, and transforming its mentality. The activities of these individuals, and others of their status, displayed a **magnetizing** effect in their community, internally re-organizing the activity of thinking and polarizing the social community in the same stroke -- those who would be awakened to the vision of human identity that was dawning, and those who would resist the change preferring to hold on to their archaic mentality. With regard to the development of self-consciousness, their combined results produced an **interaction** which exploded in a **superradiant** burst of a new mentality: **Self-Consciousness** became a **social phenomenon**, and the superradiance shined forth in the socially infectious phenomenon of "rationality" which resulted in an awakening to a decisively human nature as **intellectual** and (moral).

In a nutshell, Plato's *Apology* documents the mentality of an age being called into question.⁴² Explicitly, the community calls into question the behavior of one of its recalcitrant members. The specific behavior under review is itself the activity of the endless questioning of everything. Socrates is called forth to defend himself, to offer justification for his behavior; forced to raise the question: "Who am I?," Socrates -- the questioner of so much -- must call into question the life devoted to questioning. One who grasped the meaning of one's being in the self-reflective activity of foundational questioning must be capable of calling the life of this questioning into question. In fact, it seems that this life of questioning reaches its pinnacle when it questions its own questioning. In the *Apology*, Socrates calls the veracity of his identity into question, by calling the activity of self-questioning into question, and the answer that he proposes not only signals and reveals a transition in the mentality of the preceding civilizations, and even more specifically of the archaic age, but does so specifically in a context in which the answer is literally a matter of life and death. Addressing one's own **self-consciousness**, and reflecting upon it, is the new ideal. Human beings have announced, with this document, the articulated

discovery of a new vision of identity, brought forth through self-reflection, the grasping of which amounts to the difference between life-as-realized-human, or death - the failure to realize our humanity.

This case is entirely reinforced by Aristotle in the Nicomachen Ethics, Book X.⁴³ Confident that he has shown that the basic human meaning is expressed in action, and the purpose of all action is happiness, Aristotle insists that the highest expression of happiness is discovered in the contemplative activity. With regard to the assessment of human identity and meaning, the classical period of Greece displays a **phase transition** in which **self-consciousness** became the decisive characteristic of the new mentality of the civilization. Now, but not much before, human beings announced their social discovery, when they challenged themselves with the question: "Who am I,?" and came to accept the response: "I am essentially an intellectual and moral being." This answer is a radical departure from the Homeric ideal of the hero, or the human condition as declared by Odysseus.

Aristotle, reinforcing the idea of the discovery of **humanity** -- the intellectual and moral identity of man -- at once complicates the story. The idea of intellectual and moral life at which Aristotle arrives, becomes at once a theory of **human identity and sexual identity**.⁴⁴ Human rights are the rights of Athenian male citizenry only; women, slaves, and non-Greek speaking men are all excluded. The discovery of **humanity** must be modified here; perhaps Plato escapes this particular charge, but as intolerable as we may find Aristotle's position, which did not benefit from a context as we have today, his efforts, those of Plato, and the intellectual community which made their success possible, herald in a novel and decisive vision of human identity however imperfectly its consequences may have been perceived.

The **phase transition** whose leading-edge finds documentation in the Apology, finds sign of realization in the writings of Aristotle. In the opening of the Metaphysics,⁴⁵ Aristotle declares that "All anthropoi by nature desire to know". Usually translated, "All men by nature desire to know". Who are the anthropoi whose desire to know is an expression of their fundamental nature? It could only be the Athenian citizens, that same citizenry who less than half-a-century earlier, sitting as jury in the trial of Socrates, determined not only that all men by nature **do not** desire to know, but that the desire to know, a desire which leads to an unlimited questioning, was properly a **capital offense**.⁴⁶ The prevailing mentality of the archaic period, whose social phenomenon was **mytho-poesis**, signalled its demise in the document of the Apology: Socrates' defense, couched in the

mytho-poetic injunction of the **Delphic Oracle**, whose pronouncement that he alone was the wisest man for he alone knew that he knew nothing, prompted his **questioning** as he sought to grasp its meaning.⁴⁷ The social mentality still regarded endless questioning as impermissible, since, of course, it finally confronts **mytho-poesis** with the challenge it cannot overcome, to account for itself, the very issue which **mytho-poesis** short-circuits by declaring that **men cannot know**, identifying their place in the **a-historical** present of the muthos. By Aristotle's writing of the Metaphysics -- to whichever chronology one subscribes -- about half-a-century later, we find the confident declaration of what could not have been well received in 399 b.c., that human being is the self-questioning creature.

In the three-and-one-half billion years of the evolution of living things, **homo sapiens** make their entrance late indeed within that history. And yet, the latest of the latecomers, arriving in the very last second of the very last minute of that hour-long story, our species has radically transformed its own development, and the face of the earth with it. In this presidential address, I have tried to indicate one way to describe this situation: by the close of the classical period in Greece, **self-consciousness** became a **social phenomenon**. This description is contained within the **context** of the advent of a novel and historically decisive **phase transition** in the development of human consciousness. If we grant this analysis, then two matters wait consideration. First, the detailed exegesis of this **phase transition** in the context of Greek antiquity. Second, if the origins of self-consciousness, here considered, signals a decisive phase transition, then what if anything can we expect as the **next** decisive phase transition in human consciousness, since I am supposing that even today we have not surpassed this ideal, but rather operate within it? These matters I shall take up in a future piece.⁴⁸

NOTES

¹Cf. Bernard G. Campbell, Humankind Emerging, Little, Brown, and Co., Boston, 1982 [3rd edition]; p. 95ff. The example here is different from the one I present but based upon his "time" references.

²The "funeral oration" of Pericles appears in Thucydides, Histories, Bk. II, ch.4 [34-48].

³Plato, Republic, 368eff. Justice, for the individual, is pursued in the analogous context of the polis, since they are supposed to be of comparable structure.

⁴Aristotle, Politics, especially book III, on the citizen.

⁵Colin Renfrew, The Emergence of Civilization, Methuen and Co, London, 1972. "I propose to term this mutual interaction in different fields of activity, this property of human systems that an innovation (and its acceptance) in one subsystem favors innovation in another, this interdependence among subsystems which alone can sustain prolonged growth, the mutliplier effect." p.37.

⁶Here I am thinking especially of Hesiod's Works and Days, and various surviving writings by those like Archilocus and Sappho, Pindar, Aeschylus, Sophocles, Euripides, and Aristophanes.

⁷F. Nietzsche, The Birth of Tragedy 7 The Case of Wagner, trans. W. Kauffman, Vintage Books, N.Y. 1967.

⁸"Cultural" vs "Biological" evolution is a familiar distinction in anthropological literature. Cf. the discussion in Charles L. Redman, The Rise of Civilization, W.H. Freeman and Co., San Francisco, 1978, pp. 69ff. By "culture," I subscribe to the view advanced by L.A. White in The Evolution of Culture, 1959, p. 8: Culture is "man's extra-somatic means of adaptation."

⁹See "Section IV" for the initial case for the evidence.

¹⁰The idea that "to know the good is to do it," is testified to several times in Plato; cf. Protagoras 352b, Laws 689ff, Theaetetus 176c.

¹¹Stated differently, this is the case advanced by Bruno Snell in The Discovery of Mind, Harvard University Press, Cambridge, 1953, esp. the Introduction. I have defined self-consciousness in way co-extensive with Snell's treatment of "mind."

¹²For a discussion of Acheulian and Oldowan tools, cf. Campbell, op. cit. pp. 222ff. Also, Man Before Metals, The Trustees of the British Museum, 1979 [a 32-page booklet]; also J. Waechter, Man Before History, Elsevier-Phaidon, 1976. For the classical importance of metaphor, cf. Aristotle, Poetics, 1459a5-8; competence in metaphorical thinking is a sign of genius, it cannot be learned from others, and mastery in it is, methodologically, the greatest int.

¹³A discussion of early use of fire can also be found in Cambell, op. cit. pp. 295-296, focusing on excavations at Choukoutien.

¹⁴Ralph S. Solecki, Shanidar: The First Flower People, Alfred Knopf and Co, N.Y. 1971. Cf. also the "50,000 year-old" dating, in agreement with Solecki, in Redman op. cit. 1978, p. 61.

¹⁵Cf. Campbell, op. cit. pp. 444-445; Vincent Scully, The Earth, the Temple, and the Gods, Yale University Press, 1962, p. 10.

¹⁶Cf. the treatment of thanatos and eros in S. Freud, Civilization and its Discontents, trans. J. Strachy, W.W. Norton, N.Y. 1962; cf. also H. Marcuse, Eros and Civilization [a philosophical inquiry into Freud], Beacon Press, Boston, 1955.

¹⁷Cf. Redman, op. cit. pp. 88-140.

¹⁸For a discussion of the origins of metallurgy, cf. J. Healy, Mining and Metallurgy in the Greek and Roman World, Thames and Hudson, London 1978; R. Tylecote, A History of Metallurgy, Metal Society, London, 1976.

¹⁹It should be clear that my treatment of pardigm is much the same as that developed by T. Kuhn in The Structure of Scientific Revolutions, Unversity of Chicago Press, 1962.

²⁰In the passage cited, Glacus proves to be a spokesman for the "dark age" mentality. He challenges Diomedes spkesman for the archaic age, of self-identity which equates human being with "lineage." Claucus prefers to resolve human identity -- and so the discontinuity of death -- in the wider context of the continuity of natural cycles. His reply to Diomedes is to envisage a human nature like the leaves which fall off the trees in autumn, only to be replaced by new shoots in the spring. Death, and discontinuity, would of course be more disruptive to the community with a tiny population, as the depopulated "dark ages" suggests. As the community became larger, significant changes were adopted so as to keep death from disrupting the routines of that community. Among the first actions of the earliest lawgivers like Solon,

were changes in funerary ritual and burial practice, making the activity less severe, more restricted, and less noticeable. All of which resulted in removing "death" from the center of attention.

²¹Cf. Hesiod, Theogony, trans. Norman O. Brown, Liberal Arts Press, N.Y. 1973: "The key to the speculative structure of the Theogony is the idea of history; in Hesiod's view, the present order of the universe can only be understood as the outcome of a process of growth and change. Heiod expresses this idea by the special way he exploits a traditional mythological form -- that of the genealogical catalogue.

²²Cf. Iliad, II, 510ff, "Ascalaphus and Ialmenus, sons of Ares" -- there are other references to individuals who have descended, in lineage, from gods and goddesses. A detailed exegesis of the details of the catalogue of ships can be found in The Catalogue of the Ships in Homer's Iliad, R. Hope Simpson and J.F. Lazenby, Oxford, The Clarendon Press 1970.

²³Cf. Oswald Spengler, The Decline of the West, trans. C.F. Atkinson, Vol. I [1926] Alfred A. Knopf, N.Y. p.8.

²⁴Ibid. p. 14.

²⁵Anthony Snodgrass, Archaic Greece: The Age of Experiment, University of California Press, Berkeley, 1980, p. 39. The likeliest explanation of veneration and dedications at grave sites, which were often not actually the locations which they were supposed to be, according to Snodgrass, "is that it originated in local attempts to consolidate land ownership." Different from the city-sanctuaries, nonetheless, both were connected with the rise of the polis and thus with settled land-holding.

²⁶Thucydides, op. cit. Book I, chapter i. An excellent and recent work on the idea of Greek historical consciousness can be found in Virginia Hunter's Past and Process in Herodotus and Thucydides, Princeton University Press, 1982. For a general overview of Thucydides cf. John H. Finley, Thucydides, The University of Michigan Press, 1963.

²⁷Cf. O. Spengler, op. cit. p. 8-11.

²⁸Plato, Protagoras 319eff; cf. also 326e. "why then you ask do many sons of good men turn out worthless."

²⁹Plato, Laches, 178a-180a. Lysimachus and Melesias, sons of "virtuous" generals Thucydides and Aristides, do not want their sons to turn out as mediocre as they.

³⁰Sophocles, Antigone, probably produced in 442 B.C. Important characteristics of human excellence consist in "rule and law-giving" [174-181]; Creon declares that disobedience is the

worst of all evils since it ruins cities [665 670]; but clearly, Antigone's call of conscience is to a higher principle -- as she sees it. The play ends insisting that "Wisdom is the supreme part of happiness; and reverence towards the gods must be inviolate" [1351-2].

³¹Plato, Republic, 509eff. For a brief discussion cf. my article "A Note on Plato's Divided Line, in The Journal of the History of Philosophy, vol. LXI.

³²Plato, Symposium, p. 210aff. It seems to me that both the ascension passages in the Symposium, and presented in the Divided Line of the Republic share the same structure.

³³Aristotle, Metaphysics, book A, esp. chapters 5-10.

³⁴Werner Jaeger, Aristotle: Fundamentals of the History of His Development, trans. R. Robinson, Oxford University Press, 1934, p. 3: "Aristotle was the first thinker to set up along with his philosophy a conception of his own position in history; he thereby created a new kind of philosophical consciousness, more responsible and inwardly complex. He was the inventor of the notion of intellectual development in time, and regards even his own achievement as the result of an evolution dependent solely on its law."

³⁵For a long and detailed argument for this case, cf. Harold Cherniss, Aristotle Criticism of Pre-socratic Philosophy, University of California Press, Berkeley, 1943; and Aristotle Criticism of Plato and the Academy, University of California Press, Berkeley, 1938.

³⁶Aristotle, De Caelo repeats the argument which, for the latin writers, became familiar as the doctrine ex nihilo nihil fit, [book I, Ch. 10-12; book II, Ch. 1].

³⁷cf. Campbell, op. cit. 11-14, 18.

³⁸G. Albritton, The Abyss of Time, ch. 1.

³⁹A.S. Eddington, The Nature of the Physical World, N.Y. 1948, p. 74. Cf. also the discussion of entropy in Ilya Prigogine, Order out of Chaos, Bantam Books, N.Y. 1984.

⁴⁰The concept of entropy was first formulated by Rudolph Clausius in 1854; it was later refined by William Thomson (later, Lord Kelvin). Important works on entropy include A. Grunbaum, Philosophical Problems of Space and Time, N.Y. 1963; H. Reichenback, The Direction of Time, Berkeley, 1956; E. Schrodinger, What is Life? Cambridge, 1944.

⁴¹R.H. Dicke, "Coherence in Spontaneous Radiation Processes," Physical Review, vol. 93, no. 1, Jan. 1954, pp. 99-110; cf. also Joseph H. Eberly, "Superradiance Revisited,"

American Journal of Physics, vol. 40, Oct. 1972, pp. 1374-1383.
"Assume that a neutron is placed in a uniform magnetic field in the higher energy of two spin states. In due course the neutron will spontaneously radiate a photon via a magnetic dipole transition and drop to a lower energy state. The probability of finding the neutron in its upper energy state falls exponentially to zero. If now, a neutron in its ground state is placed near the first excited neutron (a distance small compared with a radiation wave-length but large compared with a particle wave-length and such that the dipole-dipole interaction is negligible), the radiation process would, according to the above hypothesis of independence, be unaffected. Actually, the radiation process would be strongly affected. The initial transition probability would fall exponentially to one-half rather than to zero" [Dicke, p. 99].

⁴²Plato, Apology. Socrates begins his defense by testifying to a kind of self-forgetting: "How you, men of Athens, have been affected by my accusers, I do not know; as for me, so persuasively they spoke, I almost forgot who I was" [17a1-4].

⁴³Aristotle, Nicomachean Ethics, book X, ch. 7, Aristotle explicitly identifies happiness in its highest sense, with contemplation. A similar position is reached in the Metaphysics book III, ch. 9, where the highest entity is identified -- the Unmoved Mover -- as the thought which thinks itself. Here, self-consciousness seems to be the meaning of the highest contemplation.

⁴⁴Aristotle, Politics, book I, ch. 2, book II, ch. 1-6, where explanation is offered for depriving women and slaves of the rights of citizenry.

⁴⁵Aristotle, Metaphysics, 980a22. The opening line of the treatise.¹

⁴⁶Plato, Apology, 38c, where Socrates' final address is given following the news that the death penalty had been imposed. Socrates, based upon Xenophon's testimony, was put to death in the summer of 399 B.C.

⁴⁷Ibid. 21ff.

⁴⁸Limitations of space make it impossible to detail this argument further. Omitted here are discussions of the sophists, Attic orators, and detailed examination of Attic poets.