

Cambridge University Press

978-0-521-31403-9 - Worlds of Reference: Lexicography, Learning and Language from the Clay Tablet to the Computer

Tom McArthur

Excerpt

[More information](#)

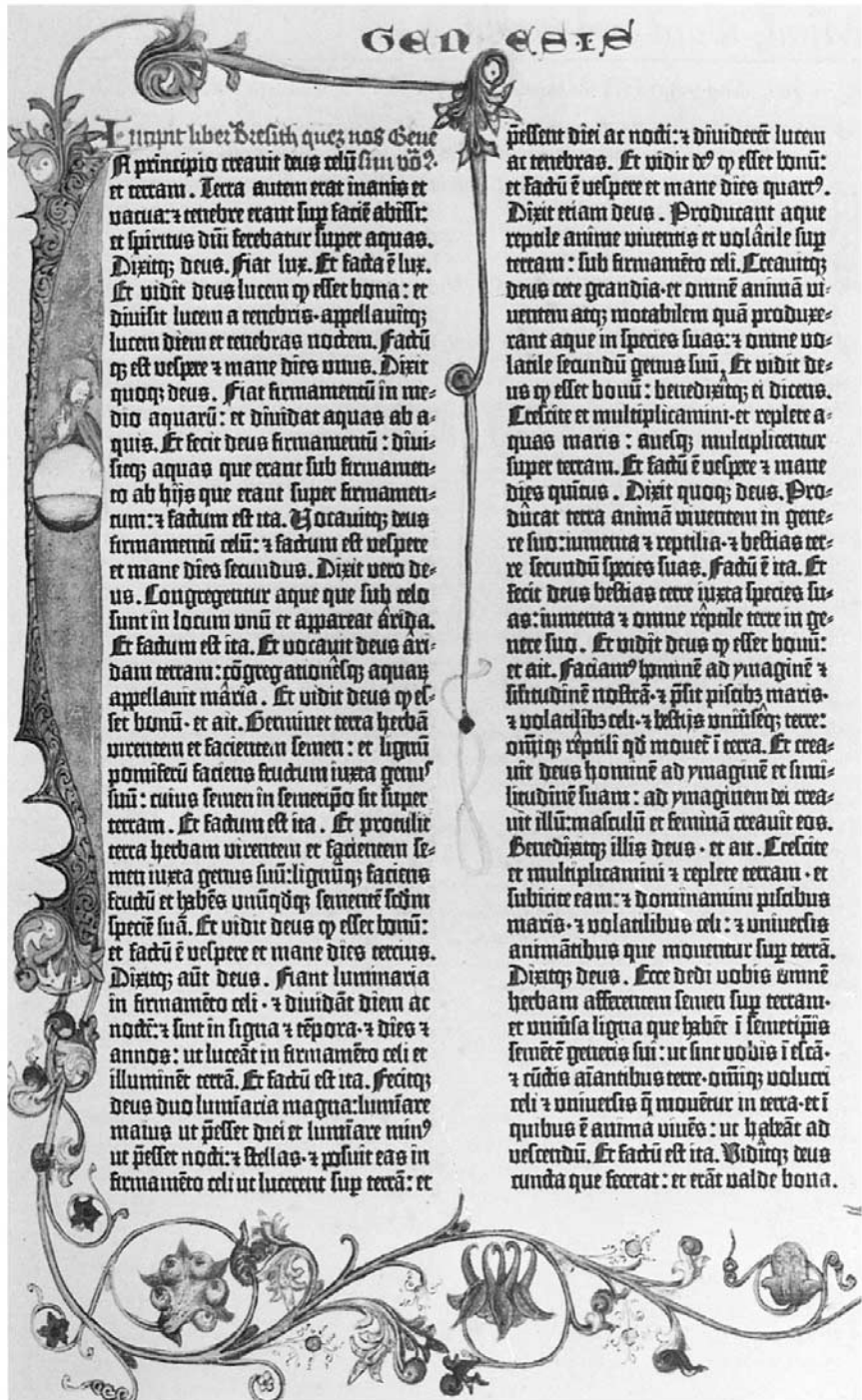
Mind, word and world

Ion: And what is there that Homer speaks about which I don't know?

Socrates: Why, does not Homer speak often enough about arts and crafts? For example, driving a chariot – if I can remember the verses, I will repeat them.

Ion: Oh, I'll say them, I remember.

PLATO, the *Dialogue of Ion the Reciter of Homer**



Genesis, in the 15th-century Gutenberg Bible. In the beginning, however, Homo sapiens had no such visual aids – only mind and voice.

1

Knowing, referring and recording: storing information beyond the brain

According to current estimates, the species *Homo* has been in existence for about two million years, although it may not have become properly *sapiens* till around 100,000 years ago.¹

If we take the second figure as providing a rough time scale for ‘true’ humanity, then what we call *civilization* (a complex of organized agriculture, cities, central authority, armies, some kind of literacy, and facilities for keeping records) occupies only about the last 5% of the scale. In its turn, the period during which civilized humankind has had recognizably modern reference systems like catalogues, directories, maps, encyclopedias, and dictionaries is less than 1%. In terms of the experience of the race, therefore, what we have stored in our libraries and computers today – no matter how solid it seems, no matter how inclined we are to take it for granted – is late, brief and fragile.

The history of civilization is more than a tally of our dynasties, governments, wars, class struggles and cultural movements; it is also the story of how human beings have learned to develop and operate systems of reference and information retrieval that are external to the brain.² If the above estimates are reliable, then for some 99.75% of the existence of the species *Homo*, and for some 95% of the time that it has been *sapiens*, there were *no* external systems at all. The brain with its erratic memory was the only apparatus available for knowing, referring and recording – and that was the natural state of things. The bulk of our ancestors would have found anything else unimaginable, and for some aboriginal peoples today, in remote areas, this statement still holds true.³

The species *Homo* has created over two million years a sociocultural chasm between itself and the other living creatures that inhabit the earth. The taming of fire, the making of tools, the possession of sophisticated shelters, the growth of social ritual and the evolution of speech have all contributed to the widening of the chasm, but until breath-takingly recently in terms of geological time humankind shared with cats and chimpanzees one similarity: whatever events they experienced and observations they made blew away like smoke on the wind. Whatever they passed on to future generations was done either through the genes or immediate personal contact, leaving no consultable record.

4 MIND, WORD AND WORLD

At some imprecise point, however, *Homo* reached a take-off point, a kind of critical mass after which a whole chain reaction of achievements became possible – including the storing of information elsewhere than in the brain. Our present civilization is both a result of – and a stage in – that chain reaction. As Richard Gregory observes,⁴ ‘It now appears that there were some two million years of slow but distinct progress in tool-making, before the explosion of technology . . . The change in conceptual understanding is then so rapid that we are forced to attribute the way we think very largely to our tools *and what has been created by them*’ (my italics). In that explosion, I would add, novel ways of containerizing information figure largely.

For Gregory, in his study of mind, the interplay of artifact with intellect, the effect of percept on concept, and the way in which ‘real’ tools have served as models for ‘tools of the mind’ have been as crucial in the development of our species as its basic biology. The equipment that we handle in our daily lives has contributed to the enrichment of our minds, and this enrichment has further contributed to the enrichment of the equipment that we handle in our daily lives.

Just as, long ago, we learned to cut up the carcasses of animals and name the varieties of plants, just as we acquired the ability to make shapes out of pieces of skin sewn together, so we transposed ‘ideas’ from the physical world and ‘cut up’ and ‘stitched together’ parallel artifacts inside our heads, creating mental dissections, mental classifications, mental frames and mental bags or containers. Language was the midwife in this transfer from worldscape to mindscape; it was the natural mediating element because it is both a public and a private matter. We share it when we communicate, but we do not directly share it when we engage in the soliloquies of the mind. In general terms, our minds all operate in comparable ways, but within our various cultures the frames of reference are different, and within each culture for every individual the structures and systems of the mind are unique and closed off, each one from every other one.

Despite this, however, certain evolutionary developments that shade from biology into technology are detectable. Commentators in recent years have drawn attention to them in various ways, distinguishing one, two or more of four distinct stages, jumps or shifts in the way *Homo sapiens* has developed communication, system-building in the mind, language, reference and the keeping of records. Elizabeth Eisenstein discussing the impact of the printing press, Walter Ong describing orality and literacy, and Anthony Smith describing newspaper technology, among others, have drawn attention to such shifts, which I would present as follows⁵:

- The consolidation of *speech and gesture* into firm language systems and oral traditions. This took many millennia, but what looks at first sight like a slow process was indeed a ‘jump’ in terms of the even longer and slower evolutionary processes that preceded it.
- The far more rapid development of *writing*, the analogue of organized speech and gesture. We can say with reasonable certainty that this

KNOWING, REFERRING AND RECORDING 5

development is just over five millennia old – nothing at all in terms of geological and biological time scales.

- The very recent explosion of *print*, occurring only in the last five centuries, a mere eye-blink from nature's point of view.
- The current burst of activity in terms of *electronic computation* hardly yet measurable in decades. It is, however, already transforming the technical and managerial élite of our civilization, and affecting our children so strongly and obviously in certain nations, that to make this statement in the 1980s is to commit a cliché.

Grasping these four stages, jumps or shifts is not difficult intellectually, but to appreciate their inner dynamic and their psychosocial force is much harder, and might best be approached by considering the barriers that they – inadvertently – create. The first of these is the barrier – I called it a 'chasm' a few paragraphs earlier – between ourselves and all other living creatures. We have speech and imagination, but we cannot think ourselves into the mental states and modes of communication of chameleons and cows.⁶ Chimpanzees may serve us as research associates and learn unchimpanzee tricks, but even the alertest of them will never appreciate why we train them to do certain things and make certain signs.⁷ The barrier is too great.

More disturbing, however, are the barriers that occur within our own species. With regard to the second shift, towards systems of writing, the attitude of the literate to the pre-literate is striking. It is hard for people who acquired the ability to read and write in childhood to understand and even tolerate the lifestyles of truly non-literate peoples – regularly classed and disdained as 'savages', 'heathen', 'barbarians', or simply 'illiterates'. For a literate person, pre-literacy is a kindergarten condition. In tandem, it is hard for people living in a print culture, with all its standardized lettering, to imagine life in the now-vanished scribal cultures (Eisenstein 1979). The print revolution has obliterated all such cultures, and it is difficult to appreciate – truly appreciate – the worlds of clay tablets, papyrus rolls, parchments, and manuscript copying.

In addition, it is also hard for people who are passably literate by the standards of a print culture to understand and be patient with those of their fellow citizens who cannot read and write (for whatever reason). These 'sub-literates' feel their inferiority every day of their lives, often going to great lengths to conceal their deficiency. It is only quite recently that our societies have begun to acknowledge that there are millions of citizens in the industrialized world with literacy problems. It is only quite recently that self-help programmes have developed in order to do something about their plight.⁸

Finally, and quite soon at that, it is going to be hard for computerate generations to imagine a pre-electronic world. We are already dividing into those who accept and understand, and those who are uncertain, confused and even resentful. Luddite tensions already exist between those who embrace the 'micro millennium' and those who will resist it to the last, with the rest of us strung out between the two extremes.

Cambridge University Press

978-0-521-31403-9 - Worlds of Reference: Lexicography, Learning and Language from the Clay Tablet to the Computer

Tom McArthur

Excerpt

[More information](#)

6 MIND, WORD AND WORLD

Crossing a divide like these is bound to exact its toll. At least one social commentator in recent years has described such a toll in terms of a quasi-psychological illness – ‘future shock’. Alvin Toffler sees the human race at the end of the twentieth century as falling into three types:

- ‘yesterday’s people’, effectively those still bonded to the neolithic farming revolution that created our civilizations
- ‘today’s people’, those who are bonded to the civilization that arose after the Industrial Revolution (but which I would prefer to relate to the Renaissance and the invention of printing)
- ‘tomorrow’s people’, a ‘third wave’ who relate to a new ‘worldwide superindustrial society now in the throes of its birth’.

Toffler is concerned about the collision of past, present and future in our individual psyches and across the communities of the world. He writes vividly and with a taste for the sensational; and yet the subject *is* sensational, and the picture he offers is a recognizable one.⁹ The old, the older, and the very new *are* in collision and *do* cause stress and anxiety. However, intense and magnified as they may be in our time, this is not to say that they are unique to that time. As Gregory indicates, the explosion began long ago, and humanity has been struggling to adapt to change for at least the last five millennia.

Collision and conflict occur, but they are not necessarily total and apocalyptic. One can point to the accommodations and compromises as well as to the dangers and divisions – especially in the area of communication, information and reference. In each of the instances that I have listed, the old can and does co-exist with the new, and the new has tended to buttress and give fresh impetus to the old.

Thus, the emergence of writing systems has not damaged speech (although it has profoundly influenced educated speech in many cultures in terms of the social graces, logic and rhetoric, grammar and elocution, and orderly academic discourse). Print has not done away with hand-writing and hand-copying, although it has done away with the copying and distribution of manuscripts; more people today engage in letter-writing by hand and even in calligraphy (in Japan and the Arab world, for example, if not in the West) than ever served as scribes in days gone by. It is also highly unlikely that computers (or television) will do away with the printed word and the bound book (although they will certainly amend our traditional conceptions and practices in interesting ways).¹⁰

I would now like to look at a universal feature in the shifts or jumps that we have been considering, a feature that can be expressed by means of the terms ‘primary’ and ‘secondary’. Thus, the first jump from sounds and gestures to organized vocal language was the development of a *secondary* use for a *primary* system. Speech is imposed upon, or develops from, a primary apparatus that evolved for other more basic purposes: lungs, larynx, pharynx, mouth, nose, teeth, and lips were the apparatus of breathing, eating and drinking (Abercrombie 1967:20; O’Connor 1973:22). When the secondary set of skills emerged, they did not seriously interfere with what was

KNOWING, REFERRING AND RECORDING 7

already going on: we still breathe, eat and drink as well as speak, and often manage all four more or less together, although it can pose risks.

The second shift, however, was radically different in one unique respect. The first shift had made use of pre-existing organs of the body and head, but the second shift moved language right away from the body and its essential activities, and changed the focus, as it were, from mouth and ear to hand and eye. The new analogue of speech – making marks on surfaces, then reading them again as often as you wanted without them ever changing – was nonetheless a *secondary* system, as linguists seldom fail to point out.¹¹ Speech is the primary form of language. Of the secondary system, however, Christopher Evans says, in the *Micro Millennium* (1979:104):

The invention of writing was the most revolutionary of all human inventions, for in one great blow it severed the chains which tied an individual and his limited culture to a finite region of space, to a restricted slice of time. Through the act of writing, one human being could express ideas or facts which were communicated to another individual. These facts could then remain as a permanent record after the originator had forgotten them or had passed away into dust. The significance of permanent data storage is the principal and perhaps the *sole* reason why Man is so absolutely the dominant creature of the planet. All non-human animals carry their knowledge and experience with them when they die. Man can preserve the richest fruits of his brain power, and stockpile them indefinitely for his descendants to feed on.

A container other than the brain had been found for information and a particular kind of reference; from this new system it was possible to see that certain kinds of data were better off outside our brains and mouths than inside them. Just as for millennia we had been putting physical objects like food and tools in bags and carrying them around or leaving them be, so we now began to put mental objects in the new equivalent of bags, fossilizing the achievement in such expressions as ‘the contents’ of a book. In doing this, we ceased to be the slaves of transience; it was, in fact, the intellectual equivalent of storing up the harvest for later consumption.

Writing, however, requires considerable skill and powers of concentration; it is also often a solitary craft that requires a kind of monastic dedication. For much of its history it has been in the hands (both literally and figuratively) of professional élites who have been willing to give it the attention it requires in return for certain social privileges that it bestows. Such élites have often had ties with ritual and religion, with the result that we retain nowadays something of the accumulated veneration that our unlettered ancestors felt for their scribal élites, while our children at school still experience the pain and the pressure mandatory in the crafts of reading and writing.

The third shift, upon the invention of the printing press, moved us from the primary manuscript to the secondary (or derivative) printed page. Our attitudes to writing and writers did not necessarily change much, but the dissemination of the written word did begin to pass beyond the control of the scribal hierarchies. More people than ever before became involved in the manufacture, writing, printing, binding, publishing, distributing, buying,

Cambridge University Press

978-0-521-31403-9 - Worlds of Reference: Lexicography, Learning and Language from the Clay Tablet to the Computer

Tom McArthur

Excerpt

[More information](#)

8 MIND, WORD AND WORLD

selling and reading of graphic materials; indeed, in due course Western society at large was even persuaded that every single citizen of every single state in the world could become more or less literate (a dream that is still far from fulfilment).

The fourth and most recent of the shifts is so new that we are still debating it, but like the others it is also a secondary adaptation of a primary activity. Electronic computation is as derivative of print as print is derivative of script and script of sound, and sound in its turn of breathing. Its potential, however, for the further democratization of knowledge is staggering. Like the printing press, the hand-gun, the radio and the telephone, it is one of history's great equalizers.

2

Information and World 3: in the beginning was the Word

Christopher Evans proposes writing as the fundamental means by which we have created a 'stockpile' of the 'richest fruits' of human brainpower. Like bees, we have created something of immense worth that is both collective and yet separate from all of us.

He is not alone in this view, which has been taken further by the philosopher of science, Karl Popper. For him, there are three distinct 'worlds' available to us: World 1 of material things, World 2 of what has developed in our minds, and World 3, the result of their interaction.¹ The first is what *Homo* has always had to contend with: the storms, heat, cold, teeth, claws, sticks and stones, flesh and bone of 'reality'. The second is the mental analogue of all that, our inner landscape of images, sounds and unspoken words, collective and yet unique to each of us, sensing, responding to and seeking to interpret World 1. The third is our honey-store, all the ideas and information that have become a kind of public domain as a result of what World 2 has concluded about World 1. As Bryan Magee puts it (1973:61): 'World 3, then, is the world of ideas, art, science, language, ethics, institutions – the whole cultural heritage, in short – in so far as this is encoded and preserved in such World 1 objects as brains, books, machines, films, computers, pictures, and records of any kind.'

The lines that you are reading belong in World 1, part of the general worldscape. How you process them is World 2, your mindscape.² Their message or content, however, is part of World 3, which has independent value and, in Magee's view, makes libraries and databanks far and away more important than the knowledge that is in any one person's head at any one time. What we may call the 'oratures' of pre-literate peoples belong also in World 3, but they are far less efficiently housed and safeguarded than the 'literatures' of literate societies.³ This is because the containers used – the finite and wasting brains of bards and genealogists – are less secure than other containers, and the delivery systems – human mouths – less dependable.

The Western world nowadays uses a single term for the most significant aspect of Popper's World 3 – the aspect that makes it a commodity or resource. That term is 'information', a word which came into general use around the time of the invention of the printing press.⁴ In recent decades, a great deal of thought has been given to this aspect of World 3 and to how it can

Cambridge University Press

978-0-521-31403-9 - Worlds of Reference: Lexicography, Learning and Language from the Clay Tablet to the Computer

Tom McArthur

Excerpt

[More information](#)

10 MIND, WORD AND WORLD

be manipulated in World 1: experts now consider how this commodity is shaped and transmitted (in ‘information theory’), and how it can be handled (in ‘information processing’).

Indeed, some theorists have gone so far as to extend the concept of information into physics and cosmology, alongside ‘entropy’ and ‘the second law of thermodynamics’. In a recent work entitled *Grammatical Man*, Jeremy Campbell asserts that ‘nature can no longer be seen as matter and energy alone To the powerful theories of chemistry and physics must be added a late arrival: the theory of information. Nature must be interpreted as matter, energy, and information’ (1982:16).

Such intriguing new trinities, however, are not central issues in this review, although they are by no means irrelevant. This is made abundantly clear by the following observations of the information scientist Merrill Flood:

All of these technological advances (the computer, etc.) together have made information a new basic resource that supplements the familiar natural resources of matter and energy. Accumulated world knowledge takes on an entirely new meaning and significance as techniques for mining, storing, sharing, and using information in new ways are learned. Knowledge in the form of newly stored information is not degraded or destroyed with use.

Stores of information represent a new kind of transactable commodity, ranking in future human importance alongside material and energy resources. Control of information stores and processing facilities may well become more important than material and energy resources as a source of social and economic power. This situation may lead to a wider dispersal of human power, as suggested above, and to a reduction in importance of the few specialists who hold power merely because of special knowledge.

In the same series of articles,⁵ David Kronick divides what he calls the ‘information media’ into two broad categories – primary and secondary – much as in figure 1 (my diagram). Kronick’s main professional interest is

Fig. 1 David Kronick’s division of the information media

