# THE ORIGIN OF WRITING AND THE BEGINNING OF HISTORY

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PERHAPS AS A FORM of intellectual shorthand, most scholars would readily associate the beginning of history with the introduction of writing. The problems raised by this accepted cliché are rather formidable if one begins to probe them even superficially. What is the value and meaning of periodization, that is, of categorizing cultural process? What are the criteria that can be used in implementing periodization? How legitimately can a single cultural trait be used to divide in two the entire development of human culture? And how are we to define exactly the phenomenon of writing and to document its inception in the archaeological record?

Of these questions, the last one—about description and typology—has been dealt with more specifically and at length in the literature, largely because the study of individual writing systems has led to a generalization, even on the theoretical level, of the conceptual, technical, and historical underpinnings of the phenomenon, as evidenced, for instance, by the studies on grammatology by I. J. Gelb. In recent years, the discovery of the Tartaria tablets and the growing interest in a variety of marking systems (from the Balkans to the Indus basin) has renewed the interest for the diachronic aspect of the question. Little can one find, however, with regard to historical and historiographic evaluation of the data: "historical" in the sense of an assessment of the phenomenon of writing in its wider institutional implications, and "historiographic" in the sense of an explanation of its importance as an ordering criterion in the analysis of the human past. It is to these dimensions of the problem that the following reflections are devoted.

Let me start by saying that I argue in favor of the essential validity of the cliché that writing *is* the hallmark of history. In so doing I am perhaps only articulating what is *implicit* in the communis opinio but, it seems, is far from obvious. When reasons for the importance of writing are stated in the literature, they cluster around two poles, history and historiography. Historically, the introduction of writing is considered as a flag referring to some

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other system, a symbol for a larger set of changes which took place at the same point in the course of human development, the so-called urban revolution. In this sense writing is both the result and the target of a complex social structure, which is intrinsically conditioned in its growth by the availability, or lack, of an effective communication system. Historiographically, one notes, first, how writing allows for a high degree of *specificity* in conveying information, and, second, how it increases dramatically the *amount* of information that can be transmitted among members of a given society and, beyond them, to us as historians.

## ENERGY AS THE MEASURE OF EFFECTIVENESS

The key question, if we are to strive for a more explicit evaluation of the phenomenon, is to determine how to measure the effectiveness of writing. Only then can we compare literate and preliterate stages within the development of a given society and assess the degree of variation between the two. I cannot offer a formula for a quantitative measurement and consequent comparison, but I wish to propose a criterion that seems to allow for a fairly differentiated type of analysis. It may be stated as follows:

> The degree of effectiveness of writing is proportional to the *amount of energy expended* in obtaining a given level of communication.

Even without precise quantification, it is readily apparent that for a wide range of cases writing provides a much greater degree of communication in relationship to the amount of energy given as input.

Let us consider, for example, the case in which an intended message includes a reference to a specified number of animals, for example, two cows. If the message is to be fixed in a permanent medium (i.e., it is not simply oral), it may be conveyed representationally: the animals will then have to be rendered to scale and with pertinent details as to genus (bovines rather than any other quadruped), sex, age, and so on; the total number of animals intended will have to be matched by the total number of animals represented—the same figure will have to be repeated several times; compositional problems will have to be solved, with regard to coordination of the figures, framing, background. The energy spent in coping with these aspects of a representational effort may be measured in terms of hours or even days, depending on the training of the "artists," the nature of the medium chosen (e.g., stone or clay), the quality of the end product. By contrast, the notation "two cows" in writing takes but a few minutes. If minutes

and hours are taken as units of energy, we come close to approximating the quantitative measure of the energy expended.

The disparity between the two approaches, representational and graphemic, becomes even wider if we look at some other aspect of the communication effort. In the representational sphere, the identification of an individual out of a genus, a specific man, for instance, requires a consummated craftsman: only a masterly rendering of physiognomic traits can differentiate one man from another, so much so that effectiveness in conveying the message can no longer be measured in terms of time, but must take into consideration the imponderable of artistic talent. In other words, not only will it take longer, it will also be much rarer that a man be identified representationally as a specific individual. Graphemically, on the other hand, the energy output remains constant as in the previous example of the two cows: the proper name and other ancillary features (filiation, place of origin, occupation, age) will univocally identify an individual for the same time expenditure of a few minutes.

It is important to note that the graphemic renderings to which I have alluded ("two cows," a proper name) presuppose other symbolic systems as intervening between the actual objects and the message embodied in the writing system, i.e. a counting system in the first example and a naming system in the second. A representational message, on the other hand, presupposes no particular convention other than generic attunement to a given stylistic mode. Writing, in other words, is a symbolic convention which builds necessarily on a number of other symbolic conventions—of which language is the most important one.

It is further important to note that writing as a communication medium is not simply a surrogate of a representational type of expression. Rather, it may be said that the two develop to some extent along mutually exclusive lines. While writing, for instance, thrives on the existence of complex symbolic identifiers, representational art will develop in the direction of rendering naturalistic traits. This means that in representational art an intended detail cannot easily be abstracted from the entire situation, whereas writing provides exactly the means for such an abstraction. The written message about "two cows"abstracts the features of count and genus and omits a host of details which in representational art must instead be rendered (relative size, color, etc.) even when they are irrelevant to the intended message. Hence we may say that energy

saving as found in writing is also the result of an intellectual ability to segment our perception of reality into such portions as may be selected depending on circumstances.

## INTELLECTUAL PRESUPPOSITIONS

We can assume as certain that language is a condition sine qua non for writing, and that it in fact developed much earlier in time. While perhaps obvious at first, a study of the relationship between the two serves to highlight, unsuspectedly, important aspects of writing as an intellectual innovation. To this end, we must first compare writing with tools and mechanical devices such as we see them develop in prehistoric times. As with writing, tools provide means for extending energy, and mechanical devices means for storing it, although writing is different in that energy is stored not as extrasomatic mechanical power, but rather as a set of abstract conventions. Where the comparison with tools becomes illuminating is in the observation of the mental processes underlying their use.

The process of making tools and mechanical devices, and the corresponding development of suitable skills and techniques, is universally recognized as a distinctive feature of human culture from earliest times. It is typical of this cultural trait that it entails a modification of natural data for purposes of use which are specific and repetitive. The tool is an extrasomatic extension of muscular energy ready for man to use at will; it creates a potential on which man can draw as the need arises. This situation may be described by saying that *the sequence of steps between manufacturing and use is not necessarily contiguous:* a tool is manufactured at one point in time and space for its potential use at an unlimited number of other points which differ, temporally and spatially, from the point of origin. In fact, even the steps to be followed during the manufacturing need not be contiguous: chipping of a stone tool need not take place all at once; it can be interrupted and resumed, even by different toolmakers, because there is an established procedure which controls manufacturing. This procedure is cultural in the specific sense that the connection between its steps is symbolic, and it is as such typically and exclusively human.

The advance in the evolution of symbolic procedures was one whereby certain procedures came to be articulated for which the sequential steps were *by necessity non-contiguous*. A typical example of this is agriculture. Perceiving the relationship between sowing, irrigation/fertilization, and harvesting implies the ability to sub-

sume within a symbolic overarching procedure a set of activities which are by necessity separate one from the other in time and, to some extent, in space. The intellectual background of agriculture as a technological process may thus be understood as the ability for connecting among themselves procedural steps that are essentially noncontiguous. To say that this procedure was symbolic implies the ability to conceptualize the steps and to relate them logically; it implies, in other words, language as a symboling tool. It is, in fact, so important to be able to view the world symbolically through effective linguistic communication that it has been suggested that slowness of progress in the Palaeolithic may be linked with the inadequacy of language in that period (Oakley). Indeed, anatomical observations have been made which help to explain on a physiological level how language must in effect have been less articulate before the full development of the pharynx took place (Lieberman). In any case, we may say, to use the terms introduced above, that language is a mechanism designed to make it possible to represent as symbolically contiguous procedural steps which are not physically contiguous. The connection between sowing and harvesting is temporally noncontiguous in the physical world, but is made logically contiguous by means of linguistic devices. Alternatively, the symbolic representations of the procedural steps are made contiguous by means of symbolic configurations: if words are used as the symbols for the procedural steps ("sowing," "harvesting"), they can be brought together within a sentence ("sowing leads to harvesting"), whereby the contiguity of the symbols is real even on the physical level (of the phonological utterance). Thus, language may be understood as a means to make symbolically contiguous procedural steps which are essentially discontiguous, as the physical embodiment for the capturing of logical connections. However, it is an embodiment which is not permanent. And that is precisely the innovation brought about by writing. Writing transfers what is essentially a somatic procedure (language) to an extrasomatic level, thereby fixing onto a permanent medium the logical connections which language can express but fleetingly. It is an evolutionary step which seems almost predictable. But in order to explain more closely the innovation, it will be well to apply truly evolutionary models to this process. Thus the question which needs to be asked, in terms of the so-called Romer's principle, is: What was the *conservative* factor which posited the need for the innovation? We will be able to give an answer after a brief

detour, which will allow us to explore first the techniques that were already available and served as the breeding ground for the development of writing.

## TECHNICAL ANTECEDENTS

That writing as a working system (i.e., as we first find it in Mesopotamia) did not spring full blown from a vacuum is obvious. That earlier steps have to be postulated in the specific line of development which eventually led to the Uruk tables and Sumerian writing has always been assumed logically on the basis of an internal analysis of these tablets. That even more remote antecedents may be found in a variety of notations known to us from prehistoric cultures from beyond Mesopotamia seems increasingly possible. What has perhaps not yet been argued is the link between such antecedents and writing proper on the basis of the intellectual presuppositions they both share.

The technical antecedents of writing may be divided into two broad categories, depending on whether or not they are *syntactical* in nature. To the nonsyntactical category belong such items as markings on objects; whether incised, painted, or stamped with a seal. To the syntactical category belong calendrical sequences and other numerical notations. The distinction between the two categories is one of essence and it should not be underestimated. Nonsyntactical notations are symbolic in terms of their correlation to individual entities, that is, they act as direct pointers to a given element of reality, for example, the owner of a given object. The direction of such pointing is given by the context, much as in a representational setting. That is to say, the link between the symbol and reality is not in itself symbolic, rather it is situational: there is, in other words, no written syntactical relationship between symbols. If we look instead at calendrical notations and numerical reckonings, we find a juxtaposition of symbols where it is the juxtaposition as such that determines the reading criterion; the written sequence acts therefore itself as a notation—a syntactical notation—in such a way that the very link between symbols is symbolical. The importance of the syntactical notation lies in the fact that here the nature of symboling is elevated to the second power, introducing one further degree of abstraction in the process: individual symbols become endowed with a positional symbolic value. This leads to the distinctive autonomy of writing as an expressive medium, that is, autonomy from the contextual or situational.

Calendric notations have long since been stressed in the literature as key traits of early cultures, for instance by Gordon Childe and Leslie White. In recent years, very specific claims for calendric documents, dating as far back as 35,000 years ago, have been advanced and argued in considerable detail by Alexander Marshack. While controversial, his theories have the distinct merit of providing a consistent syntactical explanation for complex and recurrent sets of markings, which is as close an approximation to decipherment as one can expect to have. As for numerical reckonings of another type, many tablets with numerical markings have been found, especially in recent years, at protohistoric levels from a variety of sites in the Near East. According to an intriguing hypothesis advanced by Denise Schmandt-Besserat, these tablets fix in a writing medium a different procedure which had been in practice long before the time of the first tablets—a procedure whereby small clay objects of different sizes and shapes (especially spheres, cylinders, and cones) had been used as counters: the objects may have been standardized in such a way as to make shapes and sizes correspond to given numerical items so that clusters of counters could be used to refer to the desired totals. The early numerical notations on tablets, which actually have the same shape as these counters, might very possibly be the result of these counters having been impressed on wet clay. If the theory is proven correct, and all indications are that it will, we would have here a specific locus for the transition from a concrete correlation between physical items (counting based on the clustering of counters) to a syntactical correlation between logical units (counting based on the relative position of symbols).

If calendrical and numerical notations provided the model for that essential feature of true writing which is syntactic symboling, it must be recognized that nonsyntactic symboling, of the type referred to above, also played an important role, in that it provided a rich inventory of symbolic items which were suitable for pictographic categorization of man's growing mental universe. It may be said that nonsyntactic symboling provided the static elements, and syntactic symboling the dynamic principle which together made true pictographic writing possible.

The intellectual presuppositions and the technical antecedents we have described go back at least to the beginning of the Neolithic and most likely beyond as far as the Upper Palaeolithic. But it took in any case several millennia before writing was actually introduced

as a regular routine, and that was only after the maturing of specific social preconditions: the growth of the state was the catalyst which brought together syntactic symboling and noncontiguous logical linkages. The merging of the two was called forth by the need for an effective handling of *social* constructs which were more varied in content than the items of the calendar, and less regular in sequence than the steps of, for instance, the agricultural cycle. A full reckoning of staples as they were being distributed to classes of people, for instance, was only possible, especially on a large scale, if expressed by permanent symbolic syntax, that is, by writing.

## THE NEW EXTRASOMATIC EXTENSION

Against the developmental background we have been outlining, and with effectiveness as a measuring criterion, we can now attempt to define, as we said at the beginning we would set out to do, the range of newness, and the resulting significance, of the introduction of writing. I will proceed along two lines of inquiry, both of them having to do with the nature of mental processes: first, the extension and, second, the restructuring of brain functions.

Comparable only to language, in terms of previous cultural evolution, writing played a unique role in crystallizing consciousness. Individual data and, through syntactic symboling, elements of thought processes, became susceptible of a formulation in a permanent medium. This allowed for a quick and safe retrieval of information, thereby enhancing the power of memory. This, then, brings us back to the notion of energy as formulated at the beginning. Against the background of human evolution from the origins of the species on, and with a terminology derived from it, we can provide a new and very specific formulation to describe the innovation represented by writing. The growth of human culture had been characterized from the beginning by the successful development of extrasomatic features which extended the range of human capabilities beyond the inherent limitations of genetic evolution. Thus tools provided such an extension of muscular energy that the effectiveness of human performance became multiplied by a higher and higher factor: tools and mechanical devices were an extrasomatic extension of muscular energy, which developed through a cumulative process of increased complexity. This process depended on human control, and therefore indirectly on human genetic evolution, but did not itself develop according to the patterns of genetic evolution. It is as part of this sequence that the meaning of

the introduction of writing can best be understood. Much as tools did for muscles, so writing did for the brain: writing can therefore be defined as *the first extrasomatic extension of logical brain functions.* The data that were previously accessible only through a somatic function, that is, that of memory as provided by the brain, came to be transferred onto such an extrasomatic medium as provided by writing.

We can now ask again the question which was left unanswered above: What was the conservative factor which posited the need for the innovation of writing? The observation of two concomitant factors provides the basis for an answer. First, the growth of cultural and social institutions was such that it bombarded human consciousness with an ever increasing amount of information. What is more, the relevance of this information for the successful performance of normal human activities came to be greater and greater. As a result, there developed perhaps for the first time the consciousness about forgetting. Such conscious forgetfulness entails by necessity a specific element of memory, that is, the memory that once one knew something which has become unknown at the moment when that knowledge has become relevant. Hence the need to increase the power of memory if retrieval of pertinent data is to be ensured at the moment of relevance.

But such increase could not be based on indefinite physiological growth—and this is the second factor in our argumentation. Even if there is no one-to-one correspondence between cranial capacity and brain functions, the two are nevertheless clearly related. Now it has been shown that by Upper Palaeolithic times, between 100,000 and 40,000 years ago, the previously constant growth of brain size had come to an end, as a result of a variety of factors, such as fully achieved bipedalism. Increase in memory could thus no longer be supported by any sustained growth of brain size and correlative (to some extent) brain functions. If Marshack's conclusions are accepted, it is precisely at this juncture, around 35,000 years ago, that the earliest syntactic notations appeared, marking the first true antecedents of writing. But even if this date is pushed to a later point in time, a logical connection between the two thresholds (physiological limitations on further growth of the brain and the introduction of writing) seems plausible. The conservative dimension of the innovation is thus to be found in the need to provide a suppletive function for a genetic limitation which did not allow man to cope with the increased demands on his memory.

## THE NEW CATEGORIZATION SYSTEM

The impact of the innovation I have been describing was such that it led to an effective restructuring of certain aspects of man's mental categories. Writing came to serve as an additional memory bank, but—and this is a crucial difference with respect to human memory—a bank from which individuals could draw what they had not contributed personally. This is the essentially *impersonal* aspect of the phenomenon of writing: the communication of information, the transmission of knowledge came to be possible without personal contact, without face-to-face communication. Hence knowledge came to have an identity, a hypostasis of its own. It was a way for man to crystallize almost outside of time what were and are, otherwise, essentially fleeting moments of consciousness. A victory over time, perhaps, even if at the expense of the fully human and personal conditions of communication. And yet the immensely greater *range* of communication which became possible enlarged to an awesome degree the horizon of man's awareness of his mental universe.

Writing, then, was an extension of logical brain functions but, we may add in conclusion, an extension obtained through a *passive* medium. The data stored could be manipulated only when they were extracted from the medium and reinserted within active brain processes. In this perspective we may perhaps better understand the innovation of electronic data processing, which is providing precisely the next stage along that line of development, namely an *active* extrasomatic extension of logical brain functions, whereby information can be not only stored, but also manipulated extrasomatically. The consequent human anguish many feel in front of the computer is then in line with the element of impersonality which writing introduced long ago into man's relationship to his universe.

Whether the cybernetic revolution is ushering in a wholly new phase of human development, some sort of "post-history" after "prehistory" and "history," it will be for some future, in fact some very future, paper to tell.

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