Looking for logic in all the wrong places: An investigation of language, literacy and logic in reasoning
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3.1 Introduction

The past two chapters reported the responses in reasoning tasks, of subjects with varying educational levels, and endeavoured to show some of the ways in which the response profile across subjects is a function of semantic interaction with the material of the task. It was argued that schooled and unschooled subjects are concerned with the same semantic factors; yet in the case of syllogistic reasoning tasks, schooled subjects might have learned to suspend everyday interaction strategies with the linguistic materials and to employ a contrived interpretation of the premises necessary to solve the task as intended, whereas unschooled subjects do not as readily reach the required, but contrived, interpretation. We concluded that to subjects’ varying willingness or ability to ignore such semantic factors explains much of what has been reported as differences in reasoning abilities.

The goal of the current chapter is to relate these findings to the broader theoretical context of ‘cognitive consequences of literacy’. In particular, what are the operative aspects of ‘literacy’ which can explain the above results? This incorporates sub-questions such as: What are the theoretical proposals already advanced in the anthropological and historical literature on the subject, and are they of use here? How do the findings relate to other data from psychological studies with illiterate subjects, and can similar explanations be given for these results? On the explanatory side, what is meant with the terms ‘literacy’ and ‘schooling’, and are they employed consistently? It goes without saying that coverage is by necessity highly selective; none of the topics mentioned here can be done justice, while they certainly bear mentioning.

Qualifications aside, the plan of the chapter is as follows. Firstly, I briefly mention existing theoretical approaches, and delimit how the current findings can be related to them. Secondly, I report on some other cognitive tasks, to see whether results were similar to those found in reasoning, and whether similar, seemingly deflationary, semantics-based explanations of illiterate performance can
be applied there. This helps us to assess the sources of difference in literate and illiterate performances more generally. Then I reflect on the complex of relation and dissociation, both empirical and conceptual, between literacy and schooling. Finally, the work of David Olson is singled out and evaluated for its adequacy in providing a theoretical embedding of the current findings, since Olson is the most prominent theorist in this area to address experimental findings such as those presented in the previous chapters. On the back of this, some new experimental approaches are proposed, to help further understanding of the impact of literacy on cognitive performance.

**Terminological trickery**

The reader might have noticed the equivocation of schooling and literacy in the last chapters. Of course, schooling and literacy are not synonymous. Nor are they unrelated. But the proper locus of investigation (i.e. schooling or literacy) is a discussion in itself. Often, the way the term ‘literacy’ is used makes it akin to ‘Western-style education’, while school activities are often text-based but also carry specific social and cultural values. I will, for the time being, be rather casual about using ‘literacy’ and ‘schooling’ interchangeably. In section 3.4, the relation between schooling and literacy is addressed explicitly with the goal of differentiating retrospectively, and as far as it is possible, the appropriate use of the terms.

### 3.2 Background theory

**Cultural anthropological debates on rationality**

Since the topics of literacy, culture and cognitive ability have been the topic of study in so many disciplines (including history, anthropology, educational science, cognitive psychology, sociolinguistics) it is helpful to first delineate which debates are relevant to the current investigation. For starters, there is, predating Luria’s pioneering empirical study on the impact of literacy, a long-running debate amongst anthropologists about differences in cognitive ability between different groups. The debate concerns the possibility and consequences of a cultural relativist account of rationality and has, roughly, been about whether different cultures have different rationalities, or whether cultural differences should be understood as stemming from different conceptual frameworks, often called “world views” (Lukes, 2000) to which the same universal standards of rationality are applied (see for instance Lévy-Bruhl, 1926/1910, Winch 1964, Wilson 1970, Lukes, 2000).

The debate is relevant for our current interests as far as the traditional vs modern distinction coincides with the literate vs illiterate boundary – which is
rather a lot – but also inasmuch as it addresses the same kind of empirical phenomena – which it largely does not. The debate in cultural anthropology is about differences in whole-sale belief systems, at the level of societies rather than individuals, and which certainly direct the behaviour of individuals but only within contexts in which cultural beliefs play a part. Although I will later touch on some issues addressing the possible social bases of rationality/logicality, I further judge the literature in this area to be of limited relevance for the current study. Interestingly, though, fueling much of the discussion is a type of belief held by members of traditional societies which seemingly confound ‘modern’ semantic analysis. Statements such as “twins are birds”, “a cucumber is an ox” (first reported in Evans-Pritchard, 1956, of the Nuer tribe of the Sudan), “corn is deer” (held true by Huichol of Mexico, reported in Myerhoff, 1974), and “we are red parrots” (asserted by the members of the Bororo tribe, quoted by Vygotsky & Luria, [date], – p. 70 – without a reference) are emphatically not understood metaphorically, according to the anthropologists’ enquiries, but are taken simply to be true by the tribe under study. But they are patently false! – or is that just our blinkered Western world-view? These examples have served as fuel in the debate on the possibility of a cultural relativist account of rationality in cognitive anthropology. A relativist account has been expressed in various forms, the most extreme being the view that there is a ‘primitive’ mentality, different to ours in being driven by mystical, as opposed to logical principles. We are inclined to accept Evans-Pritchard’s evaluation that Western scholars have tended to misinterpret statements like the ones mentioned above because “it was not recognized that they are made in relation to a third term not mentioned in them but understood … A cucumber is equivalent to an ox in respect to a God who accepts in place of an ox” (Evans-Pritchard, 1956, pp. 147-8), that is, as a sacrifice. Strangely enough the work which is often quoted as sparking the debate is

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1Lévy-Bruhl was one of the first theorists to treat as central the influence of historical and cultural factors on thinking. Early in his career he proposed that the psychology of primitive societies is fundamentally different from that of modern, ‘civilized’ societies (Lévy-Bruhl, 1926). The key contrast for Lévy-Bruhl was in the type of thought, as being magical versus logical. According to this account, primitive societies are ‘prelogical’; their thinking is magical (or mystical). Magical thought is primarily characterised as being insensitive to contradictions; the basic feature is the “law of participation”, in which the same object may participate in several different forms of being. In contrast, the logical nature of the thinking of ‘civilized’ societies means it has as its basic feature the law of non-contradiction. The transition from magical to logical thinking is a process of development: the modern mode of logical thinking is a more advanced one than that of the magical mode of thinking found in primitive societies. Lévy-Bruhl intended his comparison to refer to belief systems at the level of societies rather than individuals, and later formulated a much more nuanced position. Unfortunately for him, his name is still associated with the rather simplistic mystical-logical dichotomy just sketched. Theorists such as Levi-Strauss stressed the commonalities between primitive and modern thought. Levi-Strauss (1966) concluded that primitive/magical and modern/scientific thought require the same sort of mental operations but function on a different level, primitive thought being rooted more in the concrete.
Evans-Pritchard’s 1937 study of the witchcraft and magic of the Azande tribe of central Africa (and Winch’s 1964 paper responding to it). When considered in the normal context of utterance, i.e., a ritualistic one (Gellner, 1988), such statements are directly comparable to singularly Western statements such as “this bread is my body,” the simple, non-metaphorical acceptance of which is a central tenet of the Roman Catholic faith! This analysis only strengthens the case for paying careful attention to contextually driven aspects of semantics when assessing linguistic phenomena across cultures.

**Historical theories on literacy**

More directly relevant is the theoretical discussion on the differences between societies with or without literacy. The nature and impact of written language has been a subject of contemplation almost as long as writing has been around, and, just as for much western scholarship, we find ideas germinal to later theories on these themes in Plato and Aristotle. One such idea is the supposed supremacy of the written word when it comes to matters of reason. Scribner and Cole point out that in Plato’s *Republic* dramatic oral poetry is considered not to appeal to reason but to emotion, a precursor to the theme of “pitting certain oral modes of discourse against reason,” … “a theme that has never disappeared from critical studies on the psychology of reasoning” (1981, p. 6).

Contemporary exemplification of this thinking is found in Goody and Watt’s influential paper *The consequences of literacy* (1963). Goody and Watt defended the thesis that the invention of alphabetic script was a necessary precursor to the emergence of such key western social institutions and practices as democracy and logic. This comes about because of the permanence of script, which, by fixing content, turns myth into history. The possibility of historical enquiry engenders scepticism. This sceptical attitude leads to the kind of analysis at the heart of the intellectual tradition in modern literate societies today. Regarding logic, their view is succinctly formulated thus: “the kinds of analysis involved in the syllogism, and in the other forms of logical procedure, are clearly dependent on writing, indeed to a form of writing sufficiently simple and cursive to make possible widespread and habitual recourse both to the recording of verbal statements and then to the dissecting of them” (Goody & Watt, pp 344 – 5). The second part of this quote hints at the importance of the alphabet for Goody and Watt, in contrast to for instance a syllabic script, as a catalyst for development – a view also seen often in early theories of writing. For instance, a dramatic expression of this is found in Rousseau’s *Essay on the origin of language* (1754–91/1966, cited by Olson, 1994):[2]

These three ways of writing correspond almost exactly to three dif-
ferent stages according to which one can consider men gathered into a nation. The depicting of objects is appropriate to a savage people; signs of words and of propositions, to a barbaric people, and the alphabet to civilized peoples.

Goody and Watt’s theory is an example of what Finnegan termed ‘Great Divide’ theories: those which posit a principled and fundamental difference between literate and oral societies (see also Ong 1982, McLuhan, 1962). Such theories ally the development from traditional to modern, from simple to complex, from primitive to civilised, to the shift from oral to literate. For Goody and Watt, the essential difference lies in the permanency of written language. For Ong, the process of writing is “completely and irremediably artificial” depending on “consciously contrived rules” whereas speech is a “natural process” making use of “speech organs” (p. 199, 1982). For McLuhan, it’s the visual nature of writing which explains its role in a new kind of thinking, linear thinking, and creates ‘typographic man’; he goes so far as to claim that “by the meaningless sign linked to the meaningless sound we have build the shape and meaning of Western man” (McLuhan, p. 50, 1962).

While specific notation systems surely do afford different means of expression, Goody and Watt’s (1963) alphabetic hypothesis is undermined by for instance much anthropological work criticising grand general theories such as theirs (Jahandarie, 1999). For instance, anthropologists (Finnegan, 1973, Street, 1984, Akinnaso, 1992) have stressed that the diversity of illiterate or ‘oral’ societies is underestimated in Western-centric theories; conversely, ‘literacy’ is not one thing, but a variety of skills loosely grouped “under a modernist rubric” (Stock, 1990, p. 141, quoted in Jahandarie, p. 279). As such the significance of bare literacy, when divorced from the cultural milieu in which it is practised, can be overestimated. On the other hand, there are many literate traits to be found in oral societies. For these reasons anthropologists plead for specific ethnographic studies to further our understanding of the differences between literate and oral cultures.

Historical theories about the consequences of literacy are in a sense irrelevant to the current investigation, because we are interested in individuals who inhabit the same cultural-historical world, whereas historical accounts describe changes played out in historical, and cultural time. But these theories are informative about what we take the effects of literacy to be – in a general sense. The ramifications of literacy at the level of society will inevitably impact on individual literacy. This is because there are multiply different activities in which and for which the individual might use reading and writing. Moreover, these activities, and understanding of their significance, changes over time. For instance, Carruthers (1990) describes how for medieval monks reading functioned primarily as an aid to memory in the rote learning of holy texts, which were read aloud. Note that these texts are absolutely fixed. Also, there was no such thing as reading silently. Reading and memorizing were taught as a single activity and
writing was used to check one’s memory, and for transcription and translation of holy texts, as opposed to being used for communication. It seems obvious that a medieval monk must have had a very different understanding of reading than, say, a modern-day school-going child, who is interacting with many kinds of texts: narratives, other- and self-generated, fictional and non-fictional; learning aids, textbooks, and, nowadays, a whole new welter of textual genres through the internet and digital communications. Clearly any differences in conceptualising would be not only a function of involvement in different reading activities, but also the social, cultural and technological milieu. As such, when discussing the effects of literacy, we should consider not only an individual’s literacy-based activities but also the environment in which they are being practiced.

Thus we see that historical theories are relevant to theorising about the impact of literacy on the individual, since an individual’s literacy is shaped by social and cultural factors. Conversely, all these theories make use of the individual as ‘middle man’ by which changes to society or culture come about, so understanding the impact of literacy on the individual will enable us to better assess their credibility, and to identify where other variables are needed to explain cultural-historical differences.

Having indicated some of the kinds of theories that are out there, and delineated where they are and are not useful to understanding changes at the level of the individual, it is time to approach from the other direction, from the data. What kind of evidence do we have for the changes brought on by literacy in an individual?

### 3.3 Some data on the impact of literacy

There are at least three kinds of data which can help to answer the question: what are the cognitive consequences of literacy? Firstly, we can look at the differences in adult populations with and without literacy. There have been few large-scale empirical studies of this kind. This is probably due to the difficulty of finding suitable conditions, i.e., those where populations differ only in their level of literacy. Indeed, literacy is typically associated with changes in socio-economic status and participation in an industrialised and technologised world. This makes a single-factor comparison of literate and illiterate hard to achieve. We give a (very) selective evaluation of the work in this field below.

Secondly, we can look at changes in children’s cognitive development associated with literacy. There is some work on this – such as Greenfield’s studies reported below – and of course much research in education can be understood as describing the effects of literacy. But comparing literate with pre-literate children is problematic, because literacy is acquired in tandem with processes of general cognitive development, as well as (spoken) language learning.\(^3\) As such, in prin-
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Principle the ‘purest’ way to test the effects of literacy would be with adult groups which newly have access to literacy programmes. However, this does not necessarily generalise, because literacy achieved in adulthood might well have different effects to literacy acquired before cognitive maturation. Indeed, much of what we regard as ‘normal’ development is probably heavily influenced by the process of a literacy-based education. This will turn out to be an important point, one to which we shall return.

Thirdly, we can look at the effects of specific writing systems on cognition, in much the same vein that comparative cognitive linguists looks for differences in conceptualising arising from cross-linguistic differences in grammatical structuring. There are some elegant studies addressing this for different writing systems, one of which we discuss below, but, again, suitable situations in which a single-factor analysis can be achieved are rare.

Quite apart from any practical difficulty in measuring the effects of literacy, there is a more fundamental conceptual difficulty of specifying what is meant by ‘becoming literate’ or ‘acquiring literacy’. For instance, a distinction is commonly made between primary literacy\(^4\), i.e. the skills of reading and writing, from secondary literacy, meaning longer term engagement with varieties of texts, involvement in writing activities, understanding of the conventions around texts, and more generally, extended participation in the literate world. This latter stage of literacy is plausibly responsible for much more cognitive change than a circumscribed introduction into the skill of reading and writing, not least of all because it encompasses such a diffuse range of activities. Perhaps we should rather say there’s a distinction between ‘1.n-literacies’, each of which refers to a specific interaction with texts, and all of which piggy-back on primary literacy (Street, 1984). The next step would be to associate these literacies with specific sets of conditions which define them.

For the moment we put aside these concerns to examine some of the data that have been gathered on the response of illiterate adults in tasks designed to tap cognitive ability, since this is our chief interest in the current study. Later on in the chapter we’ll return to the other two sources of data and discuss how they can help us to interpret the data from illiterate adults.

3.3.1 Illiterate performance on cognitive tasks

As mentioned in previous chapters, the seminal experimental study into the effects of literacy was conducted by Alexander Luria in the 1930s Soviet Union. Luria examined performance on a battery of cognitive tasks: classification, generalisation, to read and write (see Moore, Pure & Furrow, 1990, for evidence that children master modal expressions of speaker certainty after 5 years of age).

\(^4\)This is not the same as functional literacy. Functional literacy is the use of primary literacy skills in highly circumscribed situations, for non-literate aims, such as filling in forms, checking schedules etc.
definition, arithmetic, imagination, self-awareness and perception tasks, among others. Many of the tasks investigated by later theorists are found in Luria’s experiments and as such it is worth following the framework he laid down. On all the tasks he tested, Luria found differences between literate and illiterate subjects’ responses. Here we concentrate on Luria’s findings in the tasks which are most easily classified as purely ‘cognitive’, that is, without perceptual components, although, of course linguistic perception is also perception!

**Luria’s classification task results**

In his classification task Luria found that the vast majority of illiterate subjects did not classify on the basis of categorization, but on the basis of what he calls ‘situational thinking’ (or, elsewhere, the ‘graphic method of grouping’). The associated percentages were: 80% of the illiterate subjects classified solely according to ‘situational thinking’; 4% solely on the basis of categorical thinking, and 16% used a mixed strategy. All 12 literate subjects classified using categorical thinking. The fact that the categorical approach is used by 20% of the illiterate subjects implies that literacy isn’t a necessary precursor to the ability. It would seem literacy is at most creating a bias towards a categorical strategy for classifying. Yet Luria’s conclusion is that “we failed to get these subjects to shift to a logical plane of thought” (p.64).

On being shown drawings of a hammer, a saw, a hatchet and a log, and asked to pick the odd one out, the ‘categorical’ response would be to choose the log, since it does not fall into the category *tools*. An example of ‘situational thinking’ would be to choose one of the tools instead of the log. When reminded that “a hammer, a saw and a hatchet are all tools”, Luria’s subjects replied with answers such as “Yes, but even if we have tools, we still need wood – otherwise, we can’t build anything” (Luria, 1976, p. 56). This was a commonly-occurring response and is labelled as ‘situational thinking’ because it involves the subject introducing “a concrete situation in which the objects could function together” (*ibid*, p. 64).

A second excerpt provides an illustration of a mixed strategy (*ibid*, p. 66):

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E: . . . Is an ax like a sickle in some way – is it the same type of thing?
S: Yes, they’re both tools.
E: What if I were to put some barley here?
S: No, that wouldn’t be right. Barley is food, it’s not an asbob [tool].
E: Would the group be alike if I put the barley here?
S: It would because you can chop with the ax, reap with the sickle, and eat the barley.
E: Suppose I would put the saw here?
S: Yes, that would fit. A saw is also a tool.
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For Luria this excerpt showed that (p. 67):
even when a subject appeared to have learned the principle of abstract
classification, his grasp remained far from firm. As he proceeded to
think through a problem, he would revert to his habit of constructing
imaginary situations in which objects functioned together.

Let us examine this extract more closely. The subject first classifies according to
category tool, and reiterates this by rejecting the barley. But the experimenter
persists, repeating the question about the barley. Now the subject offers another
basis for classification – roughly, ‘useful things for man’ – which does include the
barley. It should be observed here that as long as we consider useful things a
category, this is just as much a ‘categorical’ classification as the previous one.

The above extract brings to the fore the fact that there are multiple possi-
bilities for classifying according to category, something which Luria does not ac-
knowledge. For instance, on being presented with the series ‘bayonet-rifle-sword-
knife’ a subject responds “there’s nothing you can leave out here!” – which is
true if one uses the category weapons. Luria does not classify this as categorical
classification.

**Kurvers’ multiple bases for categorical classification**

What kind of results do you get if you do take different categorical bases for
classification into account? Kurvers (2002, p. 111-116) did exactly this, and her
results differ markedly from Luria’s on this task. A majority (55.3%) of her
illiterate subjects gave ‘categorical’ answers in the classification tasks compared
with 77% for the literate group. Kurvers criterion for ‘categorical’ was that
the subject named a common characteristic of three items which the odd one
out lacked. These are illustrated in responses to the series ‘rabbit-cow-fish-dog’.
In response to the question: ‘what doesn’t belong here?’ all of the following
responses were counted as categorical:

- dog – ‘because you can eat the others’ (category animals we eat)
- rabbit – ‘because it’s wild, not useful for people’ (bred for people)
- fish – ‘because it lives in the sea; the rest live on the land’ (land animals)
- fish – ‘because the others are all mammals’ (mammals)

The last option would have been the only one to be labelled ‘categorical’ under
Luria’s criterion; it’s the only one relying on the concept mammal.

Using this broadened criterion for categorical classification does not eliminate
‘non-categorical’ responses. A sizeable group of Kurvers’ subjects (25.5%) also
responded with a ‘situational’ classification strategy. This is similar to Luria’s
label, so that for instance in the series ‘chair-stool-television-sofa’ the odd one
out is chosen to be chair, “because that belongs in the kitchen.” A third group
of subjects used what Kurvers calls an ‘idiosyncratic’ strategy, which involves
reacting to a feature of one of the objects (choosing a saw because “the others
can’t saw”) or choosing an item for personal reasons (“because I like it”). This accounts for 19.1% of the subjects’ responses. These examples illustrate that the difference between categorical and non-categorical is a matter of degree: ‘situational’ categorization plausibly reflects non-subjective stereotypes – chairs belong in kitchens for instance. This could be experimentally investigated, and if such choices are stable across many subjects then this brings ‘situational’ classification closer to ‘categorical’ choices than to idiosyncratic subjective classification described above.

We can sum up the results so far as follows: according to these studies, classification tasks yield a mixed response in illiterate populations along two dimensions. Firstly, there is variety in the choice of strategy for grouping, primarily either categorical or ‘situational’ functional grouping. Then, within categorical choices, there is variety in the basis for categorization – much more so than in literate subject groups (Kurvers, 2002, p. 112). The heterogeneity in the illiterate response more generally contrasts with that in literate subjects, who overwhelmingly respond on the basis of categorical classification according to concepts such as mammal, tool, furniture, etc.

How do Kurvers’ results compare to Luria’s findings? They suggest a much more qualified and subtle distinction between literate and illiterate classification behaviour than allowed for by Luria when he says that his subjects “do not employ verbal and logical methods to group objects but reconstruct graphic situations in which the latter can function” (p. 91). Instead it seems that illiterate subject do use categorical bases for classification, although many more so than literate subjects, but that these categorical bases were just as ‘abstract’ as those intended by the experimenter. The most problematic aspect of Luria’s reading of his results is the association of ‘logical’ or ‘abstract’ thinking with categorical classification; he has no independent story about why proposing a hypothetical situation, in which objects bear a functional relation to each other, is not evidence of logical or abstract thinking. In fact, his definition of situational thinking belies the flaw (p. 49):

objects are grouped together not according to some general principle of logic but for various idiosyncratic reasons. Any such group can be extended to include the most diverse objects (all of which, however, apply to a given situation).

This is not an accurate representation of the transcripts where subjects classify ‘situationally’. As much as the subject grasps what’s being asked of them, they often gave an eloquent explanation in terms of stereotypical situations, surely just as abstract as categories. Moreover, they are capable of doing categorical classification, just as well as their literate counterparts. The following excerpt illustrates both aspects (p. 71) – see especially the first and last turns:

Subject is given the series tree–ear of grain to match with one of bird–rosebush–house.
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S: There should be a house next to the tree and the flower (ear of grain).
E: But is a house really like a tree in any way?
S: If you put a rosebush here, it won’t be of any use to a person, but if you put the house here, a person could live in it and have beautiful things around him. . . .
E: But are trees and a house alike in any way?
S: They don’t look alike but they go very well together. If you want to pick the one that’s alike, you’ve got to pick the rosebush.

To label such a response any less logical than a simple ‘rosebush’ answer seems absurd.

Greenfield’s data on classification behaviour

Another widely cited source of evidence for differences between schooled and unschooled subjects on classification tasks is Greenfield’s work with Wolof children in Senegal (1966, 1972). Rather surprisingly given the high co-occurrence of citations of Greenfield and Luria, the results presented by Greenfield at least partially controvert what Luria reported for classification tasks. To wit, her unschooled subjects did categorise according to abstract categories such as redness. Greenfield analyses her data in terms of Vygotsky’s definition of advanced conceptual structuring, superordination, in which objects are grouped by sharing a single common feature. She summarizes her findings thus: “superordination became more frequent with age in all three cultural milieus [unschooled rural, schooled rural, schooled urban]” (1972, p. 174). This contradicts what Luria reported among illiterate Siberian adults, where he found categorization to be done on the basis of functional relations, as we’ve seen above. Possibly this is a function of different testing materials: in Luria’s examples the ‘odd object out’ was often still functionally linked to the others, while in Greenfield the objects did not have such an obvious functional relation. In her first study, Greenfield (1966) presented unschooled children with ten objects bought at the local market, which could be sorted into four round objects, four red objects, or four articles of clothing. Her results were as follows:5

10% of 6–7 yr. olds formed one of these groupings
30% of 8 & 10 yr. olds did so
100% of 14–16 yr. olds did so

Despite the apparent dissimilarity in results, Greenfield interprets hers similarly to Luria – that is, lack of literacy is characterised by lack of abstraction. For Greenfield this is manifested in the different ways the subjects expressed superordination: either by a holophrase (a single word) or by linguistic predication (a full sentence). So, for instance, when grouping red objects together and asked

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5One notable phenomenon not discussed here was the predominance of the ‘colour’ grouping among unschooled children. An exploration of the implications of this finding is beyond the scope of the current discussion.
to supply a reason for doing so, you can either reply by simply saying ‘red’ (holophrastic), or by indicating each object and saying something like ‘this is red’ for each one, or saying ‘they are red’ (linguistic predication). The latter case involved an explicit statement of the connection between attribute and group members’. Greenfield contrasts this with the holophrastic approach, whose communication value “is more dependent on the situational context”. This now becomes the key point of divergence of the unschooled group from the schooled: “While the unschooled children became increasingly systematic with age in their object groupings, they continued to express the attribute basis for their groupings in a single word”. Big deal, you might think. But in fact this is taken to be very significant by Greenfield. The significance of this finding rests on her remark that the holophrastic expression “demands greater knowledge of the concrete situation – in this case the experimental stimuli – to have communication value for a listener” (1972: 174). If you grant this, then you’ll agree that “embedding of a label in a total sentence structure (complete linguistic predication) indicates that it is less tied to its situational context and more related to its linguistic context” (pp. 174-5). From here it is but a short (theoretical) step to Greenfield’s central thesis, that “context dependent speech is tied up with context-dependent thought, which in turn is the opposite of abstract thought” (p.169).

Greenfield’s extrapolation of this thesis from her findings is precipitous to say the least. The basic findings were that unschooled Wolof children were more likely to justify categorization with single word answers, while schooled children were more likely to give complete sentences as answers. This is taken to be evidence that unschooled children have more “context-dependent” thought. There are several remarks to be made here. Firstly, what does “context-dependent” actually mean? The “context” of the task is probably very different from the schooled subjects’ point of view; once we take this into account it might be that their thinking is just as “context-dependent” as unschooled subjects’ thinking. Secondly, when we compare the findings to Luria’s earlier findings, we see that they are different, but are nevertheless being taken to have the same significance as Luria’s; namely that illiterate subjects are less capable of ‘abstract’ thought. But the means to measure ‘abstractness’ has shifted – it’s no longer how ‘abstract’ the basis for categorization is, but how ‘abstract’ the justification for giving the categorization is, as measured by some ill-specified sense of context-dependence.

The lesson here is that until there is a precise understanding of the range of construals of a specific cognitive task – for both the experimenter and the subject – we cannot make evaluative judgements about performance in the task. We need to find out what the task is before we decide what’s significant in performance and what’s not. In classification tasks with illiterate subjects this has not yet been achieved. Instead the results show variation in the difference between subject groups according to the study, and hence it is difficult to identify a clear pattern characterising illiterate behaviour as different from literate.
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Reasoning tasks

The most widely-known findings in this area are those on syllogistic reasoning, as described in the previous chapters. For Luria these findings provided decisive evidence for his conclusion that illiterate people cannot reason in abstract or logical terms. But as we’ve also seen in the previous chapters, results from syllogistic reasoning tasks reveal greater differences between groups than results from, for instance, conditional reasoning tasks. This tells us that focussing solely on syllogistic reasoning tasks gives a skewed picture of the reasoning abilities of illiterates. Even within the syllogistic format, differences vary according to material used. For instance, Tulviste (1991) found that with unfamiliar material group differences were minimized (see previous chapter for details). When we consider a broader range of reasoning materials it becomes clear that there are in fact many similarities in reasoning behaviour across differently educated subject groups; in some settings they are practically indistinguishable.

Yet the differences remain. Like Luria, we found that syllogistic premises often do not yield ‘logical answers’ from illiterate subjects. In the previous chapter it was argued that, because some premises more closely resemble natural discourses in certain ways, they are relatively unproblematic for all subjects. More importantly here, they are treated in the same way by schooled and unschooled subjects. In contrast, unschooled subjects are in some conditions reluctant or unable to draw conclusions from syllogistic premises, because these premises don’t resemble naturally occurring discourse. But for schooled subjects these premises are as easy and unproblematic as the naturally occurring ones. And this is exactly the observation we want to explain: schooled subjects manage just as well with the unnatural premise sets.\(^6\)

Further work on the interaction of reasoning and literacy is minimal – probably, as Stanovich (1993) suggests, “stifled” by the widespread acceptance of the outcome of Scribner and Cole’s (1981) study aimed at separating schooling from literacy effects. As we’ll see later on, there is plenty of scope for disagreement and qualification of their findings.

We can sum up the reasoning research covered here as indicating that logical aspects of illiterate performance have been overlooked because of a lack of attention to the semantic structure of reasoning tasks. When a semantic analysis of, for instance, the syllogistic task is given, we see that the difference between subject groups can be explained in terms of their ease in ignoring certain parameters of ‘normal’ interpretation, such domain specification preceding all-usage. In this case, then, the impact of literacy would seem to be a broadening of ways of interpreting linguistic materials. How general this is, is unclear, since it might

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\(^6\)We should remember that they don’t manage that well, as plenty of results from ‘mainstream’ psychology of reasoning show. Sloman (1998) provides a nice illustration here. See Chapter 4 for more discussion on this and the seeming jump in the gap between the norm and response from here to there.
just be an artifact of the similarity of syllogistic tasks to story sums used in school settings. How significant this it is in terms of cognitive development is also as yet unspecified – we would need an account of how semantic flexibility features in cognitive processing to be able to judge this. We return to this issue up further on.

Other tasks covered by Luria

As well as investigating syllogistic reasoning and classification, Luria (1976) compared literates and illiterates on perception, self-awareness, calculation and definitional tasks. The former two are not purely ‘cognitive’ so we won’t discuss them here.

The definition task was apparently an unmitigated failure: illiterate subjects couldn’t be enticed to give definitions. For example, on being asked, “Try to tell me what a tree is”, the response was “Why should I? Everyone knows what a tree is, they don’t need me telling them” (Luria, p. 86). Luria does not give quantitative results for this task.

In the ‘problem-solving’ tasks, Luria presented his subjects with basic mathematical problems such as

It takes thirty minutes to go on foot to a certain village, or five times faster by bicycle. How long will it take on a bicycle?

Luria reported similar types of responses as for the reasoning tasks: subjects rejected or ignored premises, answering on the basis of their own knowledge, calculations or guesswork (‘One minute!’). One subject in this condition asked for the problem to be converted to ‘versts’ (a Russian unit of length), and then, when Luria refused, said “We don’t reckon in hours; I had better reckon in days”, but then did solve an equivalent problem posed only in terms of buttons to be divided among five people. This was typical. Again, though, Luria’s synopsis is damning: “The subjects can be made to solve the problem when they operate with concrete entities (versts). But when the problem changes to an abstract level (time), the subjects are incapable of reasoning about conditions divorced from practical experience, and they slip back into arguments based on experience” (p. 130), and further on: “All this shows that the formal operation of problem-solving presents major, sometimes insurmountable difficulties for these subjects.” (p. 132) I disagree. Subjects are solving the same formal task, i.e. making the same calculation, merely with different labels for the basic units, and they are not familiar with calculations in time. Which European can calculate 11 stone less 6 pounds 2 ounces? Again, a lacking specification of the informational task

\footnote{In the particular condition mentioned, Luria offered thirty buttons to the subject to help him solve it – something that would only work if the subject understood that each minute was represented by a button and that ‘five times faster’ should be represented as division by five in the problem. Needless to say the subject didn’t use the buttons!}
3.3. SOME DATA ON THE IMPACT OF LITERACY

the subject is supposed to be solving allows for different interpretations of the results.

Interim conclusions

How to sum up the findings from this selection of empirical studies? Results in this area have been often incomparable or mixed. As such, it is hard to generalise beyond saying that subjects’ performance suffers because of their unfamiliarity with the task, in some cases in terms of what’s expected of them, in some cases in terms of the materials used; and these factors also overlap. Sometimes diminished performance seems to be an artifact of the task analysis – think of Luria’s too-narrow definition of categorical classification; but in other cases it plausibly does indicate a lack of cognitive ability, because the skill is inherently bound up with experience with a symbolic system – for instance, as is the usually the case for complex arithmetic. In general, it is unclear whether results are merely a result of different uses of language usage – from the level of words up to the level of discourse genre – or whether, perhaps even because of different language usage, they do tap a difference in cognitive processing. But to get further in determining this we need a theoretical account of the relation between symbolic systems and cognition.

More serious though, is the inconsistency with which results have been interpreted – evident in Greenfield’s interpretation of her subjects’ categorical classification as nevertheless showing more “context-dependent” thought, despite the fact they met Luria’s criterion for ‘literate’ thought. As we have discussed in the previous chapters, Luria’s interpretation of his own data is seriously undermined once subjects’ interpretations of the task materials are taken into account. It would seem that researchers have such strong expectations, that they overlook aspects of the findings which do not support their apparently foregone conclusions. One wonders what would have happened if the studies could have been conducted double-blind.

At this point it is worthwhile to reflect on what such tasks are supposed to be testing. What are we hoping to learn from them? It has just been argued that Luria’s unschooled subjects were as capable of making calculations in versts as their schooled compatriots. But of course Luria’s subjects would have been stretched by more complex problems – no-one would expect them to do long-division. Everyone knows you need to learn maths at school.\(^8\) Similarly, one can certainly maintain that syllogistic problems are not suitable for use in the study of reasoning in illiterate subjects. The problems are strange to the subjects. Yet we needn’t shy away from a seeming mismatch of material and response; we should use it to learn what we value in terms of cognitive processing and why. The

\(^8\)Although see Saxe’s (1988) fascinating study of how Brazilian street children developed a complex mathematics for candy-selling, which they incidentally also go on to use in school!
mismatch itself can be very telling.\footnote{For instance, Kurvers tested illiterate subjects on the Raven Standard Progressive Matrices task (Kurvers, 2002, p. 116). All illiterate subjects scored very low on the task – the average was 16.32, from a maximum of 41 points. More interestingly, however, was the narrow range of scores in this group – outliers aside, the highest score was just above 20, the lowest just above 10 points. In the literate (but relatively unschooled) group, the average score was 25.88 but the scores ranged from 10 to 41 points. In the latter group only, then, it would seem that the task is achieving its purpose: differentiating intelligence levels. This cannot be said of the test for the illiterate group. Note that these results were garnered on a non-verbal task; the fact that illiterate subjects showed ‘illiterate’ behaviour here highlights that literacy does not apply only to texts but to pictorial representations too.} We can get information about the range of task interpretation available to a subject and then we are in a position to better judge how our cognitive development piggybacks on interactions with externally developed symbol-systems, like the arithmetic used in school mathematics, but also language-genres, and how specific the link is between a skill and its context of use. In the case of reasoning tasks, it seems we have neglected exactly this aspect of reasoning behaviour. Results have not been sufficiently ‘vetted’ for semantic factors; nevertheless they have often been taken to be convergent about the idea of a deep difference between literate and illiterate thought. We now explore the context in which literacy is overwhelmingly acquired: school.

### 3.4 Are we barking up the wrong tree?

Most people learn to read and write at school, or at least, most people who read and write have also been to school. Acquisition of literacy skills is thus usually paired with a process of enculturation in an educational system; any comparison between literate and illiterate subject groups really should take account of the confound effect lurking here. This is very difficult to do, though, precisely because the two factors (literate and schooled) almost always occur together. There are rare opportunities to study the two separately. Scribner and Cole had one such rare opportunity, in 1970s’ Liberia, where literacy and schooling could be tested separately – to some extent. The results of their large-scale empirical study within the Vai population of Liberia are reported in Scribner and Cole (1981).

#### 3.4.1 Literacy without schooling

The opportunity arose through a fortuitous diversity in scripts and learning contexts within the Vai tribe. The situation was as follows: schools (usually mission-based) were widespread in Liberia and had English as medium of instruction. Additionally, there were many religious schools for study of the Qur’an, where the Arabic script was used. Attendance at these religious schools was often an after-school activity – so the English and Arabic literacy were commonly paired. But the Vai also have a native syllabic script, which is taught and used in private
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Although originally (150 years ago) otherwise, when Scribner and Cole visited Liberia there was no formal instruction for learning the native script. Rather, it was taught largely in a one-on-one manner; in many cases the student lived with the teacher. Students of the script were mostly young men, who chose, usually for personal reasons, to learn it. Scribner and Cole (1981) report one man’s experience:

[H]e began to learn when he went to work at a sawmill in the high forest of the Vai Koneh district, where a fellow sawyer was able to read and write Vai script: “All of us were living together . . . Every time he received letters he read and answered them, so I too got encouraged and decided to ask him to teach me.” Over several months, as they worked together, they would have a session, “sometimes five minutes when we met, because we never used to spend to long talking about it”.

This seems to have been a fairly typical way to learn; very few reported learning on their own or in a more organized context. Many of these Vai ‘students’ had never been to school. This then is the key group: they are literate, in the Vai script, but have no experience of a formal schooling environment.

Scribner and Cole conducted a large-scale study of the effects of the different literacies and learning contexts on performance in a range of experimental tasks, including abstraction, classification, memory and reasoning tasks. The question was, who would unschooled literate subjects look more like: schooled (literate) subjects, or (unschooled) illiterate subjects? If, in any specific task, the former was the case, then that would suggest that indeed, the skill tapped in that particular task was advanced by skills in reading and writing per se. If, on the other hand, unschooled literate subjects looked more like illiterates on a task, then it would suggest that familiarity with school practices (which might include some specific literacy practices) made the greater difference to performance in the task.

The results from the testing were striking: no specific effect of (Vai) literacy was found on a number of cognitive tasks, including geometric sorting tasks, for letter-writing, record-keeping and accounting. Scribner and Cole report one case in which a Muslim association had a constitution and bylaws written in Vai script. The script is composed of approximately 210 signs, representing all possible combination of consonant and vowel (most syllables have CV form), plus seven vowel symbols and a ‘syllabic nasal sign. Precise origins of the script are unclear. What is known is that it was first developed early in the nineteenth century, and may originally have had a more pictographic character. A well-known origin story tells of a man ‘Duala Bukele’, who was visited in a dream by a tall white man in a long coat who brought a book to show Bukele. On waking, Bukele could not remember the signs, so gathered together with friends and made new signs. At that time the Vai had already had contact with Roman and Arabic scripts (both alphabetic): Portuguese traders had established connections with them in the mid-fifteenth century, and the Vai themselves were migrants from the Mande region along the Niger river and had much contact with Islam.

\[\text{\footnotesize{\textsuperscript{10}}}\] The Vai’s native syllabic script is used, as stated above, principally in a private capacity: for letter-writing, record-keeping and accounting. Scribner and Cole report one case in which a Muslim association had a constitution and bylaws written in Vai script. The script is composed of approximately 210 signs, representing all possible combination of consonant and vowel (most syllables have CV form), plus seven vowel symbols and a ‘syllabic nasal sign. Precise origins of the script are unclear. What is known is that it was first developed early in the nineteenth century, and may originally have had a more pictographic character. A well-known origin story tells of a man ‘Duala Bukele’, who was visited in a dream by a tall white man in a long coat who brought a book to show Bukele. On waking, Bukele could not remember the signs, so gathered together with friends and made new signs. At that time the Vai had already had contact with Roman and Arabic scripts (both alphabetic): Portuguese traders had established connections with them in the mid-fifteenth century, and the Vai themselves were migrants from the Mande region along the Niger river and had much contact with Islam.
classification tasks, recall tasks and syllogistic reasoning tasks. Scribner and Cole summarize their findings thus: “The most impressive finding is that formal schooling with instruction in English increased ability to provide a verbal explanation of the principles involved in performing the various tasks . . . neither syllabic Vai script literacy nor Arabic alphabetic literacy was associated with what are considered the higher-order intellectual skills” (1981, pp. 130-132). The authors themselves argued that their findings “lay to rest some misconceptions about the psychology of literacy that went unchallenged in the past for lack of empirical data. . . . The small and selective nature of Vai script and Arabic influences on cognitive performance precludes any sweeping generalisations about literacy and cognitive change” (p. 132). And expressed even more strongly elsewhere “Our results are in direct conflict with persistent claims that ‘deep psychological differences’ divide literate and non-literate populations.” (p. 250). Specific effects of Vai literacy were found only in tasks more tightly tied to literacy: grammaticality judgements, rebus reading, and integrating syllables.

Not surprisingly, this study has popularly seen as the ‘death blow’ to Great Divide theories (Stanovich’s phrasing, 1993, p. 138). Jahandarie (1999) says of the impact of Scribner and Cole’s study: “[that] literacy did not have any of the general cognitive consequences attributed to it by the literacy theorists [has] become received wisdom in many discussions of the topic” (p.267). Greenfield (1983) expresses the ‘general view’ (according to Olson, 1994, p. 20) in saying that Scribner and Cole (1981) “should rid us once and for all of the ethnocentric and arrogant view that a single technology suffices to create in its users a distinct, let alone superior, set of cognitive processes.” (Greenfield, 1983, quoted in Olson 1994). As such, it deserves a closer look.

**Interpreting the results from Scribner & Cole (1981)**

Jahandarie (1999) takes Scribner and Cole to task for over-interpreting their own results. He questions their measures in some tasks, but more worryingly, identifies several points at which Scribner and Cole offer a ‘summary’ or evaluation of the results which according to him incompletely represents, or is not justified by, the actual results. An example is the word definition task. Scribner and Cole report the following outcome:

> After considerable experimentation, we coded each definition on a binary basis. . . . On this measure we obtained no noticeable population differences, but there was striking evidence that definitional adequacy was controlled by the semantic properties of the words being defined. . . . Words that were more familiar or concrete in meaning elicited the most adequate definition, while level of description dropped for words at a greater distance from concrete experience. (my emphasis)
Note that this is a finding which applies across all groups. Yet Scribner and Cole continue:

This outcome is consistent ... with Luria’s distinction between mundane and academic concepts – a distinction that literacy in Vai script or Arabic does nothing to diminish. (p. 150)

... And neither does schooling in English, a crucial omission at this point.

Another set of findings for which Jahandarie questions Scribner and Cole’s conclusions is based on the syllogistic reasoning task, where he reports that although all the literate groups (Vai, Arabic and English) performed equally well, Scribner and Cole summarize as follows: “Taken together, these studies of logical-verbal problem solving cast doubt on hypotheses that implicate literacy directly in the acquisition of metalinguistic knowledge about the properties of propositions” (Scribner and Cole, p. 156, reported in Jahandarie, p. 270). Jahandarie concludes: “Once again, a finding not justified by the actual findings.” Now in fact it’s Jahandarie who’s over-interpreting his findings. Scribner and Cole conducted two sets of tests on syllogistic material. In the first round of testing, conducted with familiar content materials, they found that:

Of all the survey tasks, logic problems proved the most predictable and demonstrated the strongest effects of schooling. Not only did amount of school increase the number of correct answers, but it contributed to the choice of theoretical explanations, over and above correct answers. Schooling was the only background characteristic to improve performance; neither Vai script nor Arabic literacy had an effect on either measure.”

The second round of testing was conducted with new materials, this time with unfamiliar content, i.e. content about which subjects could not have had own experience of – for example “All stones on the moon are blue”. With these materials, group differences disappeared\(^\text{11}\) although exactly how the tests went is not clear from Scribner and Cole’s reporting of them. As well as this change in materials, they distinguish between a metalinguistic survey and a replication survey; the difference between these two is not explained. The one variable that functioned as a predictor was the order in which the tasks were given: “when logic problems followed all other tasks [including conversations about grammar and words], the rate of theoretical responses was significantly higher” (p. 156). Scribner and Cole are pursuing the hypothesis that familiarity with the relevant discourse genre accounts for the shift in performance on the tasks – not literacy per se – and their reported results are certainly consistent with their conclusion as presented above, which they continue as follows: “In moving from one study

\(^{11}\)See also Tulviste (1991).
to another we found greater variability arising from differences in materials, pro-
cedures, and experimenters than in literacy or other background factors.”

This discussion shows the importance of reporting others’ results in a complete
way. The failure to do so – but this time in the other direction – has resulted, as
Stanovich (1993) points out, in Scribner and Cole being over-interpreted in the
literature in literacy, resulting in the ‘death blow’ interpretation of their results
for Great Divide theories. “A major issue that is often glossed over – but that,
interestingly, was raised by Scribner and Cole themselves – is whether the nature
of Vai literacy was such that it provided a valid test of the claims of Great Divide
theorists.” There are several ways in which Vai literacy do not meet the criteria
for the literacy intended by theorists: for Goody & Watt (1963), it would be the
lack of access to accumulated knowledge, for Olson (1994), no essayist tradition,
even Havelock (1982) would quibble that it’s not alphabetic.

But more generally, the Vai script might fail to provide a means to test literacy
because it was used for highly circumscribed purposes: primarily for letter writing
and, to a lesser extent, record-keeping. In several ways these texts are ‘atypical’
according to the criteria given by many literary theorists. For instance, letter-
writing is highly personalised, assuming much shared knowledge between writer
and addressee. The letters usually follow a fairly prescribed format, and are used
for only two communicative purposes: making requests, and giving information,
such as announcements about births, deaths, or reasons why money has not yet
been repaid, for example (Scribner and Cole, pp. 71-75). Moreover, the script,
as described above, is learnt much later in life and in a one-on-one environment.
Another relevant factor is the lack of ‘literature’ in the Vai script – there’s almost
nothing to read in Vai.

Interim conclusions II

To give a short answer to the question we started with: no, we are not barking
up the wrong tree. These considerations show that the empirical results garnered
by Scribner and Cole by no means strike a ‘death blow’ to literacy hypotheses.
There are at least three main reasons why this is so: firstly, their results are
not as clear-cut as they could be, as we’ve seen above. Secondly, and more
importantly, Vai literacy is a very restricted form of literacy; most theorists would
be happy to only make claims about a more diversified literacy, for instance,
involving at least reading texts from unknown authors. Related to this, a third
key problem is that a simple separation of schooling from literacy as Scribner and
Cole claimed to have is not tenable: schooling is centred around literacy-based
activities. In fact, Scribner and Cole’s study could be understood as investigating
the effects of say primary versus secondary literacy. Another factor which should
be mentioned is bilingualism; this is known to affect metalinguistic knowledge,
but in this case the contribution of bilingualism is in all likelihood only applicable
to the English schooled group, who spoke both English and Vai, and not to the
Qu’ranic schooling group, as in the latter case the students just had to rote learn the text without understanding what it meant.

Moreover, that literacy and schooling are not easily separable is a conceptual as much as an empirical matter. School in many senses forms our concept of what it is to be literate and what our understanding of language is – as the next section indicates. On the other hand, we’ve seen that the term ‘literacy’ is used where ‘schooling’ or ‘schooled literacy’ could often more accurately be substituted, since the term is used to refer both to the basic skills in reading and writing and to deeper interaction with literate culture. In some cases, the sense in which literacy is attributed to someone makes it tantamount to meaning: this person has passed through a Western-style formal education system. The identification is even made explicit by some authors. We see this, for instance, in Ogbu (1990), addressing difficulty with literacy in minority groups in the United States: “I define literacy as the ability to read, write, and compute in the form taught and expected in formal education. Put differently, I consider literacy to be synonymous with academic performance” (1990, p. 520). Indeed, schooling is a heavily literacy-oriented institution. The ‘three R’s’: reading, writing, and arithmetic, are all about becoming literate in different systems of notation. Much of school activity involves interaction with texts; in this sense, schooling is a vehicle of literacy, and we could say someone is ‘schooled’ when they are literate in the right ways. Describing the literacy-based aspects of education would mean specifying what kinds of interactions are valued, not only with texts, but also with other notational or symbolic systems.

Another terminological issue we should bear in mind is the varying application of the term ‘literacy’ at the level of society. For instance, the term ‘literate society’ is sometimes used when referring to a society in which some small elite is literate (as in classical Greece); sometimes to a society in which it is widespread and needed to negotiate every day life (as in modern society where for instance official forms, road signs, prices, etc are written). Moreover, literacy effects at a societal level can interact with those at an individual level. If a literacy-based activity/technology catalyses some or other insight on language then it might well be widely absorbed by a culture without specific individuals gaining reading and writing skills. So, for instance, ‘word magic’ could die out in a society before literacy becoming widespread. On the other hand, if reading and writing skills are used in a very narrow range of activities, in an otherwise non-literate environment they might not be accompanied by the consequences otherwise associated with the acquisition of literacy. This phenomenon is reported in, for instance, Narasimhan (1991), which describes the continuing dominance of oral practices in India despite long literate traditions, and, as we’ve seen, precisely the same phenomenon is uncovered by Scribner and Cole in their 1981 book. This point has led some theorists to suggest that it is technologies and practices associated with scripts which have more impact than just the presence of the script in a society – for example, for both Finnegan (1973) and McLuhan (1962) the invention of the
printing press was more important in shaping modern society than the invention of scripts.

Thus we see that the task is to specify which activities, conventions, forms of knowledge, etc. engendered by the schooling environment are the relevant ones for the tasks at hand (see Ceci & Roazzi, 1994 for evidence of why this is important). It might turn out that the aspects of schooling which advance cognitive performance are not directly related to literacy – for instance the social environment. Results of this kind would be far more damaging to literacy hypotheses. We need to delve into the schooling group, to ascertain literacy-based vs non-literacy-based effects on cognition, in order to evaluate the literacy hypothesis.

A way to investigate the social environment aspect, for instance, would be to compare home-schooled subjects with normal schooled subjects. Comparing subjects schooled under different educational philosophies would also help to separate these effects somewhat.

### 3.4.2 Social factors in cognitive performance

The results presented and reported in earlier sections of this chapter and in previous chapters make it clear that cognitive development cannot adequately be viewed as an individual-bound process of maturation, whereby cognitive skills or structures simply unfold with age. As well as this, Scribner and Cole’s results show that the school environment has a role over and above literacy skills in determining cognitive performance. The message is clear: we need to seek to explain the effects of literacy relative to their contexts of acquisition and use. The cultural context of acquisition and use is especially pertinent when a task involves cognition on symbolic material which needs to be interpreted. The ways in which cultural and social factors may shape cognition are manifold; in this section we explore ways in which cultural and social factors can shape cognition via the imposition of norms in a school environment.

**Schooling as a source of cognitive and linguistic norms**

In Cole, Gay, Glick and Sharp’s (1971) study with the Kpelle they had little success in getting unschooled subjects to group objects according to categories in categorization tasks – until, that is, they asked subjects “how stupid people would do it” (Glick, 1975, p. 636). Then suddenly, unschooled subjects used categories to group objects – as schooled subjects were doing all along.

This example illustrates the importance of the value we place on *ways of approaching* problems. Cognitive and social development is paired with the acquisition of values. Values can attach to both activities, goals, knowledge, skills, and to *ways of* performing activities, achieving goals, acquiring knowledge, practicing skills, approaching problems. For instance, calculating with numbers is a skill worth acquiring. On top of that, there is a correct way to calculate. There’s
no value in calculating if you do it incorrectly. We might say the skill is both valued and ‘normed’, that is, practice of the skill is always constrained by normative standards for how it should be practiced. As Goodnow (1990, p. 259) puts it, “We do not simply learn to solve problems. We learn also what problems are worth solving, and what counts as an elegant rather than simply an acceptable solution.” The role of school in this process is more apparent in some domains than in others. Enforcing appropriate behaviour in the social realm is explicitly part of a school’s prerogative. But in the cognitive domain, just as in the social domain, there is a very clear indication of what kinds of activities, knowledge, goals are valued – the dual authority of the teacher and the syllabus determine what is taught in class. And the ‘norms’ attaching to correctly acquiring and practicing are given by judgement of performance, for instance, in grading exercises and tests. More generally, the norm in the cognitive domain is expressed in terms of ‘intelligence’: some behaviours are smarter or more intelligent than others.

The example from Cole et al suggests that each cultural group has its own definition of what are the interesting and worthwhile problems. Along similar lines, Luria (1976) remarks that his experimental subjects often found it very strange that he was interested in such trivial tasks.

There is another sense in which school imposes norms, but this time in the sense of ‘normalisation’: fostering a sense of homogeneity. This occurs simply by the standard classroom set-up: with the possible exception of the naughty ones having to sit at the front, everyone is treated the same. Everyone has to do the same work and come up with the same answer. This engenders the notion that everyone has the same basic set of cognitive capacities – especially in the early years. In fact this ‘normalisation’ is accomplished in some sense by the common norms applied to performance, which generates the idea of a class of ‘like-minded’ children.

In the norming of cognitive activities and the normalisation of the members of the class, the child learns that there is a correct way to do things, and that it’s the same for everyone. It seems to me that this very basic way of approaching school-like problems is present only in literate performance on reasoning tasks. Illiterate subjects in my study often seemed very concerned to ‘get it right’, but more out of a sense of wanting to understand, to have a successful communication, rather than from a sense of oneself as a representative of a kind of thinking, or thinker.

12 A result of cultural valuing of knowledge, as Goodnow observes, is the phenomenon that particular groups take ownership of some skills and areas of knowledge: these skills and knowledge can seem to ‘belong’ to some people more than others. She gives the example of mathematics in our culture being considered more relevant for males than females – although this is changing rapidly. Another illustration of this is Fordham & Ogbu’s (1986) fascinating account of resistance in black students in the States to academic performance, out of fear of being accused of “acting white”.
A central argument in this dissertation is that linguistic material used in reasoning tasks is not a neutral catalyst for reasoning processes, but is integral to the reasoning itself. We’ve also observed that educational background of a subject influences how they interact with the linguistic material. Where can we find a theoretical home for such an observation? Mainstream linguistic theory cannot provide it. As the sociologist Pierre Bourdieu so adroitly puts it, linguistic theory suffers “the illusion of linguistic communism” (1991, p. 43). All speakers have equal and untrammeled access to a shared language. For Bourdieu, this stems from the conception of language as a kind of ‘universal treasure’, and linguistic competence as the deposit of this treasure in the individual. Bourdieu sees this conception maintained in Chomsky even though Chomsky makes explicit that he is concerned with an ideal speaker-listener. Distinguishing between competence and performance, à la Chomsky, does not rid us of lingering communist ideals, precisely because this vocabulary hides a fictio juris, “converting the immanent laws of legitimate discourse into universal norms of correct linguistic practice”. Bourdieu’s concern is that this move “masks [the] social genesis [of the language as object]”. In other words, the use in linguistic theory of an idealised speaker-hearer bolsters the sense of a universally given system of norms for linguistic practice and masks the social nature of these norms. It identifies ‘official language’ with ‘ideal language’. This would not be so damaging if, say, the Chomskyan picture of language had not been so influential. As it is, his ideas have wide currency beyond linguistics.

There is strong empirical evidence that in fact the ‘treasure deposit’ is differ-

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13A good example of the use of this assumption is the reliance on native speakers’ intuition in theories of linguistic structure. A single speaker, any speaker, will do, since they are assumed to have access to the same linguistic treasure trove as any other speaker.
3.4. ARE WE BARKING UP THE WRONG TREE?

ent for different speakers, and, more importantly here, that it differs according to educational background. For example, Karanth and Suchitra (1993)’s research review indicates that the ability to judge grammaticality develops over a long period, increasing dramatically in the age-group 6-7 yrs, is qualitatively different at different stages of development, and develops at different rates for different aspects of grammar (for example, sensitivity to plural markers is early, sensitivity to participial markers is late, reaching ceiling after 11 yrs). The timing of this development is consistent with the proposal that grammaticality judgements develop out of school activities. Corroborating this, Karanth, Kudva and Vijayan (1995) report that illiterate subjects “generally refused to perform the task” or “gave indiscriminate responses” (p. 304) on grammaticality judgement tasks. This result is limited in the sense that it suggests the grammaticality judgement task does not effectively tap any intuitions about grammaticality of the subjects, but it does raise the question: does the illiterate subject have the same intuitions about language norms? Dabrowska’s (1997) comprehension study overcomes the limitations of a grammaticality judgement task, thus going further to answering this question. And it would seem the answer is no. Dabrowska conducted her study in a group of university employees of varying educational levels. The least-educated group consisted of cleaners and janitors, most of whom had had no more than ten years of schooling. The next group consisted of first and second year undergraduates from different faculties. The third and fourth groups were graduate students and university lecturers, respectively. The latter group “had a professional interest in language”: they came from literature or foreign-language departments. All these respondents had spent a substantial amount of time in education. Still, Dabrowska found a clear progression in their scores on comprehension tasks. Adults’ ability to process complex syntactic structures thus depends on their level of education. There is no universal competence to which we all have equal access.

So much for the experimenter’s reliance on a non-existent norm. But what about the reasoning subjects? They are no Saussure or Chomsky readers. Where does their sense of a linguistic norm originate? And for the linguistic theorist, what is his source for the ‘immanent laws of legitimate discourse’, giving the ‘ideal language’? The key to this lies in education: schooled subjects have been taught to talk properly, as it were. As Bourdieu says, “[i]n the process which leads to the construction, legitimation and imposition of an official language, the educational system plays a decisive role” (p.48). This could be achieved by any or all of several aspects of the educational system: firstly, the teacher, the authority in the classroom, teaches in the standardized language, inclining the students to see it as this. Related to this is the dynamic of the classroom situation itself, in which all pupils are treated similarly by the teacher, again fostering a sense of sameness between pupils. Secondly, of course, there are grammar lessons, in which the standard language is explicitly taught. Even if children do not use this language in the playground, the perception that there is such a language is strengthened.
In this way, the notion of ‘ideal language’ and the ‘official language’ coincide. But if the idea of such a universal language competence is a theoretical and cultural construct, what should we replace it with when conceptualising language between groups? According to mainstream linguistic theory the only way to interpret variation in interaction with linguistic materials is as divergence from a universal norm. As misuse of language. As mentioned above, this conception of divergence extends beyond the borders of linguistic theory, into theories of cognitive behaviour grounded in the use of language. But this is clearly inadequate to explain the range of behaviour and, as we’ve seen, premised on the mistaken assumption of “linguistic communism”. The ramifications of different language competences resurface when we sketch a theoretical proposal later on in the chapter.

3.4.3 Literacy improves intelligence: a tautology?

The professed aim of the current chapter is to explore the consequences of literacy on cognition. But the data presented are all about illiterates’ performance, and the ways they do not match up to a posited norm. The implication is a functional near-equivalence of ‘literate’ response with ‘correct’ response. This is interesting, because it indicates an implicit bias towards literacy in the selection of test materials. Researchers in this area have looked overwhelmingly at tasks in which ‘we’ do well, leaving only the possibility to discover deviation from the norm as a source of difference between literates and illiterates, even before the tests have been administered. There may well be good reasons for this – one being that one needs to understand the logic of a test to be able to administer it – but this is very different from the situation elsewhere in reasoning research, where highly literate subjects are found to be systematically diverging from the norm. It seems there is a kind of relative distance between subject and experimenter, which widens or narrows depending on what kind of results are interesting in the context. The equivocation of ‘literate’ with ‘correct’ behaviour can also lead to circularity in explanation – for instance, as we will see when we come to discuss the work of David Olson, where logical reasoning comes to be dependent on literal interpretations of language, a literate achievement, because that’s what’s required in the experimental tasks used thus far to test it.

Within studies of illiterate reasoning, this reduces to taking for granted the representativeness of the experimental tasks. In other words, it is assumed that the experimental setting is suited to elicit behaviour characteristic of the way people process information in the world. This reveals an issue which we have not yet touched on: the matter of generality. How do results generalise, if at all? Do the observed phenomena provide a representative portrait of unschooled

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14 The so-called ‘negativity bias’ inherent in focussing on norm divergence is addressed in more detail in the concluding chapter.
versus schooled subjects’ ways of thinking, or are we getting a random snapshot which has little significance outside the experimental setting? This is a complex issue; in unravelling it you can learn much about the logic of any experimental endeavour to understand cognition.

To get insight into the case at hand, Cole, Sharp and Lave (1976) suggest considering the consequences of learning in a totally different domain. They use the example of learning to be a carpenter:

Sawing and hammering are instances of sensorimotor co-ordination. Learning to measure, to mitre corners, and to build vertical walls requires mastery of a host of intellectual skills which must be co-ordinated with each other and with sensorimotor skills to produce a useful product. . . . To be sure, we would be willing to certify a master carpenter as someone who had mastered carpentering skills, but how strong would be our claim for the generality of this outcome? Would we want to predict that the measurement and motor skills learned by the carpenter make him a skilled electrician or a ballet dancer, let alone a person with ‘more highly developed’ sensorimotor and measurement skills?

One might readily grant that the master carpenter has ‘more highly developed’ sensorimotor and measurement skills – within the domain of carpentry skills. Whether this could also be claimed about the carpenter’s ability in other areas depends on how skills and tools demanded for performance in both areas are related. We might say: it depends on the extent to which the assembly of sub-skills involved in the skill of say, measurement or co-ordination, overlap. The master carpenter can measure with a measuring rule; he can’t therefore measure temperature with a mercury thermometer, because they require different assemblies of sub-skills. He can co-ordinate his hand in the act of shaping a piece of wood with a lathe; he can’t thereby co-ordinate his body parts in a dance move, because this requires a totally different set of sub-skills.

But surely the performance in the experimental tasks have a much tighter relation to general cognitive skills? Well, this is because general cognitive skills are defined in terms of just such tasks. As Cole et al (1976) point out, some version of practically every experimental task on the effects of education can be found in Alfred Binet’s early work on the development of tests to predict children’s success in school.\textsuperscript{15} Notice the circularity here. The effects of education are measured with tests originally designed to predict success in education. As such, Cole et al say, “the correlation between successful performance on Binet’s tasks and success in school was a tautology” (p. 227).

The way out of this circularity would be, of course, the purported inherent transferability of the skills taught in school: they are designed to be general,\textsuperscript{15} Binet is considered to have developed the first intelligence test; his tasks form the basis of modern IQ tests.
high-level, transferable skills. That would be why they are taught at all. There is some experimental evidence that this is indeed the case, i.e. that schooling fosters the development of flexible problem-solving ability. For instance, Cole and Scribner (1974) found that schooled subjects treated groups of problems as cases of a single type, and applied common operations to solve them. The problem is, the relations between these problems are probably very evident to the subjects from their school experience. Problems unlike those encountered in school might not be solved so easily. More broadly, just how ‘flexible’ school-learned skills are depends on what we take to be the domain of problems to be solved. Usually the domain is defined by academic performance. Less attention has been paid to the cognitive demands of everyday life – although contemporary cognitive scientists are beginning to tackle this (for instance, Gigerenzer and his colleagues in Gigerenzer and Selten, 2001).

The above point is important because it will influence what the effects of literacy are hypothesised to be. If the literate response is too easily taken to equate with the correct response then the effects of literacy could be overstated or misconceived. Tomasello has made this point in the domain of language acquisition: what the child acquires should be modelled in terms of adult linguistic behaviour – not in terms of a theoretical linguistic structure. Admittedly, in the domain of cognition there are much more compelling reasons to posit a theoretical norm which might not be achieved in practice but is nevertheless correct for independent reasons – think here of complex arithmetic calculations. This rests on the status of the theoretical models of mathematics, as opposed to say models of language. The norm/practice distinction is not parallel to the competence/performance distinction in language use because a competence model describes, and doesn’t prescribe, linguistic behaviour.

On the other hand, this is also a point which suggests a widening of the experimental approaches would be fruitful. If a broader range of cognitive tasks would be considered, the results might be more varied. Cole et al (1971) purposefully tried to include tasks where literates don’t necessarily do well, and found many cases where illiterates did. They report that unschooled Kpelle farmers were much more accurate in estimating quantities of rice, for instance, than their schooled urban counterparts. Note that there is no inconsistency in concluding that indeed schooled subjects ‘do more’ with the information given in a task, and yet that their skills are not widely transferable.

**Interim conclusions III**

The underlying issue here is what we take the relation between symbol use and cognition to be. This also has implications for when behaviour is appropriately ‘normed’ and when a competence model is more appropriate. In western society, the cognitive achievements derived from literacy are potentially over-represented in our palette of intelligent behaviour. As an example, see Stanovich (1993) list
“vocabulary, syntactic knowledge, metalinguistic awareness, verbal short-term memory” as aspects of cognition which contribute to intelligence. Now the question is: is this a contingent, chauvinistic view to take on cognition? Or is human cognition fundamentally shaped, or even advanced, by engagement with symbol systems, of which the written word just happens to be a particularly potent example? Insofar the latter is the case, we should be prepared to grant linguistic capacities agency in the cognitive domain, and reassess whether semantics-based explanations of cognitive performance are indeed deflationary. But this, again, is tied to general theory. An answer rests on a specification of what constitutes a cognitive ability and the kind of agency which can bring it about.

One should, however, be wary of singling out literacy as a cultural product. In the literacy debate, the temptation is to suppose that written language is ‘learned’; spoken language is ‘given’. As we’ve seen above, such a principled distinction lies behind much theorising about the effects of literacy. In particular, the physicality of written language often stressed: it is a material thing (which is spatially-extended), in contrast to speech (which extends in time). Thus text can be analysed, broken up and re-interpreted in countless ways – “in short, it comes under the language user’s control” (Scribner, 1997, p. 166). In this way the language becomes an object of further analysis and not just an instrument which we use for communicative (or other) purposes.

Is the distinction so sharp? Ingold (2000) argues that it is not; and does so by comparing the contrast between speaking and writing, to the contrast between walking and cycling. For, as Ingold (2000) points out, “it is generally accepted that bipedal locomotion is a universal human characteristic, whose evolution entailed a distinctive suite of anatomical adjustments. ... Cycling, by contrast, is an acquired skill which has appeared relatively lately in some, but not all human populations.” The supposition is that we are born to walk, but we learn to cycle. Walking is innate; cycling is acquired. And although it is accepted that certain environmental factors (such as an attentive and supportive caregiver) are necessary for the ability to emerge, the sense remains that we are bound to walk (provided all environmental conditions are met), whereas we are not bound to cycle, and that the body is hard-wired, or ‘ready-made’ for walking, but not for cycling. But these distinctions are one of degree, not category, says Ingold.

Certainly cycling requires more specific environmental preconditions (a bike, for starters, and probably the ability to walk) than walking, and is practised much less widely as a result of this. And certainly there is not such a short critical window period for learning to cycle as there is for learning to walk. These are differences, but they are a matter of “extent, rather than principle”. The similarities are much greater: “if walking is innate in the sense – and only in the sense –

\[\text{16 And thus comprehension depends on the peculiarities of the auditory modality, as opposed to sight. An interesting discussion on characteristics of different modalities can be found in Ingold (2000).}\]
that given certain conditions, it is bound to emerge in the course of development, then the same applies to cycling. And if cycling is acquired in the sense that its emergence depends on a process of learning that is embedded in contexts of social interaction, then the same applies to walking.”

Ingold’s expressive analogy suggests that we should be wary also of splitting speech and writing into ‘given’ and learned’. Speech conventions are as much subjected to cultural conventions as textual interactions are; this point makes it clear that there may be no single defining feature of the impact of literacy which separates literates from illiterates. Nevertheless, it is worthwhile attempting to connect specific aspects of literacy with specific cognitive insights or behaviours. This is the aim of the next section, namely, investigating what aspect of literacy might explain the differences in reasoning performance as reported in the previous chapters.

3.5 Olson on the effects of literacy

As we have seen, most of the theoretical work on the consequences of literacy predates experimental results and/or engages only with the findings of anthropological fieldwork studies. An exception to this is found in the work of David Olson. In developing his account of the consequences of literacy, Olson endeavours to account for experimental results from psychology of reasoning, language acquisition and reading studies, amongst others. Already in his 1977 article “From utterance to text: the bias of language in speech and writing”, one of the most widely-cited in the literature, he references reasoning studies such as Cole, Gay, Glick & Sharp (1971), Henle (1962) and Wason & Johnson-Laird (1972) (more recently, in this vein see Olson, 1993, and Olson, 1994). With colleagues he has conducted his own experimental work, especially on children’s development of language understanding and adult metalinguistic knowledge (see for instance Lee, Torrance & Olson, 2001, Astington & Olson, 1990, as well as Olson & Astington, 1990). The aim in this section is to assess how useful Olson’s ideas are, in explaining the impact of literacy as evidenced in the reported experimental work. Recently Olson has published a comprehensive formulation of his views in the book, The World on Paper (1994), so I will primarily respond to his ideas as outlined there.

3.5.1 Central themes

No illocutionary force in texts?

A central theme throughout Olson’s writings is the increasing “explicitness” in the transition from spoken to written language. In his earlier work (1977), he states that “language is increasingly able to stand as an ambiguous or autonomous

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17Living in the Netherlands lends this citation special resonance!
representation of meaning” (p. 258). One consequence of this is that societies move towards greater explicitness as they become more literate; another is that children’s language and thought will become more explicit as they become more and more enculturated in literate habits, particularly through schooling.

The increasing explicitness hypothesis goes against the commonly-held conception that writing is simply the transcription of speech. This idea dates back to Aristotle: “written words are the signs of words spoken” (from De interpretatione, quoted by Olson, 1994, p. 65) and endured to be explicitly upheld by seminal linguistics scholars such as Saussure and Bloomfield (Olson, 1994; Harris, 2000) – although note their goal was to emphasise the legitimacy and centrality of spoken language as a subject for linguistic study. The validity of the transcription view has been challenged by contemporary literacy scholars, such as Roy Harris, as well as Olson. In his book Rethinking Writing (2000, and see also Harris, 1986), Harris sets out to deconstruct the Western view that writing is “depicted speech”. This view is both what he calls “phonoptic”, that is, sees speech as basic, and biased towards considering (alphabetic) writing as progress on speech. Harris sets out to disabuse us of these mistaken notions. Olson (1994), like Harris, also aims to provide a more convincing alternative view of the relation between writing and speech; it is this view which we now explore in more detail.

The crucial flaw in the conception of writing as the transcription of speech, is the teleology implicit in it. A transcription account requires projecting modern conceptions of languages backwards onto the inventors of scripts, and understanding the history of scripts as one of development: each change is an advance towards an optimal transcription. In other words (Olson, 1994, p. 67): “[transcription views] assume the inventors of writing systems already knew about language and its structure – words, phonemes and the like, and progress came from finding ways to represent those structures unambiguously.”

In keeping with the view of writing as increasing explicitness of meaning, Olson (1994) rejects the transcription account of writing, and argues instead that the direction of influence goes the other way: writing provides a model for speech. This occurs because writing brings aspects of language into consciousness which are not available to language users in an oral society. These newly-explicit aspects of language then provide “the concepts and categories for thinking about the structure of spoken language” – the opposite of transcription views. This applies at several levels of linguistic structure, from phonemes, to words, to sentences, to discourses. Expressed generally: “whatever is represented in the script becomes an object of knowledge or awareness to the person literate in that script” (Olson, 1994, p. 91).

The reason for the greater explicitness found in written language is that it has, more than spoken language, to stand by itself. Maintaining his earlier (1977) distinction between “utterance” and “text”, Olson (1994) argues that texts fail to represent certain aspects of meaning, “such as the indications provided by a speaker and by the shared context as to how what is said is to be taken by
the listener or audience” (1994, p. 91). In other words, texts only represent the *locutionary act* or ‘what is said’, but do not represent *illocutionary force*, which tells us ‘how they are to be taken’. This is in contrast to utterances, which portray both aspects of meaning. In Olson’s words (*ibid*, p. 93):

> All oral utterances are composed of both what is said and some indication of how they are to be taken – as statement, question, command, promise or whatever; writing, capturing only what is said, represents only the former. How it is to be taken is underspecified and hence becomes the central problem in interpreting written texts and a critical problem in composing them.

This is division of labour is surely overly simplified, for written language does come with a context and indications from the speaker/author. First, consider the case of context. Texts do not appear out of the blue, but in a newspaper, a novel, on a sign in a railway station. Whoever writes the text can make use of this to get his message across. Beyond contextual indications, we can imagine all manner of cues within the text itself which indicate further aspects of illocutionary force. These cues include punctuation, formatting, even font. Punctuation often functions as an explicit marker for an illusionary act – a full stop indicates an assertion, a question mark a question, quotation marks indicate reported speech, and so on. Furthermore, we can discern how the text is to be taken by asking: What is the surrounding text? How is the page on which it appears laid out? Are there accompanying diagrams or illustrations? What register is the text written in? In the case of a letter, is there an official letterhead? Is it hand-written or typed? Is it signed? All these cues help us to deduce aspects of illocutionary force. In sum, the means and manner of conveyance of illocutionary force may change in writing; that is not to say it is absent. Moreover, we risk understating the force of text if we suppose what it does afford in terms of transmitting intentions is only a manque attempt to convey what speech naturally does. Text rather also offers novel ways of conveying meaning.

Examples offered by Olson as illustration of the distinguishing line between speech and text fail to convince. For instance, he suggests that the illocutionary force of the statement “You’re a real friend”, which may be uttered sincerely or ironically, can only be distinguished in spoken language. Which of these readings is intended would be conveyed, in speech, by extralinguistic factors such as tone of voice, facial expression, and context. But a writing system “which simply transcribed what was said would capture neither tone nor context. Yet the tone and context convey part of the meaning of an utterance” (p. 91). This is a problematic illustration; the statement “You’re a real friend”, when written, has a context just as the spoken version would have, as described above. This context *would* provide cues, such as the response of the interlocutor, and the events leading up to the utterance, to help determine illocutionary force. Of course one might miss the cues – but the cues accompanying the spoken version could just as easily
be missed. A second illustration given by Olson is Herbert Simon’s assertion that the mind is a computer. “That expression, however, gives no indication of how it is to be taken” (p. 92). As Olson himself writes, however, this applies equally well to the spoken and written versions of it. Consequently, Olson’s examples not only fail to illustrate his claim but actually weaken it, since he relies on the assumption that speech gives unambiguous, and stable representations of a speaker’s intentions. Rather the given examples can be used to argue that illocutionary force is in fact neither unambiguous nor stably given in spoken language; it may be absent or be dynamically given. Finally, transcribing dialogue is neither sole nor primary function of writing, as Olson has emphatically told us. Yet his example relies on a text “which simply transcribe[s]” an utterance. This is a recurring weakness in this part of Olson’s thesis: the writing as transcription view, and inherent problems, are implicitly preserved and surface at crux points in his account.

What Olson will go on to argue is that the history of writing has been one of developing means by which to convey illocutionary force, primarily by lexicalising it. This is probably the best way to take his claim that writing does not represent illocutionary force: i.e. as an historical one, that writing did not originally capture as much illocutionary force as speech does. Early writing systems were limited in their scope to capture the complexity of a spoken linguistic interaction – indeed, the original functions of written language were record-keeping, mnemonics, and such-like, rather than transcription of spoken language – but gradually devices have been developed to improve on this function, such as a massive expansion of communication and mental state verbs, the development of punctuation devices such as question marks and exclamation marks, the differentiation into genres, and the conventions such as reported speech. Lack of illocutionary force in early written language and the development of means to represent it in historical time give his theory a depth it does not have in a synchronic reading of it. In general, Olson’s work suffers for the continuous mingling of historical and developmental changes associated with the growth of literacy.

However, it is still unclear why Olson places so much emphasis on this aspect in the history of writing, as evident in his assertion that “[t]he history of literacy, in other words, is the struggle to recover what was lost in simple transcription” (1994, p. 111). Why should the lack of illocutionary force, at least when it is understood to be a feature primarily of spoken language, be so dominant an impetus in the development of writing systems? Other devices, such as graphic accompaniment – think of the illuminated manuscripts of the middle ages – con-

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18 British humour is rife with dry remarks whose wit relies on the subtlety of the ironic reading, and is all too easily missed.

19 For instance, rising intonation in spoken English is generally taken to signal a question, but in certain sub-populations – such as some groups of young British women – it is used at the end of declarative sentences, indicating that phonological cuing of the speech act is dynamic. This phenomenon has been labelled “up-speak” (Bradford, 1997).
vey the significance of the text, but we should be careful about equating their function with that of providing ‘illocutionary force’, especially if we follow Olson in taking this to a be primarily a property of spoken language. In fact, as already mentioned, we risk missing novel functions of writing which are not traceable to speech functions if we focus only on the ways in which writing captures aspects of a verbal interaction. Text is a representational system on its own, not just a derivative of speech. The confusion comes because (non-pictographic) writing only means through its relation to spoken language, unlike, for instance, pictures, which represent their meaning directly. But that writing represents meaning via spoken language does not mean it represents in the same way as spoken language.

Writing as a model for speech

Apart from these qualms, the idea that “writing provides a model” – only not just for speech, but for language in general – seems very plausible. In fact, the challenge is not to show this is the case but to make this claim more than a platitude. There is bountiful evidence that literates have a very different conception of language to illiterates, and it is extremely likely that acquisition of literacy changes the individual’s perspective on language and makes them more aware of the properties and structure of it. More specifically, research focussing on the classroom situation suggests that it does draw attention to language functioning, and thus generate metalinguistic awareness or knowledge. For instance, Dolz & Erard (1999) report on the use of reflection on language as part of teaching practice in language class, and Allal’s (1999) study of text-production in the classroom also shows evidence of awareness of interpretational divergence.

Claims of difference in language perception between literate and illiterate subjects, for instance at the level of phonemic awareness, are experimentally borne out in many studies. An example is the elegant study by Read, Zhang, Nie and Ding (1986). Read and his colleagues compared the ability of two groups of Chinese speakers to segment words into consonants. The groups were differentiated by their familiarity with alternative written scripts for the same spoken language, Mandarin. The customary script for Mandarin is logographic, or character-based, but an alphabetic counterpart to it was introduced in schools in China in 1958\textsuperscript{20}. This means that only those Chinese schooled after 1958 are literate in the alphabetic script for Mandarin. Read et al took advantage of this educational juncture in their study: one group of subjects was literate in both the alphabetic and character-based script, while the other (older) group knew only the character-based script. They tested the groups on their ability to delete or add single consonants to spoken words. Spoken Chinese is ideal for this kind of testing because syllables consist of a syllabic nucleus with an optional single initial consonant and optional final ‘nasal’ consonant so, for example, /a/, /da/, /an/ and /dan/, are

\textsuperscript{20}This alphabetic script is known as Hanyu pinyin.
all possible syllables. Subjects were asked to delete or add a consonant from the initial or final position of a syllable. A response was deemed correct if the syllable nucleus remained the same as in the presented syllable, as judged by three phonetically trained transcribers. The results show a significant difference between alphabetic and non-alphabetic groups, and a significant difference between word and non-word target items, with no significant interaction between the two effects. That is, alphabetic literates were significantly better than their non-literate counterparts at the task, (83% vs 21% correct on nonword targets, 93% versus 37% on word targets), and both groups found the conditions with word target items significantly easier than those with nonword targets. Effects such as reported here are not exceptional: similar results have been found in a study which compared literate and illiterate Portuguese speakers (Morais et al, 1979), and several studies have found correlations between reading level and segmentation ability in children (see Ehri, 2000, for an overview).

At the level of words and sentences, a review of the research on this topic is to be found in, for instance, Kurvers (2002)\textsuperscript{21} (but see also Olson 1994, and Scribner & Cole, 1981). Kurvers conducted her own research to investigate illiterates’ awareness of language at the phonological level, the level of single words, and the level of sentences and texts, as well as their perception of scripts as such. She carried out three kinds of tasks to investigate language awareness at the level of sentence and above: sentence imitation; syllogisms\textsuperscript{22}; and story-telling. On all these tasks she found the illiterate subjects to perform significantly worse than literate subjects. Here we report in more detail on the sentence imitation. In this task simple sentences were often repeated exactly; only 6 of the 24 illiterate subjects had difficulty with simple sentences. Repetition failed more frequently when sentences contained embedded clauses or two simple sentences joined by a connective like ‘because’, or ‘but’. A paraphrase was often given; this usually maintained the meaning but often omitted words, such as the connective, and was often a more conventional formulation than the original one. This is reflected in the average word length of the answers across groups: 9.79 for illiterates versus 12.78 for literates. The absolute number of non-repetitions are 13 in the group of 15 literates; 60 in the group of 24 illiterates. Kurvers codes non-exact repetitions more precisely along these lines:

1. **words not repeated**: ‘She wanted to go home’ instead of ‘Now she really wanted to go home’; omission of function words like ‘but’, ‘because’ (58.3% of mistakes)
2. **paraphrases**: ‘It rains very often in the Netherlands’ instead of ‘In the Netherlands it rains very often’ (29.9%);

\textsuperscript{21}This is a Dutch book; all translations are my own.
\textsuperscript{22}The fact that Kurvers includes syllogism tasks in her chapter on ‘knowledge of language at sentence and text level’ indicates just how much she sees the task to be indexing linguistic rather than cognitive skills!
3. **reactions to content:** ‘Yes, it’s eleven o’clock’ when asked to repeat ‘Do you know what the time is?’; ‘That is your pen’ instead of ‘That is my pen’ (8.3%)

4. **other reactions:** ‘Come aeroplane?’ when asked to repeat ‘Did you come to the Netherlands by aeroplane?’ (3.3%)

These results are very much in line with the puzzling recall data recorded in Luria (1976) and Scribner (1997). Both Luria and Scribner interleaved a recall task with the various reasoning tasks when interviewing their subjects. This was motivated by the realization that subjects’ interpretation of the premises plays a role in what conclusions they will draw. One means of accessing the subjects’ understanding would be to simply ask the subject to repeat the premises just heard. For example, Luria reports attempts at repetition of the following syllogism: “Precious metals do not rust. Gold is a precious metal. Does it rust or not?” (1976, p. 104–6). The following responses were recorded:

Kurb., 18 yrs, peasant from remote region, illiterate.
S: Do precious metals rust or not? Does gold rust or not?

Gal., peasant from remote region, almost illiterate.
S: Precious money rusts ... there was something else, I forget. (1)
S: Do precious metals rust or not? (2)

Iganberdy, 34 yrs, Kirghiz, illiterate.
S: Precious metal rusts. Precious gold rusts. (1)
S: Does precious gold rust or not? (2)
S: Do precious metals rust or not? Does precious gold rust or not? (3)

We return to the significance of this data in more detail later on in the chapter.

In sum, studies like those mentioned above make evident that literates and illiterates have a different perception and conception of language. The task is to specify how this impacts on cognitive behaviour such as evidenced in reasoning tasks. Considering Kurvers’ data above, the most obvious explanation of reasoning performance would be that unschooled subjects do not, or cannot, pay attention to exact wording, and this somehow influences their reasoning behaviour. Olson’s explanation is of this form: he proposes that unschooled subjects do not make the distinction between ‘what is said’ and ‘what is meant’, since this distinction is a product of literacy. In the following section we assess the evidence for this claim and its relevance in reasoning tasks.

### 3.5.2 Saying versus meaning

Donaldson (1978) writes of a child learning to speak as becoming more sensitive to “sheer linguistic form” in determining the meaning of utterances. Olson
(1994) echoes this in proposing that a primary effect of literacy is awareness of the difference between the text and its interpretation, thus enabling the distinction between ‘what is said’ and ‘what is meant’. The ability to distinguish what was said from what was meant is a result of the model of language engendered by writing, according to Olson, because it “makes interpretative divergence possible”, by making the process of interpretation more explicit and thus the concept of interpretation available. It is easy to imagine how distinguishing ‘what is said’ from ‘what was meant’ could result from school activities. Firstly, and perhaps foremost, is the very basic observation that learning to read is a long and arduous process. The child’s attention is focused for many months on squiggles on the page, which gradually become letters, words, and sentences. Exactness is of the essence. In this sense learning to read is partly a process of learning to pay attention to exact wording: meaning can only be gleaned by doing so. This sharpens the notion of ‘what is said’. Secondly (or perhaps 1a), written text is invariant, candidates for intended meaning (both in what has been read and in what has been written by the child) are checked against it. Especially being corrected when the process is unsuccessful would be relevant here. In other words, the comparative and evaluative process should also serve to focus attention on exact wording. Thirdly, and here we employ a circumscribed version of Olson’s earlier mentioned claim, the realization of the very possibility of differentiating between intended meaning and expression used to communicate that meaning might be prompted by learning to read. The suggestion here is that in written text the speaker’s intention is apparent only through their words (and perhaps accompanying pictures), which might result in a less determinate or apparent speaker intention than in the case of spoken language. In the latter case extra-linguistic clues as to speaker intention: gesture, tone of voice, facial expression, context, and so on, work in concert with the uttered words to communicate speaker intention. The multi-channel nature of this process would presumably leave less doubt than the single- (at most dual-) channel process that reading is.

There are several studies which address the development of the discriminatory ability and report similar results (Robinson, Goelman and Olson, 1983; Torrance and Olson, 1987; Beal and Flavell 1984, Bonitatibus 1988, Lee, Torrance and Olson 2001): that is, that children under six years of age are strongly inclined to accept ‘what was meant’ as ‘what was said’, and become less so as they pass the six-year mark. This is just when the children are becoming readers at school. The results suggest that learning to read and write play a role in acquiring this explicit knowledge. But frustratingly, detailed information about what school activities their subjects have experience of, or of their literacy levels, is not given in any of these studies. Torrance and Olson (1987) do address this issue; if only to say that “it is a mistake to assume that [these interpretive distinctions] are strictly associated with the practices of learning to read and write.” They suggest

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23 Being read to is again different.
that ambient affects of a literate culture might be just as effective in catalyzing the development of the distinction, such as how the parents talk to the child and the experience with books the child may have prior to reading themselves. Moreover, the direction of influence goes both ways: being able to distinguish a text from its interpretations is a key part of being a competent reader later on. All we can conclude at this point is that distinguishing intended from some as yet unspecified literal meaning is an ability which develops from the time when children are attending school and learning to read and write.

However, there is a caveat to be made, regarding song and poem contexts. Lee, Torrance and Olson (2001) explored the affect of discourse genre on awareness of the verbatim/paraphrase distinction, and found that children as young as 3 yrs recognize when a response is not an exact reproduction of the stimuli – but only in the context of a nursery rhyme. Also, given the fact that songs and poems rely on exact wording and are surely not restricted to literate cultures, we may conclude that the ability to recall exact wording is not especially a literate feat, but an attentional bias which is triggered in contexts of rhymes, songs and so on. Again, it’s not just the skill itself but also the context of practice which matters.

A conservative hypothesis would be that attention to interpretational divergence is engendered by specific literacy practices in certain contexts. But here Olson is again prone to overstatement: the result of writing “is a kind of interpretational anarchy, each interpretation being taken by some individual or group as what was said.” And again, I think that Olson’s thesis has merit when it is applied to a restricted domain, such as perhaps the history of texts, but it does not necessarily apply to individuals. At the level of the individual, attention to interpretational divergence is heavily dependent on the context of acquisition of literacy skills. This is demonstrated by for instance the study by Scribner and Cole discussed above. But even if the context of acquisition does foster awareness of interpretation this doesn’t mean that the man on the street is concerned with or even aware of the difference between understanding and interpretation when reading the sports page. In certain circumstances when it becomes pertinent – a typo in the text? a reasoning task? – it might be available to him as a means to resolve misunderstanding or discrepancy. In the following we explore how this might operate in such a situation.

The literal meaning hypothesis

As we’ve seen, a primary tenet of the reasoning task paradigm is that people reason, or rather should reason, on the basis, and solely on the basis, of the presented material. ‘Solely on the basis of the given premises’ can be taken to mean interpreting them strictly, that is, literally, verbatim, word for word, and contrasted with a ‘paraphrase reading’. The question is: how does the ability to distin-

\textsuperscript{24}It is interesting to observe the terms ‘literally’, ‘reading’, here being used in a metaphorical sense, are terminology from literate practices.
guish verbatim phrasings feature in reasoning tasks? What consequences could a non-literal reading of the premises have? As we saw in Kurvers’ and Luria’s data, illiterate subjects were had difficulty producing verbatim repetitions of sentences or premise sets. This offers a new vantage point from which to understand many of the responses in the reasoning tasks proper. From this view, the instruction to reason solely on the basis of the given premises changes meaning. The given premises are converted into a reconstruction of what was meant, and it is this which serves as a basis for reasoning.

How exactly might literacy help with verbatim recollection? There are two types of hypotheses available here. Firstly, an undifferentiated concept of literal meaning can serve as an explanation for this phenomena; so that what was said is conflated with what was meant (or posited to be meant). Without concentrating merely on exact wording used, as distinct from what might be meant by it, the subject would have to rely on similarities (however scanty) between presented material and familiar forms of utterances. Interestingly, none of Luria’s subjects reproduced the premises in the form: two assertions followed by a question; instead the majority returned either a pair of questions or a pair of assertions. Here the lack of relevant discourse ‘genre’, presumably gained in a school environment, could be crucial, because it prevents the subject from figuring out ‘what is meant’ but at the macrolevel – what the experimenter intends with his task. Familiarity with story sums, for instance, opens the possibility of reconstructing the experimenters intention as some such challenge. Secondly, being able to recall exact wording might be facilitated by being able to convert spoken language into a written representation, which in turn might be helpful in holding novel sentences in working memory and reproducing them: so that not only do the subjects not pay attention to wording, but that, even if they did, it wouldn’t help them because they wouldn’t have the computational aid of a visual representation of the sentences to hold in their mind, a suitable format to put the exact words into, if you like. The hypothesis here would be that literacy enables recall of exact words by providing a means to keep them in mind, namely in a textual form, writing as a mental mnemonic if you like. Recall of exact wording in song and poem contexts speaks against a strong version of this hypothesis; nevertheless literacy might play a facilitating role.

In the context of the reasoning task, non-reliance on ‘literal meaning’ might make it easier to adjust paraphrase readings according to what makes more sense in the situation, as it were. This is illustrated in the following excerpt:

Nonkululeko, 56 yrs, illiterate. Presented material is
‘All people who own houses pay house tax. Sabelo does not pay house tax. Does he own a house?’
S: He doesn’t have a house if he’s not paying.
E: And now suppose that none of the people in Cape Town pay house tax. Do they own houses or not?
S: They have houses.
E: Why?
S: They can have houses because there are places where you don’t pay
tax, like the squatter camps.
E: So they can have houses and not pay?
S: They may, they can live at the squatter camps.

In this case the subject was initially using the first premise as a basis for reasoning, as can be seen in her first turn. Moreover, she would have to be reading it as a strict universal to be able to generate a conclusion about a random individual, Sabelo. But when reasoning with it as a strict universal would entail an extraordinary conclusion, namely that none of the people in Cape Town have houses, she can be seen to revise her interpretation to a generic reading, and thus avoids generating that strange conclusion. We can see this as an example of the tendency to attribute ‘awry-ness’ to language before the world, to anticipate Fillenbaum’s formulation in the next section.

One might find the literal meaning hypothesis appealing without wanting to go so far as to identify logical reasoning ability with the ability to distinguish literal meaning in a text. Olson, however, does go so far. In his 1977 article, he claims that (1977, p. 274–5): “logical development in a literate culture involves learning to apply logical operations to the sentence meaning rather than to the assimilated or interpreted or assumed speaker’s meaning. Development consists of learning to confine interpretation to the meaning explicitly represented in the text and to draw inferences exclusively from that formal but restricted interpretation.” Although it is unclear what ‘logical development’ means here, this sounds quite uncannily like the argument in Goody & Watt (1963) which Olson so vehemently sets himself against. Olson maintains a variation of the claim throughout his subsequent work, where he says (1993, p. 177, based on arguments in his 1994 book): “Logic and literal meaning are, therefore, completely interdependent and both dependent on properties of language rendered explicit by writing.” The logical (if you’ll pardon my non-literal use of the term) outcome of this claim is that unschooled subjects are not in the possession of logical faculties. In fact, Olson is intending logic in a very specific sense; logic in his 1993 paper is reduced to a rather vague notion of ‘logical proof’, which relies on a distinction between the literal and metaphorical (p. 172). This notion of logic is not only specific but also circular, since later on he defines literal meaning in terms of logic (p. 177): “this constitutes a working definition of literal meaning; literal meaning of a statement is that meaning for which strict logical rules apply. . . . ordinary language rarely achieves such logical purity”. As the next chapter shows, this may well be the case under certain descriptions but the point is whether this is the correct notion of ‘logic’ being applied. The problem arises when logical reasoning ability is judged solely on the basis of the tasks such as reported in the previous chapter, which apparently do rely on some literate tendencies to be performed correctly. These conceptual confusion are not the only problems with the literal meaning hypothesis described thus far, as the next section shows.
3.5. OLSON ON THE EFFECTS OF LITERACY

Problems with the literal meaning hypothesis

There are two kinds of challenges to such a strong formulation of the literal meaning. The first stems from empirical work which suggests that the distinction between ‘what is said’ and ‘what is meant’ is neither exclusive to literate cultures nor widespread within them. Indeed, it proves under certain circumstances to be a very recalcitrant notion, as will become evident when we report on Fillenbaum’s (1978) study of strange conditional constructions. Moreover, it is not clear that the recall data, adduced to show that illiterates cannot or do not access literal meaning because they do not produce verbatim reproductions of sentences, actually does the job in showing this.

The second type of challenge lies within the notion of literal meaning itself. This is addressed in the next chapter, where we address in greater detail the problems with assuming that logical subjects reason solely on the basis of the given premises, i.e. on the basis of the literal meaning of the premises.

This section is devoted to an evaluation of some empirical findings which are relevant for the literal meaning thesis as stated thus far. The bulk of the empirical research reported by Olson (including many he has done with colleagues) are developmental studies, so the subjects are children of school-going age. Apart from the possibility that the relevant distinction might be pertinent in exactly the phase of learning to read and discounted after that, these studies suffer from a potentially disabling confound between general cognitive development, including (spoken) language acquisition, and acquisition of literacy skills. Eradicating this confound may well be nigh impossible to avoid in such studies, but Olson should at least attempt to offset it by comparing results to those for populations in which these two factors come apart. He relies rather heavily on anecdotal anthropological evidence to achieve this but would strengthen his argument by exploiting cross-cultural research further.

Besides this, there is anthropological evidence which goes against his claim that awareness of interpretation and attendant ramifications are a uniquely literate achievement. For instance, Feldman (1991) investigates to what extent oral genres separate text and interpretation. Indeed, as she points out, there will be certain events characterised by their form of talk (Feldman calls them ‘linguistic jobs’) in every culture – story-telling, songs, conflict resolution, contract negotiation, ceremonial and ritual talk. We tend to focus on conversation when we think of oral genres, perhaps because written genres are more explicitly differentiated, or because we’re in a literate society where written genres may have even taken over some oral forms. But the case can also be made that oral forms be “more varied and better defined in [oral] cultures because there is no competing written language”. Feldman argues that artful genres which stress the difference between text and interpretation are very much present in oral societies. She cites the example of ‘kiyori’, a type of political poetry used by the Wana tribe of Indonesia. A kiyori has a set form and fixed pitch contour, and makes use of special am-
biguous and metaphoric language. When delivered it is usually repeated several times until the exact wording is stable. It might also be repeated by the person to whom it is delivered. Then it is replied to, either in the form of another kiyori or in a general conversation, in which interpretations of the kiyori are discussed. So kiyori are an oral genre in which text is first fixed, and subsequently interpreted. With this example Feldman wants to illustrate that oral forms can also be seen to make the distinction between a text and its interpretation. This in turn undermines what she calls the ‘general claim’ of literacy theorists, that writing is necessary for the development of consciousness of this distinction.

Upon closer analysis of the recall data mentioned in the previous section, it becomes apparent that also here the conclusion that illiterate subjects do not have the concept of literal meaning is too hasty. One major reason to believe so is the nature of the errors. Luria provides transcripts but does not analyse the errors, but Scribner (1997) does provide an analysis of the errors she found in her recall data. A “principal form of error” was the omission of a premise, according to Scribner. Both examples of omissions that she offers concern premises which could plausibly be taken as common knowledge. This might make them not worth repeating, to the subject, because they go without saying, as it were. For instance, with the premise “Mr Ukatu’s store is in Kpelleland”, presumably Ukatu is a Kpelle name, so we could take for granted that Mr Ukatu’s store is in Kpelleland. It’s even more plausible to consider that premises such as “all the people we know are in Liberia” are considered common knowledge, and thus doesn’t bear repeating in the subject’s eyes, who has most likely never been outside Liberia and had minimal contact with foreigners (the experimenters were also local Kpelle people). Perhaps most striking is the consistent omission of these kinds of premises in Luria’s data too. Recollect that Luria reports attempts at reproduction of the following syllogism: “Precious metals do not rust. Gold is a precious metal. Does it rust or not?” (1976, p. 104). Only one of the five subjects quoted by Luria included the premise “Gold is a precious metal” in their reproduction of the premise. This is again a premise which could conceivably be considered so well-known that it does not bear repeating. Indeed, we can’t tell from this data whether these ‘common knowledge’ premises are forgotten or rather taken for granted. At most the claim can be made that unschooled subjects are not inclined to pay attention to exact wording in the context of reasoning tasks. The claim that unschooled subjects can’t pay attention to exact wording in general seems dubious anyway; recall for songs and poems speaks against it.

Literal meaning is contrasted by Olson with intended reading, in which one goes after what was meant, what was intended to be communicated by the sentences. That this latter method of interpreting is dominant, even among literate populations, is supported by several sources. One such source is Fillenbaum’s 1978 study of conditional constructions.

In a paraphrasing task Fillenbaum identified what he called ‘pragmatic nor-
malization’. Subjects were presented with a set of sentences and asked to paraphrase them. Instructions emphasized that the task was to preserve given meaning, that is, the subject was to (Fillenbaum, 1978, p. 187):

paraphrase or rephrase “the sentences as accurately as you can conserving meaning as completely as possible” and that the subject was not “to improve the sentences or make them more sensible, but to paraphrase them, rewording each in a way that captures its meaning as accurate as possible.”

Despite these exhortations, subjects were inclined to reorder any sentence which violated a somehow natural or expected relation (percentages ranged from 70% in conjunctive sentences violating an entailment, to 54% in ‘perverse’ conditional threats). This is what Fillenbaum terms ‘pragmatic normalization’. An example illustrates the phenomenon (p.187):

“Clean up the mess or I won’t report you”

becomes

“If you don’t clean up the mess I’ll report you”.

The latter situation is easier to envision than the former, but it also does not take a massive stretch of the imagination to envision a situation for which the literal reading is fitting. All we need is a situation in which being reported is a desirable outcome – as in, being reported as a potential employee of the month. So there is a sensible literal reading available for the sentence; nevertheless, subjects tended to paraphrase non-literally in these cases. The sentence structure itself is in the above example not unconventional, as can be seen in the following variation:

“Eat your vegetables or you won’t get any pudding”.

Perhaps most surprising in this study is the responses of subjects after the fact. Once the subject had finished the task proper he was instructed to go through his paraphrases, and asked (ibid, p.187)

“about the remaining differences IF ANY (sic)” between each sentence and its paraphrase, and that if he did “see some shred of difference” to say what seemed to be involved.

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25 Or because of them? That the sentences are not already clear, is presupposed by the suggestion that the sentences can be ‘improved’ or ‘made more sensible’. This only makes the task pragmatically stranger.

26 Note that literal meaning and plausibly intended meaning need to be distinct for the tendency towards one or the other to become apparent. Thats why only the ‘disordered’ sentences, that is, those for which this distinction holds, are relevant.

27 Fillenbaum unfortunately does not specify for which sentences normalization was most common. There are other sample sentences – such as that mentioned above ‘Don’t print that or I won’t sue you’ – for which a literal meaning is more difficult to find. However, you can do it: in the above-mentioned, you can simply take out the unnatural negation, rephrase, and stick the negation back in.
The experimenter then worked through each item individually with the subject, asking “is there any difference?”, and “what sort of difference?” if the subject answered affirmatively. Also, if the subject made changes to his paraphrases at this stage he was asked to explain the original answer. The results from this stage are mixed: according to the type of sentence the number of subjects who detected a difference of meaning, as against those who overlooked it, varied. But both groups remain substantial: for example, the figures for those who detected difference vs those who didn’t are respectively 27% and 43%, for conjunctions, and 20% and 34% for conditional threats (types as described above) In the cases where subjects did detect a difference in meaning, and so were asked to explain their initial choice of paraphrase, the results are less equivocal. Fillenbaum reports that the comments of the majority of the subjects could be classified along five lines: that is, claims of the form
(a) that the paraphrases made things clear and more sensible
(b) that the paraphrases put things into natural order
(c) that the original sentences violated expectancies
(d) that the original sentences were illogical
(e) that they knew what the original sentences were trying to say so they said it.

Further, seven of the remaining subjects said they had “misread or read incorrectly” the original sentences (p. 190), which suggests they did not see the literal meaning in a first reading.

The picture we get is of subjects who often can see the difference between a literal and non-literal paraphrase, but who defend the latter on the basis that it was a more successful formulation of what was intended to be said. In Fillenbaum’s words: “what is taken to be awry or extraordinary is not the world but the linguistic account of it. . . . a difference detected is not so much one between descriptions of two different sorts of events but as one between two different descriptions of the same event, with the paraphrase expressing properly what is intended and badly expressed by the original sentence” (p. 190, his emphasis). That this occurs when university students are in a laboratory task which is very clearly about paraphrasing only strengthens the import of the findings, because if there is any situation which piques attention to literal meaning, this is one.

Fillenbaum’s study illustrates that preserving a literally faithful but pragmatically strange complex sentence meaning is a difficult task for highly literate individuals; nonetheless in many cases they are able, if only when heavily prompted, to distinguish between a literal and non-literal paraphrase of a sentence. There are other studies reporting such ‘corrective’ reading of pragmatically strange sentences (Garnham & Oakhill, 1987 for instance), but others showing that in the case of simple passives sentences such ‘corrective’ reading doesn’t happen (Macwhinney, Bates and Klngl, 1984). The task settings under which these results were elicited differed: the former was a paraphrase task; the latter asked only for thematic role information (“who’s the actor?” in sentences like
The eraser bit the turtle). So the phenomenon is related to the specific task setting, including the emphasis placed on a coherent holistic interpretation of the presented material, as well as the complexity of the presented materials.

The empirical findings presented above suggest that the claim that literate subjects are uniquely and unproblematically able to distinguish a text from its interpretation, or literal meaning from intended meaning, is too strongly formulated. The literal meaning hypothesis as stated in Olson (1993, 1994) needs to be scrutinised.

Qualifying the literal meaning hypothesis

Fillenbaum’s sentences contained unexpected negations (for instance of a typically negative outcome in a threat, as above) and unusual use of other connectives in combination with these. The sentences are semantically/pragmatically incongruent. In this case paraphrasing can be seen as correcting this incongruency, in order to make the sentence more sensible for comprehension. In other situations, such as the say/mean studies conducted with young children (Robinson, Goelman and Olson, 1983, Bonitatibus 1988) the original sentence is ambiguous between two potential referents, resulting in a communicative failure. So a paraphrase here serves to disambiguate, thereby enabling the communicative task (i.e. indicate the right referent) to succeed. In the recall studies reported by Luria, the ‘paraphrases’ offered by the subjects (although the experimenter asked for repetitions) often omit information which can be considered general. So the paraphrases here can at least partially be described as ‘repackaging’ the information contained in the original sentences, by backgrounding common knowledge and highlighting new/contentious information. When sentences are idiomatic, metaphoric or ironic, appropriate paraphrases would supply a new sentence which elucidates the non-literal meaning, for example ‘his job is a jail’ rephrased as ‘his job is very demanding and inflexible’ or something to that effect. Here paraphrases tell us about the use of a particular stock construction within a language community (such as that ‘what’s up?’ is used as a greeting among American English speakers). Similarly with rhetoric devices, such as rhetorical questions, which are not to be understood as questions at all. An appropriate paraphrase of the question ‘How I am supposed to explain that?’, for instance, might (depending on the context) be the assertion ‘I don’t know how to explain that’.

The variety of paraphrasing possibilities indicates the different relations between literal and non-literal meanings, and that taking a sentence literally might involve different counteractions depending on the context, the goal of the interaction, and the common usage of the sentence. In fact, to prefigure what will be covered in the coming chapter, literal meaning, as it functions in Olson’s theory, comes as part of a package, a specific theory of language which assumes a semantic core of meaning is determined prior to the input of pragmatic factors. This semantic core, however, turns out to be theory and context-dependent notion,
at best an abstraction over a range of contextually determined meanings. Once literal meaning loses its status as semantic core, it also loses its place in theories of logical reasoning. In the following chapter I address the sense in which the notion of literal meaning can be applied in reasoning tasks, and show that there is no simple connection between literal meaning and logic.

3.6 Summary, conclusions and outlook

As the first half of this chapter illustrated, it is difficult to say anything interesting and general about the consequences of literacy on the individual, further than that they impact on awareness and knowledge of language. There are various reasons for this difficulty; amongst others, these are that existing historical theories concentrate on whole-scale differences in societies, and that empirical research with individual subjects has been inconsistently interpreted because of a lacking standard approach to categorization of responses. For instance, we saw that Greenfield’s data on categorization from illiterate subjects, although fitting Luria’s criterion for ‘literate’ thinking, was judged according to Greenfield’s own criterion and therefore interpreted as having similar significance to Luria’s, namely that illiterate people are limited to situational or context-bound thought.

Fresh empirical research into the effects of literacy might well have been inhibited by the reception of Scribner and Cole’s (1981) study which aimed to separately test the influence of schooling from that of literacy. The general perception was that Scribner and Cole’s study found schooling to be responsible for more cognitive change than literacy. However, examination of their findings indicated that their results were by no means as unequivocal as this conclusion suggests, since they only tested a very restricted form of literacy. More generally, literacy and schooling are not to be readily teased apart, either practically or conceptually. Literacy is almost always acquired with schooling, bringing a whole complex of values, norms and practices with it, and the terms literacy and schooling have been differentially applied to aspects of this complex.

The task is to index consequences of literacy to contexts of acquisition and use, and especially to the social norms and conventions about language and cognition active in these contexts. This entails specifying which activities, conventions, forms of knowledge, etc. engendered by the schooling environment are operative for performance in the tasks at hand.

With this in mind, we pursued the hypothesis, found in the work of David Olson, that performance on logical reasoning tasks is a product of the literate ability to distill a ‘sentence meaning’ as distinct from ‘speaker meaning’, or ‘what was said’ as distinct from ‘what was meant’. We reviewed the evidence that this is a peculiarly literate achievement and argued that it much be understood in a qualified form and that it the ability should not be too quickly associated with logical behaviour.
3.6.1 Experimental suggestions

Conceptualising literacy not as a unitary skill but as a host of skills leading into differential engagement with the world of text opens up new avenues for experimental research into the effects of literacy. It makes clear that literacy can be segmented into different levels and that at each stage we may look for cognitive change. As the inventive work of Dabrowska shows, there are huge differences between subjects within the literate spectrum. This avenue has also been begun to be explored by Keith Stanovich and his colleagues. For instance, Stanovich (1993) presents evidence for print recognition (briefly, how many book and publication titles a subject recognises) as a measure of ‘secondary’ literacy and argues that using such a factor provides a very efficient means to get a handle on the cognitive correlates of literacy while staying within literate populations. Additionally, different educational environments also engender different approaches to cognitive tasks, as Miller’s work on mathematics learning in China and the United States reveals (Miller, Kelly & Zhou, 2005). Even within undergraduate subject in different disciplines (humanities vs sciences) we might expect to see differences in response on the kinds of task reported on here. Paired with further experimentation, ethnological studies of literate environments are needed. Case studies of particular interactions with texts, such as reported in Camps and Milian (1999), enable us to get behind the platitudes of saying that literacy impacts on language perception, and identify mechanisms fundamentally shaping cognitive behaviour.

Further research with unschooled subjects would benefit by being coupled with interrogation of the language perception of such subjects, as Kurvers (2002) did with her subjects. However, suitable tasks for this are not readily to hand and here borrowing from the anthropological literature might prove fruitful – for instance Feldman’s (1993) extended exploration of the role of interpretative processes in different ‘linguistic jobs’ across cultures could yield as yet unexplored routes of access to such notions in further empirical work. This would enable experimenters to get a better grip on the possible interpretations their subjects are taking and thus have a more accurate semantic analysis of the task from the perspective of such subjects.

Someone who is sceptical of the whole linguistic basis of the tasks done here might want to see non-linguistic tasks developed, to tease out the consequences of literacy on cognition apart from those which we access via language. This seems to me to be a very difficult task, because, firstly, representational conventions may be literate although not textual, as we saw with the Raven Standard Progressive Matrices task (Kurvers, 2002) which is intended as non-linguistic and yet which stymies unschooled subjects and fails in its goal of measuring non-verbal intelligence in such a population. Indeed, the whole paradigm of an experimental task is closely linked to an educational testing paradigm, as such it might be inescapably bound with literacy acquisition (in school contexts). Moreover, some tasks are inescapably linguistic; I wouldn’t know how to design a non-linguistic
equivalent of complex arguments, such as full syllogisms, with two quantified premises. Granted, these are also difficult to test with purely verbal interactions, but in combination with physical objects – such as in Haan’s ball-in-the-box task, discussed in Chapter 2 – one can plausibly get much further than by aiming for a purely non-linguistic paradigm, insofar that can be achieved at all.