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## Literacy and democracy

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### ABSTRACT

It is argued that literacy and democracy interact in dynamic reciprocity. Their mutual influences may be either positive or negative: they are negative when literacy, unequally distributed, is reduced to mere skills (even if these are highly sophisticated), rather than conducive to free, argumentative and critical thinking, inspired by humanist values. Furthermore, in the case of pseudo-democracy, when elections said to be free replace well-informed public debate and collective decision-making, as well as the people's control over such decisions. The development of a democratic intentionality is claimed to be the key to reversing the current tendency to a negative dynamic. The paper also describes and discusses the historical development and present situation of literacy and democracy worldwide, their impact throughout human history and, at an individual level, the impact of literacy acquisition/development on the mind and brain.

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## Introduction

The present paper on the interaction between literacy and democracy is an attempt to develop a conceptual framework and a theory that accounts for the empirical evidence while also stimulating social and political change in support of literacy and democracy. Indeed, almost 6000 years since the invention of writing, literacy, our crucial means of production and expression, remains the privilege of a small minority of our conspecifics. It will be argued that pressuring governments to make literacy accessible to all human beings is necessary to spark a dynamic interaction between literacy expansion and social, economic and political democratisation all over the world.

Yet literacy and democracy are ill-defined words, with multiple, inconsistent meanings. I begin by examining “democracy”, which, although more familiar than “literacy”, is probably the most equivocal of the two.

## Democracy and pseudo-democracy

The word “democracy”, from the Greek “demos” (people) + “kratus” (rule, strength), was imported to English in the eighteenth century via the fourteenth century French word “démocratie”. It designates, according to an optimistic political definition, the “government of the people for the people and by the people” (D. Webster, A. Lincoln) or, according to my understanding of contemporary “democracies”, the attribution of the right to govern all the people to a group of individuals, by

some section of the people and for the profit of an even smaller section. For this reason, I hereafter use democracy to denote its ideal meaning, and “pseudo-democracy” to designate its actual implementation, where, like a pseudo-word falling short of meaning, there is only the unfulfilled promise of democracy.

Democracy has never existed in any country. In Athens, the great decisions were made by no more than 10% of the population, the free male citizens; in reality it was even less, given the low literacy of many of them (only children from rich families could be instructed in school, Pébarthe, 2006), and the dominance of rich, literate tribunes. Examples of local democracy occurred in the early Middle Ages within rural communities serving the nobility and the king, and more recently in Paris with the self-organisation of the Paris districts after the 14th of July 1789 (Genty, 1985) and the Commune in 1871 (Ross, 2015). The latter represent the most crucial feature of democracy: “power to the people”.

Democracy is understood to mean free elections for political functions. The problem is that the choice is not free. It is restricted in four important ways.

First, there are strong constraints on electoral rights: many people cannot take part as they are not citizens, although they live and work in the territory; and in most countries, citizens can only be candidates if they belong to a party. Second, “particracy” dominates political life: The parties are hierarchical and centralised organisations in which professional politicians pursue their own

interests and those of economic groups. Third, the manipulation of information by a mass media dependent on wealthy individuals can easily determine electoral outcomes. In the UK in 1997, a secret agreement with R. Murdoch, owner of *The Sun*, allowed Tony Blair to be “elected” against John Major (Ladd & Gens, 2009). In the USA as of 2010, corporations and millionaires are permitted by the Supreme Court to invest unlimited sums of money in the campaigns of candidates they support (Jorion, 2013, p. 72). Finally, to guarantee the perfect functioning of these mechanisms, a large section of society is maintained in a state of no or low literacy, which prevents them from processing the information necessary to participate freely (that is, from a position of complete understanding) in the election of their representatives. The double myth that elections are free and that free elections make a democracy is maintained by the dominant wealthy (and literate) portion of the society.

What happens after elections? Who determines the policies: the average-earning citizen or the economic elites and interest groups? The analysis of a USA survey of public responses to a favour/oppose question about each of 1779 proposed policies between 1981 and 2002 (Gilens & Page, 2014) showed that the general public had a near zero independent influence on policy change. In contrast, both economic elites and organised interests groups had a substantial impact. Cases in which the “average voter” and the elites and organised groups made the same choice could be due in part to the “considerable effort (of the latter) to shape opinion”. According to the authors, “the majority does *not* rule (...), when fairly large majorities of Americans favour policy change, they generally do not get it”.

The discrepancy between the average citizen’s policy choices and those actually made by governments can exist because there is no popular control, either of representatives’ actions or of governments’ actions. Rosanvallon (2015) argues that, from the nineteenth century to the present, there has been a tremendous displacement of power distribution, namely from legislative to executive power. The executive power does not execute; in fact it governs. Both the parties and representatives have become machines or bodies to support a personalised government power, totally out of the people’s control.

As argued by Searle (2010), there is a “background” power, an ensemble of social pressures over individuals that is largely unconscious and that, by modelling their beliefs, may lead them to behave against their desires, including accepting to die for their country. In addition, the “background” power may present these “as the only available (options), thus leading subjects to want something they would not have wanted had they

known other options were available” (p. 147). If this does not work, as a last resort against subversion of the installed plutocratic power, all pseudo-democracies, like assumed dictatorial powers, avail of repressive forces to maintain the system: the police and the armed forces. “Perhaps the most important key (of preserved power) is that governments typically have a monopoly on organized violence” (Searle, 2007, p. 96). Indeed, whenever pseudo-democracy is in danger, these services are called upon. When the Parisian students radicalised their movement in May 1968, de Gaulle first used the police. Then, he visited the French Army located in West Germany as a clear sign that, if necessary, he was prepared to give it the order to act.

To understand the current wide acceptance and valorisation of what are merely pseudo-democratic institutions, it is necessary to take into account the history of political ideas and the efforts of the West, since the end of the Last World War, to base democracy solely on the two pillars of “free” elections and “human rights”, the utmost of universal values. Having already commented on “free” elections, one sentence will suffice on human rights. It is indeed crucial to recognise that humans have rights, but one of them is not to be humiliated by declarations known by everybody, including those who make them, to be contradicted by the real facts.

### **How the hate of democracy turned into “democracy” love**

Today only historians and a few others know that the fathers of North-American independence and the main ideologists of the French Revolution were anti-democrats. In their view, democracy corresponded to direct democracy, the most horrible system, because the masses are ignorant, irrational and violent. John Adams wrote that democracy is arbitrary, tyrannical, cruel, that the people cannot act, judge, or think (letter from 1807; in Adams, 1972). According to Thomas Jefferson, the main writer of the Declaration of Independence and the third USA President, the government must be the privilege of a talented and virtuous “natural” aristocracy (letter from 1813; in Wiltach, 1925). As Furet and Halévi (1989) reported, Barnave, deputy at the first French National assembly said in 1791 that democracy represents what is more odious, subversive and harmful for the people itself; and Sieyès, arguing that the people are unable to govern themselves, claimed that they cannot speak or act other than through their representatives.

Those historic politicians were not naive, they knew exactly for whom they were working and what could

serve them the best. They considered themselves to be a natural aristocracy based on virtue and talent. For Hamilton, in all communities, there are the rich, in small number, and the poor, the people, who are much more numerous. The poor are unstable and jealous, and it pertains to the rich to govern and control them. For Adams, the destiny of the poor is work, whereas the rich are qualified for superior functions. According to Governor Morris, give the poor the right to vote and they will sell it to the rich who can buy it (Farrand, 1966). For James Madison, democracies are incompatible with personal security and property rights (Hazen, 1964). In France, the main political actors were aware that the principle of representation was a fiction. For Robespierre, “it was only by a fiction that the law expresses the general will”, and to Rousseau “the will cannot be represented (...) as soon as the members of the Parliament (in London) are elected, (the people) is slave, is nothing” (cf. Dupuis-Déri, 2013).

The notion of democracy began its transformation from hell to heaven from around 1830. Political marketing operation took place, first in the USA, and later in France, until eventually, democracy became a highly positive concept. The so-called representative democracy was pacifist, reasonable, respectful of differences. Since the end of the Second World War, with the USA leading the way, democracy has been and continues to be the key word of an intensive ideological campaign, formerly in the context of the cold war with USSR, and now of the tepid and somewhat hidden war with China and Russia. In Europe, pseudo-democracy, while allowing free expression and association to a great extent, only formally represents the people’s will. In reality it does not. As stated in a colloquium at the Royal Academy of Belgium, “The jammed democracy”: “Democracy, without the slightest doubt, is definitely chained, faced with the power of money” (Jorion, 2013, p. 73).

Having argued that contemporary “democracy” is actually pseudo-democracy, one might expect me to delineate what precisely democracy is, or what it should be, given that there is (still) no place where it exists. However, democracy is not a state but a process, and therefore it cannot be pre-defined. Only potential trends can be discussed. My hypothesis is that, in our literate society, democracy is not independent of literacy. Thus, before I go further, I will focus on literacy vs. illiteracy and on the literate/illiterate mind.

### Literacy and illiteracy

The definition of literacy and illiteracy has changed throughout history, and today, there is no definition

that would reach universal agreement. A few centuries ago, illiterates were those who could not put their signature on a contract, so for statistical purposes, those who could do so were counted without further verification among the literates. For the United Nations (UN), to be considered literate, a person only needs to read and write a very short and simple statement, typical of a low level education. If that were all a person could do, I would rather call him/her semi-illiterate.

In Morais and Kolinsky (2005, p. 188), we defined literacy as “the ensemble of representations and processes that an individual acquires as an obligatory and direct consequence of learning to read and write”. I now think that this definition is essentially correct from a strict cognitive perspective, but that it leaves aside all the non-obligatory and indirect consequences on the individual’s mind, which also have affective, social and political dimensions.

Concerning the cognitive dimension, I now take literacy, both alphabetic and non-alphabetic, as a capacity that includes, at its basic level, the skills of reading and writing, and that, at increasingly higher levels, supports productive, argumentative and creative activities. Actually, the continuum from illiteracy in adolescents and adults (or from pre-literacy in children) to full literacy masks the huge diversity of expression shaped by writing system, culture, personal experience and idiosyncrasy. However, some categorical distinctions must be made to reflect qualitative jumps in the literacy learning process and in the accomplishment and usage of literacy.

Indeed, in the individual, learning to read and write proceeds through a succession of stages. In the case of the alphabetic writing (the one I know and use in this Journal), the learners need about one year – depending on the complexity of the language’s orthographic code – to be capable of controlled conversion of a legal letter sequence into its spoken form, and vice versa. The person who is able to read and write, independently of word knowledge, but without automaticity, is an *alphabetic or alphabetised reader and writer (alphabetisé in French)*, not yet a literate (*lettré*).

I consider as literate the person who can read and write *in a predominantly automatic way* all words (isolated or in text) that are consistent with her or his level of spoken language and knowledge. Automaticity in reading and writing refers to immediate and direct access to the phonological and orthographic word forms, respectively, through complex but non-conscious processing. This is *Level-1 or productive (alphabetic) literacy*. I presume that automaticity is also a convenient criterion to classify as literate someone who uses one of the other writing systems, but leave this classification to the relevant experts. I call this first level productive

because literacy is not just a skill. It also involves the use of this skill to acquire knowledge (through reading) and convey it (through writing). Those who have not automated reading and writing and do not regularly use their unconsolidated skills may tend to become semi-literates or even functionally illiterate. In the UK for example, this may apply to approximately 7 million people (20% of adults adolescents, World Literacy Foundation, 2015, p. 12). I must acknowledge that we are still ignoring the learning conditions that make literacy skills immune to, or on the contrary affected by, a subsequent lack of practice.

Literacy may allow more than the mere understanding and written transmission of information. Literates may be able, by analysing and linking information (facts, judgments, concepts, ideas) from different sources, to critically evaluate what they read and express this coherently in print, a capacity that is crucial to being active participants in democracy. I call those people *Level-2 or argumentative literates*. Finally, literacy may also be used to create knowledge (as in the case of, for example, scientific literacy) or literary narratives, poems, philosophical ideas, etc. These creative activities are typical of *Level-3 or creative literates*, which nowadays comprise only a very small proportion of people.

In the global population, in 2014, 14.7% (758 million) of our fellow humans aged 15 years or more (10.8% of men and 18.5% of women) were illiterate in the sense that they did not satisfy the above-mentioned UN definition for literacy. Together, Southern Asia and Sub-Saharan Africa now account for 77% of the illiterate adults, and the overall decrease in adult illiteracy since 2000 has been small: 4% (UNESCO, 2016a). However, the validity of these data is in some doubt: the last time literacy was assessed, it was through household or self-declaration in 53 and 76 countries, respectively, through “estimates” in 5 and through literacy tests in 23 (for many countries there is no information). The question “Can you read and write?” is commonly used in the surveys mentioned above. “In most countries, there are no other measures. Answer ‘yes’ and join the ranks of the so-called literates. Answer ‘no’ and you are considered to be illiterate” (UNESCO, 2016b).

The UN data are extremely poor at explaining how well people read and write, amongst those who have attended school. We ignore exactly how many can be estimated to be at least productive literates, which would allow them to engage in literacy-demanding professional activities, or argumentative literates, which would allow participation in democratic debate. However, the PISA reports on 15-yr-old adolescents, promoted by the OECD, provide interesting information that

we can appreciate once we match the PISA’s scale with what I call productive and argumentative literates.

The last accessible OECD (2016) report is relative to 2015. Reading comprehension was estimated through a battery of tests that positioned adolescents on a 7-level scale, from 1a, the lowest, to 6. Taking the average of the 35 OECD countries involved in the study, 57% of adolescents achieved PISA’s level 3: able to identify the main idea of a text, integrate several parts, and understand it in relation to familiar knowledge (corresponding to what I call productive literacy). There were huge between-country differences: from only 25% in Mexico to 72% in Finland, with USA and UK being close to the mean). More demanding were the criteria for PISA’s level 4, corresponding to what I call argumentative literacy: (a) being able to interpret the meaning of nuances of language in a section of text by taking into account the text as a whole; (b) using formal or public knowledge to *hypothesise about or critically evaluate* a text; and (c) demonstrating an *accurate understanding* of long or complex texts whose content or form may be unfamiliar (*italics mine*). The average percentage of argumentative literate adolescents, calculated over the means for those OECD countries, was much smaller: 29%, again with huge differences between them: from Mexico (5%) to Finland (42%), and again USA and UK only slightly above the average. These adolescents were still attending school: if those aged over 15 and adults were to be included, the average proportion of argumentative literates in the OECD would be much less than 29%.

PISA’s level 5 or higher was reached by only 8.3%, with level 6 being reached by only 1.1%. These levels do not necessarily involve creative literacy, but level 5 requires making hypotheses and inferences drawn from specialised knowledge, and level 6 generating abstract categories for interpretations and taking into account multiple criteria or perspectives, which are certainly components of creative literacy.

We, researchers and academics, have the impression, as parts of the country’s literate elite, that literacy is now generalised in the “democratic” world. The UN statistics (UNESCO, 2016a), displaying percentages close to 100% (97.8% of adult literates on the average) for developed countries, reinforce this belief. The truth, however, is that over the world low literacy (below the productive level) is the more typical situation, and high literates are a clear minority. For our shame or satisfaction, we are indeed *the elite*, surrounded by, yet at comfortable distance from the plebs.

To be illiterate in a literate or, more exactly, partially literate society is obviously not the same as belonging to an illiterate society. A modern illiterate adult can

communicate through a cell phone, although it is quite improbable that the cell phone could have been invented had literacy not existed. Anyway, it is worth trying to envisage the total impact the historical acquisition of literacy had on the Sapiens' mind, and, in each case, to ask to what extent this also holds true for the modern illiterate.

## Language and literacy

The cognitive evolution of our species is marked by two great achievements: the first is oral language (articulatory language, perhaps more than 1 million years ago; propositional language perhaps more than 50,000 years ago); the second, writing, and more generally literacy, which began less than 6000 years ago. Both are due to the fact that our species is social, and both have changed our brains, but the former is biological while the second is cultural.

The critical step for the emergence of language was the social learning of the production of unvoiced consonants by the tongue, lips and jaw actions. During evolution, the control of this tract combined with the control of vocal action, responsible for vowels, led to human speech (Lameira, Maddieson, & Zuberbühler, 2014). The articulatory dimension of oral language was crucial for the emergence of inner speech, verbal memory and self-consciousness. Later on, oral language became propositional and triggered or allowed a sort of situational reasoning. But the mental life of the solely oral and of the literate Homo sapiens was certainly very different.

Without oral language, writing was impossible. The purpose of writing was to go beyond drawing and to represent oral language. Like many technological inventions, writing is a case of exaptation of an adapted feature (spoken language; Larson, Stephens, Tehrani, & Layton, 2013). Our ancestors began by inscribing in stone their stylised and emotionally tinted perceptions of the visual world and some abstract dimensions like quantities. Then, they found a way to inscribe objects, ideas, and eventually their oral language, the proper social medium of their ideas and affects.

The historical and the contemporaneous impacts of literacy acquisition have been studied mostly independently, which is understandable, given the differences in access to informational data and the methodologies used in anthropology and in cognitive psychology and neuroscience, respectively. Less clear are the reasons why two such sets of work have been considered as marginal to the understanding of the human mind, and actually completely ignored in many important debates.

One might be tempted to believe that this neglect would be in part due to social and political reasons.

Not because most of the researchers would reject the political consequences of such studies, but because of the generalised purist stance that science must remain uncontaminated by ideology. It should indeed, but one is more likely to respect this rule, while reaching larger and better comprehension, by being aware that all of us, scientists included, are impregnated by our past and present society's cultures. Curiously, biology has endured many more ideological and political debates than psychological science, and those topics that have involved psychologists tend to be located at the frontier with biology.

I think, however, that the main reason is lack of self-reflection. With few exceptions, cognitive science and the philosophy of mind depict the brain and the mind of you, me and of our elite circle (Heinrich, Heine, & Norenzayan, 2010). The most outstanding authors do not seem to be aware that their texts are the outcomes of their minds, that their minds are literate, and that literacy may be more than a simple code of their thought and language. They do not even suspect that they might be prisoners chained in Literacy's cave, confident of listening to unwritten inner speech and of thinking without seeing print, and taking a reflection of literate reasoning as the direct analysis of their minds' objects.

In the last quarter of the twentieth century, the hypothesis that literacy might impact the contemporaneous human mind was (and remains to a large extent) absent from the theoretical debates. The most important debate opposed two theories, namely modularism and interactionism. Both intended to describe a universal and a-temporal mind. In Fodor's *Modularity of Mind* (1983), there is no reference to literacy at all, and in Rumelhart and McClelland's *Parallel Distributed Processing* (1986), although script and reading provided the illustrating material, there is no consideration of literacy as such. Coltheart (1999), in a defence of the modular approach to language, presented spoken and written language as completely distinct modules in spite of the fact that Morais, Castro, Scliar-Cabral, Kolinsky, and Content (1987) and especially Ziegler and Ferrand (1998) had found clear evidence that spoken word recognition is influenced by literacy. These and other instances of literacy's impact on spoken language had been reviewed by Kolinsky (1998), who also proposed a three-stage processing model of spoken words, acknowledging the influence of orthographic knowledge not only on metaphonological judgments but also on speech recognition. Since then, this influence has been largely documented.

According to Pinker (1994), "language is not a cultural artefact" (p. 18), it "is a part of human biology" (p. 24). In this influential book, only three in more than 400 pages

are devoted to written language, which is correctly presented as invented and representing not sounds but the “abstract units of language” (p. 191). However, it contains no mention of the fact that spoken language is modulated by culture and, in particular, by literacy. Likewise, in *How the mind works* (Pinker, 1998), there are only a few minor references to reading and literature and to “the unnatural activity called formal education” in teaching to read (p. 342) and nothing on literacy as such. It is with a different purpose and without recognising a direct impact of literacy on cognition that Pinker (2011, pp. 172–177) attributed an important role to literacy expansion: This would be one of the factors that contributed since the seventeenth century to the decline of violence in the world. Like mind science, the philosophy of mind is literacy-blind. One of the most remarkable philosophers, John Searle (see for example Searle, 2004), portrayed the mind without referring to literacy. In his *literate mind*, literacy is thus a mind-tool that does not change the mind.

This also happens in cognitive anthropology. Sperber (1996) defined culture as made up of “contagious ideas”, those that “propagate so effectively that, in different versions, they may end up durably invading whole populations” (p. 1); however, literacy does not seem to play any relevant part in such a contagion, given that there is nothing in the book about literacy or reading or writing. Similarly, no mention of either literacy, reading or writing is made in the recent *Oxford Handbook of Cultural Neuroscience* (Chiao, Li, Seligman, & Turner, 2016). Yet, given that culture is defined as an organised set of social experiences that, by repeated use in information processing throughout life, forges the individual mind/brain, literacy ought to be considered as a cultural acquisition.

In the classic educational literature, literacy should have played a privileged role, in particular when education was discussed in relation to democracy. In Dewey's *Democracy and education* published originally in 1916, literacy appears only twice: to say that it is often associated with bookishness and to deplore the tendency to equate education with the acquisition of literacy. At that time, literacy was still a recent word in English (derived from the Latin “*litteratus*”, *literate*, it began to be used in 1883), and its meaning changed, but unfortunately to refer to no more than a double skill, namely reading and writing.

Literacy did not become a popular concept either. Harari (2011), best-selling author on the history of mankind, only dedicated a short section to the invention of writing. The unexplained conclusion that “script changed the way humans think and view the world” is illustrated in a desolating way: “Free association and

holistic thought have given way to compartmentalisation and bureaucracy” (p. 146). Perhaps as a cultural effect of the widespread neglect of literacy exemplified above, the concept of literacy has not been attributed the relevance it actually has. Indeed, without literacy one may hardly imagine science, technology, art, institutions, economy and social organisations to have developed as they did in the last five or six millennia.

Below, I argue that all these developments were made possible because literacy contributed to changing the human mind and, in particular, human cognition in a likely constant interaction between the creator and the creation.

### **The impact of learning to read and write on the mind/brain system**

In spite of the scarcity of studies comparing cognitive functions across different levels of literacy, including illiteracy, in adults, three recent general reviews (Dehaene, Cohen, Morais, & Kolinsky, 2015; Huettig & Mishra, 2014; Kolinsky, 2015), and a further one on verbal memory (Demoulin & Kolinsky, 2016) make a detailed analysis here unnecessary.

With the cultural acquisition of writing through intentional learning, readers develop a specific network for reading in a visual area of the left hemisphere called the Visual Word Form (Warrington & Shallice, 1980) or Visual Word Form Area (Cohen et al., 2002). In this area, during exposure to written words or pseudo-words, we observe an increase of activation correlated with the participant's reading ability, and no increase at all in illiterate adults. In contrast, the same area is more activated by faces and objects in the illiterates compared to the literates, and the neural competition due to literacy acquisition in childhood leads to an increase of activation by faces in a homologous area of the right hemisphere of the early literates. Literacy also impacts other areas, in particular, those involved in spoken language and those involved in visual discrimination and mirror invariance. One of the most interesting findings is that, while the mere presentation of either written or spoken sentences activated almost completely distinct brain areas in illiterates, in literates there was a strong modality overlap in both temporal areas (although these still showed a difference favouring spoken language) and frontal regions, which became equally activated by spoken and written language (Dehaene et al., 2010).

As detailed in the reviews mentioned above, literacy modulates several facets of cognition, including semantic knowledge, working memory and executive functions; it installs directionality biases in spatial attention and processing, at least in alphabetic literates but,

most probably, also in literates of other script; and it allows the emergence of new, metalinguistic, representations. In apparent contrast with the brain data reported above, ex-illiterates tend to resemble illiterates, rather than literates, in the more anterior-based cognitive functions. This is the case, in particular, for semantic knowledge and fluency (Kolinsky et al., 2014) and verbal working memory (Morais, Bertelson, Cary, & Alegria, 1986). It is also the case in tasks requiring analytic processing, like visual part detection (Kolinsky, Cary, & Morais, 1987) and attention to absolute vs. relational line size (Ventura et al., 2008) as well as in logical reasoning (Verhaeghe & Kolinsky, 2006).

Therefore, the acquisition of elementary reading skills may be sufficient for connecting, to some extent, brain areas dedicated to written word and speech processing, but, unless literacy becomes productive, the higher cognitive functions do not change or improve substantially. It is important to appraise the differences between the illiterate and literate mind, but it is also essential to determine what is critical in the course of literacy development and the activities that influence central cognitive capacities. This remains to be done for the adult learner and is crucial to assessing how far age constrains mind plasticity.

In any case, what is certainly wrong and disastrous is the myth that for cognitive development, the die is cast by 3 years of age, an idea echoed by Hilary Clinton in an audience with teachers (“when the children begin pre-school the brain architecture is already built”, cf. Howard-Jones, Washbrook, & Meadows, 2012). Were this to be accepted by the teaching community, it would definitively condemn the children of families from the lower class, perpetuating literacy and cognitive inequalities.

### The historical impact of literacy on human language and cognition

I now consider the historical analyses showing how the invention of writing and the historical development of literacy have changed the mind with regards to metalinguistics, discourse and metacognition. Both for the individual mind and throughout history, most of this impact of literacy is not unique, in the sense that it would result from an interaction with cognitive development and with health and material conditions. It is extremely hard to analyse most of these interactions. My intention is thus to point out significant direct influences of literacy.

Without literacy there is no metalinguistics. This has been demonstrated at the individual level, not only for phonemic awareness (Morais, Cary, Alegria, & Bertelson,

1979, and many other subsequent studies), but also for word awareness. For us, literates, sentences are sequences of words in a linear order, even if the words are organised according to a phrasal structure. Illiterates, instead, have a sense of the phrasal units, not of single words. Asked to divide a sentence into words, illiterates actually separate its syntactic constituents (e.g. “The car – stands – in front of the door” is made of 3 “words”; Morais & Kolinsky, 2004). In addition, the lexicon is more extensive and covers more precise meanings in literates than in illiterates (Kolinsky et al., 2014). Obviously, this increase depends on knowledge acquired through literacy in its multiple uses (science, humanities and fiction, mainly drama and literature), which feeds back to oral language.

Similar trends are observed in the historical development of literacy. The advent of print, first in China, later in Europe, contributed to a considerable expansion of the lexicon, illustrated by the publication in 1492 of the first European grammar, in Castilian (Illich, 1980). Parallel qualitative changes have been reported (Olson & Astington, 1990): Among Old English words (before 1150), there were already verbs for speech acts (“say”, “tell”) and mental states (“think”, “know”, “mean”). “Understand” is a Middle English (ME) verb (1150–1350), and thereafter many verbs that involve a specific qualification of what is said or written or a reaction to it were assimilated, directly from Latin or via French (e.g. “claim”, “define” and “interpret”, all from ME, and “assume”, 1436). Later, “predict” (1546), “concede” (1632) and “criticize” (1649) appeared.

Many of these metalinguistic and metacognitive verbs were necessary for discussing or commenting on texts. They are *metarepresentational*: “I believe the author A knows X” implies that I am not completely sure A knows X and that, in contrast, I’m sure that X is true. Astington and Olson (1986) found that grade-6 children still chose at chance, among alternatives, the most appropriate verb to signal what a character said or thought in a story. Metalinguistic and metacognitive knowledge may be interrelated and may require an advanced stage of literacy. It thus seems that without literacy there is no metacognition either. We learned our cognitive concepts (attention, memory, reason, intention, decision, consciousness, emotion, affect, etc.) from texts written by people who thought and attempted to analyse the literacy-based concepts they read in other texts. Literate concepts become objects of thought that remain impacted by literacy. For example, “representation”, by definition, is a conscious literate concept, even if it can be extended to include unconscious representations.

Written language led us not only to interpret but also to literally view language as an ordered combination of



segments (phonemes, syllables, morphemes) and parts (phrases, sentences, paragraphs). We became more adept at coding the linear order of objects and events, and, in addition, more prone to coding relations, attributes and ideas as if they were units, entities, even things.

Literacy, through its emphasis on phonology, made the world of language more expressive, less focused on meaning. Words could be distinguished from their meanings. They became phonological forms. Nowadays, most illiterate adults still believe that “cat” is a longer word than “butterfly” (Kolinsky, Morais, Content, & Cary, 1987). In contrast, literates focus on phonological length rather than on the length of the designated object. More generally, illiterate listening is semantically oriented, as it is literacy that makes listening highly sensitive to phonology. For example, asked whether a target word refers to one among several pictures of objects, the high literates, but not the low literates, look first at phonological competitors, then at semantic ones (Huetting, Singh, & Mishra, 2011).

Literacy also changed our discourse. Our literate mind took time to develop, and it still keeps some features of the previous oral language mind. Several authors have attempted to specify their respective characteristics. As Ong (1982) and others argued, oral language is additive, aggregative, rather than structured and strongly employing subordination. As noted by Chafe (1982), an example of the additive oral style is the creation narrative in Genesis, with “and” initiating almost each proposition (... *And* God said: Be light made. *And* light was made. *And* God saw the light that it was good; *and* he divided the light from the darkness). By contrast, the same passage in The New American Bible reflects a more literate style with extensive use of compound sentences and reasoned subordination (e.g. “when”, “then”, “while”, “how”).

The Homeric poems, which reported events from the Second millennium BC, also offer striking evidence of the oral language style. The Iliad would have been composed shortly before the invention of the alphabet, in the eighth century; the Odyssey 100 years later and fixed in writing in the sixth century BC. In these poems, formula and cliché (set phrases and proverbs) are frequent. In an oral culture, poems and narratives were repeated many times to avoid forgetting.

When no information can be recovered from external repositories like dictionaries and encyclopaedias, it has to be organised in the internal memory according to rhythmic patterns, assonances, antitheses, epithets and functional or thematic relations. In addition, the speed of oral language does not leave much room for creative spontaneity, for avoiding redundancy or for online

ordination and reorganisation. After the invention of the alphabet, texts still displayed mnemonic formulas for many centuries, but eventually this kind of discourse became obsolete (Ong, 1982).

Despite their relative similarity in language, the Iliad and the Odyssey reflect different *inner speech and thought*. In the Iliad, the characters hear the “voices” of the gods, which Jaynes (1977) attributed to a *bicameral mind*: the left hemisphere interprets the thoughts and orders that come from the right hemisphere. In contrast, in the Odyssey, the wily Odysseus (still a formula) does not hear or at least does not obey such voices; there is introspection, sense of will and of the difference between past and future. Jaynes’ hypothesis is highly speculative. Nevertheless, it is possible that such subjective phenomena such as the experience of a non-self source were more frequent in the preliterate Greek because they lacked the executive control characteristic of the literate mind. Even if Jaynes were wrong, the idea that states of consciousness are not the same in oral and in written language cultures remains credible. The analytic nature of scripts may have rendered our thought processes different from those of the preliterate people. The alphabet, by separately coding vowels and consonants, introduced a highly analytic and abstract representation of speech sounds, and other writing systems acted similarly: the Chinese by distinguishing morphemic and phonetic information, the Japanese by noting the morae, and the Semitic ones by using the same character for syllables starting with similar articulatory configurations.

Writing also made the combinatorial properties of words into phrases and sentences more transparent. Although grammar is much more constrained in the written language, it is also much richer and became, itself, an object of analysis. Thus, writing allowed the development of a more conceptual, rather than situational, kind of thought, served by a language in which meaning, in the absence of full context, depends upon linguistic structure. With the advent of literacy, thought became not only analytic, but also autonomous.

By separating the utterance from the utterer and the assertion from the situation, literacy promoted a kind of thought based on objectivity instead of subjectivity, on logical analysis instead of on global resemblance. The potential anonymity of the product made it independent of the producer. Through a boomerang effect, impartial analysis of the product elicited an effort of self-analysis leading to a new, interiorised form of consciousness. In other words, as the mind became literate, it created distance from itself. This kind of consciousness would have been impossible without literacy. It may have been at the origin of a solipsist or egoistic stance,

but also of a greater openness to the interaction with other minds and a deeper sense of sharing and community belonging.

Such self-analysis and openness to other minds allowed the development of a particular kind of literacy, the literary one. In literature and drama, fictitious people are “characterized” in a “round” way (Forster, 1927), that is, in complex figures with salient and dynamic traits. For us, the readers, they become cognitively and affectively *like* real people. For their creators, the writers, they are the others of themselves with whom they play a secret communication game.

### Literary literacy: its origins and impact on language, mind and self

Recently, there has been an increase in work on the impact of literary and fictional literacy on the mind and on its corresponding brain bases, showing impressive effects on personality, self-evaluation, theory-of-mind (TOM), social skills, empathy and other affects (Djikic & Oatley, 2014; Mar, 2011; Mar & Oatley, 2008). However, are these effects specific to literary fiction or can they also be observed in plays and films?

Obviously, written narratives have their own cultural evolution throughout history, in terms of genre, focus, structure, style and themes. Their origins can be found in quite ancient oral narratives made possible by the emergence of conversational speech a few thousand years ago. The Grimm’s tales, for example, can be traced back to an original “archetype” from the Bronze Age, spread across societies through trade, migration and conquest (Graça da Silva & Tehrani, 2016; Tehrani, 2013). Most of the African tales can be classified as variants of “The Wolf and the Kids”, and the East Asian tales may have evolved by blending elements of this tale and of “Little Red Riding Hood”. Presently in many East Asian countries, a group of siblings spend the night in bed with a tiger or monster who pretends to be their grandmother, while in central and southern Africa a girl is attacked by an ogre who imitates the voice of her brother. It is not surprising that narrative stories should be universal, as they derive from human sociability and provide useful simulations (models) of the self in its social group.

Probably between 50,000 and 30,000 years ago, humans began painting and making ornaments, thus externalising perceptions and mental states. This behaviour may have provided the basis for establishing correspondences (symbols and metaphors), creating myths (about gods or other non-natural beings) and telling stories (that are not true but could be) involving characters with human aims, emotions and actions, and

proceeding according to a plot. All of this is present in literary literacy, but was already there before writing had emerged.

With the invention of writing, oral and written language came to be combined in both play and opera and, in the long term, may have modified one another as a consequence of their inherent reciprocity. Literature and cinema allow the revisiting and potential reinterpretation of invented mental worlds in text and image, respectively. The novel in particular has created polyphonic contrasts of perspectives between author, character(s) and possible narrator(s) that real voices would be unable to compose. These silent voices speak to us in the hearing areas of our brain. When people read a text for comprehension, their voice-selective brain areas situated along the posterior and middle parts of their superior temporal sulcus are selectively activated by passages that include written direct speech (e.g. “he said: we really need those data”) compared to indirect speech (“he said that they really need those data”). Direct speech also elicits more activity in occipital and parietal areas, probably due to the greater recruitment of associated visual images (Yao, Belin, & Scheepers, 2011). Further work should specify the neural cues related to the literary use of indirect speech.

The use of rhetorical devices is not exclusive to literary writing. Figures, like metaphors and metonymies, are present in spoken language, but creative ones are considerably more frequent in literary writing. Fictional literature and poetry are free to make unexpected violations of conventional linguistic rules. Shakespeare’s words, for example, are full of these violations. As Keidel, Davis, Gonzalez-Diaz, Martin, and Thierry (2013) illustrated in their study called “How Shakespeare tempests the brain ...”, Iago, talking about Cassius and Desdemona, used in the same sentence the expression “to lip (a noun used as a verb) a wanton (an adjective – meaning luxurious – as a noun) in a secure couch”. The authors contrasted written sentences including the normal syntax, “he was married to a kind and beautiful woman” to the syntactic violation, that creates a surprise effect and a need for re-evaluation, “he was wived (from wife) ...” In the reader, this yielded increases in the right-hemisphere homologues of language areas typically activated by grammatical processing (the inferior frontal gyrus) and by lexical-semantic integration (the fusiform gyrus). Yet, as the authors acknowledged, “it is likely that (the rhetorical devices) elicit similar effects in the listener’s brain”. Indeed, such texts had been written to be played.

The concept of *literary awareness* has been proposed for referring to the capacity to consider, manipulate and derive meaning from complex text. O’Sullivan, Davis,

Billington, Gonzalez-Diaz, and Corcoran (2015) derived a proxy measure of literary awareness from the shared variance of the degree of poetic recognition (difference in the participants' ratings for poetic and prosaic pieces) and the need for reappraisal perceived by participants when the pieces ended unexpectedly. This measure was compared against the neural responses obtained when poetic and prosaic pieces were read for comprehension, and was found to modulate a number of regions belonging to Central Executive and Salience networks. The latter includes regions connected to interoceptive awareness (insula, amygdala, thalamus, hypothalamus, etc.) and allows the orientation of cognitive resources to online representations of motivational significance. When there was a need to update meaning, there was also an activation of the anterior prefrontal cortex and the salience network. Again, listening and reading were not compared, and I would not expect them to lead to qualitatively different outcomes. However, if literates and illiterates had been compared on listening, one may presume that literates would have been much more efficient in updating meaning, due to an influence of literacy on the memory and reasoning capacities needed for resolving the unexpected ending of a piece.

One plausible hypothesis concerning literary fiction is that reading has a specific focus on implicit meanings and an influence on ToM, given that it takes different viewpoints of the reality through the consciousness of the characters. Because the characters' personalities and intentions are neither stereotyped nor apparent, their interpretation requires an inferential and integrative effort, whereas in popular fiction the characters are consistent and predictable. Kidd and Castano (2013) contrasted the effects of these two kinds of fiction on both cognitive and affective ToM measures (e.g. whether the character will behave according to their own false belief or the participant's true belief and identification of facially expressed emotions). Performance on ToM tests was better after literary reading than after popular or non-fiction reading or no reading at all. However, it must be noted that the possible influence of stylistic and aesthetic aspects was not taken into account. In fact, it has been shown that metaphors create intimacy: When people read short texts involving interlocutors who are friends, and when one of the characters uses metaphors, the friends in the story are perceived as being in a closer relationship and their experience is rated as significantly more emotionally intense than when the character uses a literal counterpart (e.g. Bowes & Katz, 2015).

As reading increases the ability to adopt the perspective of others, it also improves out-group attitudes by reducing prejudice: this would be "the greatest magic

of Harry Potter". The paper so titled reported reading these popular best-selling books improves attitudes towards stigmatised groups such as refugees or disabled people (Vezzali, Stathi, Giovannini, Capozza, & Trifiletti, 2015). Indeed, literary literacy has the greatest impact on the mind by representing and interiorising, through fiction, otherness and universal deep desires and conflicts like sex, love, power and possession.

### **A final word on the cognitive impact of literacy**

Literacy affords much greater cognitive power in situations which are, cognitively, highly demanding. We do not know to what extent and until which age acquiring literacy in adulthood, in the context of the literate society, allows ex-illiterates to fully develop the capacities characteristic of early literates, but there are reasons to believe that their functioning would at least greatly improve. I knew an ex-illiterate quite well who fought the dictatorial regime in Portugal and learned to read and write in jail. I testify that, having practiced these skills every day, he became capable of reading and writing at a very high level of expertise. We had to prepare a political manifesto together and frequently discussed the sentences and words most appropriate to the message, diverging sometimes on the ideas but not on grammatical structure.

Regarding desires, emotions, affect and agency, the Homo sapiens obviously had all that before inventing literacy, but probably not as today because they were linked to different situations, events and social relationships. Literacy allowed their expression under different forms and on new objects. As researchers, we spend most of our time reading and writing, and we have needs and feelings that we would not have if we were not literate. Today, the hundreds of millions who are illiterate do not suffer or exult as we do when we read or write scientific papers. We ought to think it not fair, leaving them totally deprived of such experiences.

The questions now are: should we leave all illiterate adults to remain illiterate, or should all of the governments around the world teach them reading and writing systematically, based on the cognitive science of literacy? And, why do governments not do this? To answer, we must specify what democracy is and the reasons why pseudo-democracies are unwilling to promote universal literacy.

### **What is, or should be, democracy?**

Democracy is freedom for all. It is what has so often been proclaimed with beautiful words unmatched by social

reality: Liberty and equality. (Freedom and liberty are currently used as synonyms. I use freedom in the sense of the power – and right – to act, including thinking and speaking, without restraint or hindrance, and liberty as the state of feeling and acting freely.) By saying that democracy is freedom for all (which does not imply the individual having all freedoms) one excludes from democracy unequal status with respect to law (for example, concerning association rights) and unequal social relationships (slavery, which still exists, and salary employment, which is based, for the constrained side, on the necessity to work to live, and for the constraining side on the advantage of keeping a part of the value created). In principle, not all unequal social relationships involve a constraint, that is, trainer–trainee or physician–patient. Similarly, concerning the employer–employee relationship, not all cases involve a constraint. However, the basic form of the employer–employee relationship in the capitalist society, where the only equality concerns the amount of money paid and received, is “legalised” by the contract “make me richer if you want to survive”. This is ethically unacceptable and is a social violation of freedom; thus, it is anti-democratic. Capitalism, or any other system leading to an antagonism between the rich and the poor, is incompatible with democracy (as clearly enunciated by Plato in “The Republic”, democracy appears when the poor kill some of the rich, expel others and share the public charges with the remaining). This is an issue to examine later in relation to literacy. The important point to keep in mind now is that, together with freedom, equality is crucial to democracy, provided equality does not threaten diversity, either in social relationships or personal development.

As democracy is an ideal, it is premature to discuss the corresponding political institutions, for example, deliberation by consensus or by informal or formal majority. What is urgent is to reflect upon the democratisation process. This depends largely on the expansion of literacy, on a better understanding of what literacy is or should be and on the role that educational institutions or communal associations will play. Obviously, any programme for such a democratic-oriented development of literacy will hurt the anti-democratic elite who do not like generalised literacy because literacy kills the elite. If all people join the elite, there will no longer be an elite, and the elite will not accept suicide. They will do everything they can to stop the expansion of literacy, which I believe to be an essential part of the democratisation process. I thus attribute to the elite, or more exactly the power that protects the elite, an anti-democratic intentionality. At this stage of the democratisation process, it is urgent, against that intentionality, to

specify as best we can and encourage a democratic intentionality.

### Democratic intentionality

Contrary to the official discourse that “democracy” (pseudo-democracy) is the best possible political system and is here to stay forever, it is typically one of the most, if not the most, contested political terms in its own essence (Boromisza-Habashi, 2010). “Democracy” is contested on the basis of a “moral concern for the community” and the use of the term is, in itself, a “norm violation” “falling outside the zone of acceptable variability” (p. 283), which is exactly what I have been claiming (Morais, 2013, 2014, 2016). Indeed, “essentially contested concepts (...) tend to exacerbate social divisions along moral fault lines” and this is intentional (Boromisza-Habashi, 2010, p. 283).

Real democracy is the object of a moral desire. I place myself among those who make a strong “affective defence of rhetoric” in the politics of cognitive poetics (Gruber, 2016). Gruber refers to the recent neuroscientific literature of rhetoric demonstrating the physiological effects and affects elicited by spoken language. He recalls, against Rousseau, the occurrence of biases against affectively adverse outcomes and towards positive views, and given that “affect cannot be neatly divided from rationality” he proposes that “the strategic use of emotions and affects generated from specific rhetorical features is not necessarily damaging to the democratic process; quite the opposite. Affects and emotions are unavoidable and needed for deliberation” (p. 40). Gruber mentions Martha Nussbaum (2013, p. 3), who asserted that shame, sacrifice and sympathy are “great help in getting people to think larger thoughts and recommit themselves to a larger common good”; and Preskill (2014, p. 1), who stated that “love, in particular, grants people the imaginative and motivating engagement with others that helps to make sacrifice and social activism possible”. Gruber (2016, p. 41, author’s italics) adds that “some words might generate greater feeling, but the likely result of rhetoric intervention is a populace *experiencing* various perspectives just as much as engaging in logical evaluations – and, in fact, *feeling* arguments whether they like it or not”.

It is the people who, by being active or passive, make history as well as their social and political entities: state, government and institutions. Individuals have both knowledge and affects. Knowledge and belief may determine the sense of an active engagement (or no engagement) but are insufficient to trigger it (when it happens). The engagement or not is the consequence of a concurrence or confrontation of desire and affects, and

sometimes passion (Lordon, 2016). To put all these concepts under a single heading: intentionality can be defined as “the features of minds by which mental states are *directed at* or *about* objects and states of affairs in the world” (Searle, 2006, p. 56). The important point in the present context is that “in addition to individual intentionality (...) ‘I desire’, ‘I intend’, ‘I believe’, there is also collective intentionality (...) in the form ‘we believe’, ‘we desire’, ‘we intend’” (p. 56). The latter concept requires explanation. Indeed, “if all the intentionality I have is in my head, and all the intentionality you have is in your head, how can there be such a thing as collective intentionality?” (Searle, 1998, p. 149). Searle is opposed to a reduction of “We-intentionality” to “I-intentionality” on the basis of something that can be observed when people, together, act in the same direction: “I believe that you believe that I intend, and I believe that you believe that I believe that you believe that I intend ...” But, as “my poor brain will not carry that many beliefs”, the answer to the above question is that:

we can have intentionality in your brain and my brain, which is in the form of the first person plural as much as we can have it in the form of the first person singular. (...) I don’t have to reduce that to “I intend” and a set of mutual beliefs. On the contrary, I have the “I-intends” that I do have, precisely because I have an irreducible “we-intend.” (...) I am indeed playing the violin and you are singing the soprano part, but I am only doing what I am doing and you are doing what you are doing, because we together are collectively playing the chorale movement of Beethoven’s 9<sup>th</sup> symphony. (pp. 149–150)

To Searle, the constitution of social reality and of political power can be explained not only by recourse to the concept of collective intentionality but also by recognising the role of language. Indeed,

language is partly constitutive of all institutional reality. In order for something to be money, property, marriage or government, people have to have appropriate thoughts about it. But in order for them to have these appropriate thoughts, they have to have the devices for thinking those thoughts, and those are essentially symbolic or linguistic devices. (Searle, 2003, p. 12)

I do agree, but must comment that language is too general a concept and that, for the author of *Speech Acts*, “language” may refer to only spoken language. The present analysis of social reality is indeed achieved by a linguistic mind, but more specifically by a literate one. The linguistic devices that these thoughts about institutions require have been modulated by literacy and recurrently expressed through it.

Above, I first referred to the concept of intentionality, and then to collective intentionality, which is crucial for

social relationships. Now it is time to specify democratic intentionality, which is an instance of collective intentionality. Collective intentionality can be, or rather has been, and is very frequently, anti-democratic. Capitalists and the politicians who are partisans of capitalism, even competing among themselves for personal or party interests, are able to make mutual agreements that favour their common privileges. In my view, the specificity of democratic intentionality is that the “We-intend” aims to increase the power of the demos, that is, the collective capacity of the people as a whole and in an equitable way for all its members, that is, when society is represented in this intentionality as a “social totality” to which the individual can contribute (see Popp, 2011). All people possess language, which makes social life possible, but not all people are literate, and the large majority does not develop the full literacy to enable critical examination of concepts and ideas and elaboration of new proposals. Hence, people with low or no literacy can share democratic intentionality but, in normal circumstances, out of revolutionary periods, their contribution is in principle less productive than that of full literates. Expanding and developing literacy must be considered as crucial to democratic intentionality and consequently to democratisation.

Six stages can be distinguished in the exercise of power: information, debate and decision; after which come implementation, execution and control. The people must be fully informed and participate collectively in debate, decision and, finally, control. At these four stages, it is crucial that all the people intervene, and to this end, they all must be argumentative literates. The democratic process depends on the strength of democratic intentionality, and this depends on our capacity, on the one hand, to get governments to cease privatising education and begin organising public literacy education on democratic principles and, on the other hand, to organise, ourselves, popular associations and cooperatives for stimulating literacy by all means possible everywhere.

The Plato’s dilemma of having to choose between the society being governed by knowledge or by the citizens holds true for pseudo-democracy. But it does not apply to democracy or movement towards it. As stated by Canto-Sperber (2013, p. 258):

the claim of education for all (...) became the democratic claim by default. Democracy, in terms of education (which we can replace by literacy), takes then two complementary senses, give education to the people and the power to the instructed (literate) people.

The problem is that “only a small part of secondary school graduates ingresses in higher studies, and

among these, only a group of privileged accesses the elite's courses". Actually, this educational failure has its origin much earlier, in kindergarten.

Where there is democratic intentionality, there is also an opposite pseudo-democratic intentionality. With some ingenuousness, Van Parijs (2013, p. 55), economist and philosopher who revised the class struggle theory by changing the capitalist-proletarian antagonism into workers vs. unemployed, wrote that one crucial reason for "the superiority of democracy (...) is that it is a mechanism of political decision that forces the elite to glean information". Indeed, pseudo-democratic intentionality has a restricted purpose: literacy and knowledge are crucial but for the dominant elite.

To state the main idea in a nutshell: neither literacy nor democratic intentionality *alone* can put humanity on the democratisation track. Fortunately, literacy may help, but does not guarantee democratic intentionality; and democratic intentionality is too weak without literacy. Humanity needs both.

Today, due to the increasing social abyss between the 1% rich and the remaining 99%, thanks to the stubbornness of big financial pathological gamblers, the old liberal pseudo-democracy is sinking, if it has not already sunk. In the West, a large proportion of the people either turns its back on the pseudo-democratic rules and institutions, accepting to be governed by parties, lobbies and media coalitions, or calls for demagogic and reactionary dictatorships. Both kinds of intentionality, one individualist and apathetic, the other populist and infuriated, have been made possible because the elite persists in refusing the new generations argumentative literacy and an education in ethical values. The elites who, fearing the people, feel nostalgic of the liberal pseudo-democracy would do better to understand that they have been responsible for its failure. The crucial question is whether the younger generations can develop a democratic intentionality, realised in a consistent programme of political mobilisation. To succeed, this programme should obviously include extensive communal literacy education.

### The social history of literacy

Literacy was created in societies characterised by great inequality. It was restricted to a small minority and helped to consolidate their power. Nobles and priests formed an oligoliteracy (Linell, 1982) that benefitted from the mystery of writing to strengthen their supremacy over the people. In Europe, circa 1550, less than 20% of the people were literate, and most of these were very low literates. In one century, elementary literacy expanded to slightly more than 50% literates in

England and the Netherlands but was still around 30% in Germany and France. At the beginning of the twentieth century, more than 90% were literate in the Netherlands and Sweden, 80% in England and a little less in France and Germany (Roser, 2016). These variations reflect technological development, the need for professional qualifications and cultural factors. Importantly, these averages hide the fact that, for example in England at the beginning of the eighteenth century, there were three times more literate men than women, a difference that disappeared only by the end of the nineteenth century (Clark, 2007).

What are the relations between literacy and democracy or pseudo-democracy? During the brief democratic episode of the Paris Commune, public school education had been declared obligatory for both sexes and free of charge. In pseudo-democracies, education and literacy are formal rights, though illiteracy and low literacy are common. This is because it is crucial for pseudo-democracies, and consistent with their nature, not to offer universal literacy, especially high literacy, culture and critical thinking. Pseudo-democracies cannot ensure freedom, not in the sense of freedom to accumulate capital and increase richness, but of living and determining his/her actions through knowledge and rational comprehension acquired through the exercise of critical thinking.

Literacy is crucial for obtaining this kind of freedom. Because pseudo-democracy is incompatible with freedom for all, it is also incompatible with literacy for all. The founders of liberalism thought it necessary to build the "freedom" of their class through the lack of freedom of the large majority. Ten of the first 14 presidents of the USA, most from Virginia, were important slave owners. Before them, John Locke had made the apology for slavery. As owner of assets in the Royal African Company, he invested in slave traffic and was therefore highly interested in the expansion of white colonies in North America. While condemning the absolute power of the monarchy over the elite, he legitimised slavery and proposed laws to make poverty profitable for the rich. For more than two centuries, the development of capitalism in England benefitted from gold extracted by black slaves. The individual freedom of liberalism was hostage to a system based on both slave and waged labour. Literacy would be dangerous in that system. The slave owner, who had the right to kill his slaves, was not allowed to educate them, not even his own child born of one of his slaves. B. de Mandeville, in the early eighteenth century, wrote that, for society's happiness, the indigenous should be as ignorant as they are poor (Losurdo, 2005).

Illiteracy and low literacy are like slave chains, the shame of the present, globalised, technological world

that tends to keep these phenomena under a thick blanket of silence. Yet, we already know enough about them to get an inkling of the disgraceful cultural exclusion that illiteracy, in particular, represents.

While the rich and powerful have invariably tried to prevent the low classes from developing literacy in its highest sense (for critical acquisition of knowledge), on many occasions over the last three centuries, the workers and the women have sought more education and have used literacy in their struggle for freedom and a better life. Chomsky (2016) mentions several reports on the reading habits of the working class by the middle of the nineteenth century, with many proletarian autodidacts knowing the classics and employing boys that read for them while they were working, and remarks that he noticed signs of this mentality in New York workers during the Great Depression, who craved high culture. Lyons (2001), too, analysed 90 out of 800 autobiographies from British and French workers, women and men, in the period from 1790 to 1900. Most of them had been illiterate but found, outside of school, different ways of learning to read, becoming intensive readers and ultimately writing about their lives. One of their main characteristics was a great appreciation for the classics and an abhorrence of popular literature. Among many interesting cases, I summarise in the [Appendix](#) those of one man and two women. The women's involvement in literacy began earlier in the eighteenth century amongst the upper classes. In Paris, as part of the Enlightenment period, it was stimulated by the 1759 founding of the *Journal des Dames* (later forbidden). Its editor, Mrs. de Baumer (later expatriated), arguing for sex equality, called for women to show that they could think, speak, study and criticise as much as men (Gelbart, 1987).

Full illiteracy (in the UN sense) was quite low by the middle of the twentieth century in the developed West, but not elsewhere. In the 1960s, when some compromise was still viable between social motivations and the interests of the capitalist economy (it was the time of social-democracy and "social State"), there had been a few programmes – or so they were presented – to eradicate adult illiteracy in the world. The most notable of them stopped in 1973. The "donors" ceased to invest (actually they had expected returns). At roughly the same time, Cuba fully completed its basic literacy campaign, and at least one of the nationalist African regimes registered a decent success, raising the rate of basic adult literacy from 33% in 1971 to 80% in 1983 (Lind, 2008).

I already mentioned that adult illiterates (aged 15 years plus) all over the world are presently at 14.7%. There are predictably fewer illiterates among the youth

(aged 15–24 years), at 9.4% (still according to the UN definition), but one would have expected much fewer, had the huge economic growth of the last 30–40 years benefitted literacy education. With the kind of educational policies currently adopted for both adult *and* young illiterates, illiteracy will not be eradicated in the near future.

It is not the cost of literacy programmes that stops the governments from supporting efficient literacy programmes for all. Indeed, it is illiteracy, not literacy, which represents a cost. In the USA, for example, health care costs are almost four times higher for people who left school after third grade (10,700 USD\$ per year) than for people who attended school past fourth grade (2900 USD\$ per year; Weiss & Palmer, 2004). In our pseudo-democracies, the rich become richer by making the poor become poorer, and perpetuating poverty requires reproducing illiteracy and low levels of literacy. The idea that only child education should be supported because most of the illiterate adults will die soon and adult illiteracy will disappear in a few decades is wrong, given the reproductive cycle of literacy and poverty. An illiterate home cannot give children a favourable linguistic and cognitive environment to help them learn to read and write efficiently and develop literacy capacities. Many studies on Western populations show that poverty and low socio-economic status (SES) do not allow the genetic potential to be expressed as it could. For those of low SES, the environment accounts for about 60% of the individual differences and genetics for a little more than 0. In contrast, among children and adolescents of high SES, genetics may account for 80% of the differences (Turkheimer, Haley, Waldron, D'Onofrio, & Gottesman, 2003; Tucker-Drob, Rhemtulla, Harden, Turkheimer, & Fask, 2011). Obviously, this does not imply that no child from an illiterate milieu can reach high levels of literacy.

The wisest man I ever knew in my whole life could not read or write. At four o'clock in the morning, when the promise of a new day still lingered over French lands, he got up from his pallet and left for the fields, taking to pasture the half-dozen pigs whose fertility nourished him and his wife. My mother's parents lived on this scarcity, on the small breeding of pigs that after weaning were sold to the neighbours in our village of Azinhaga in the province of Ribatejo. Their names were Jerónimo Meirinho and Josefa Caixinha and they were both illiterate.

This is the beginning of the Nobel Prize lecture given by the Portuguese writer José Saramago. Jerónimo and Josefa were perhaps exceptional, but even today there are people who would feel comfortable with John

Locke's statements, in his *Essay Concerning Human Understanding* (1690): if we compare the understanding and capacity of some men and of some beasts, we will find so few differences that it will be very difficult to claim that the human understanding is clearer and larger. In contrast, Spinoza, born the same year as Locke, wrote in his unfinished *Tractatus Politicus*:

it is supreme folly to wish to transact everything behind the backs of the citizens. (...) For if the populace could moderate itself, and suspend its judgment about things with which it is imperfectly acquainted, or judge rightly of things by the little it knows already, it would surely be more fit to govern, than to be governed. (Spinoza, 1667)

The "populace" does not suffer from "lack of judgment" (or at least this is not proved), but from not being informed and educated.

### Perspectives of literacy

In our ICT Age, will all of us, Sapiens of the third millennium, become productive and argumentative literates? Even the blind and the deaf children can acquire literacy using, respectively, the tactile perceptual pathway to engage the visual cortex (Burton, 2003; Reich, Szwed, Cohen, & Amedi, 2014), and a combination of lip reading and cued speech to allow phonological development (Leybaert, 2000). Many dyslexics also find ways of compensating for the effects of their deficits and become productive or even creative literates. Moreover, the actual prevalence of the dyslexic impairment is much smaller than what is assumed (almost 10%), even in scientific journals. A very well-planned French study (Fluss et al., 2009) showed that, among second-graders, those with severe delays in reading were only 3.3% in the schools frequented by a large proportion of children from families at a medium to high socioeconomic level, whereas they were 24.2% in the "disadvantaged" schools. Given that dyslexia is recognised as resulting from genetic anomalies, that result strongly suggests that the prevalence of dyslexia is probably inferior to 3% (one can suffer from severe reading delay for other reasons even in privileged families) and confirms that the real problem concerning literacy is the huge differences in education related to social class.

Thus, the question is: Does the pseudo-democratic society want everybody to be productively literate both in reading and writing? And the answer is no! It is worth recalling that literacy has been and still is for many people just being able to read, given that writing was and remains in many countries a privilege of the powerful, not to be put, literally, in the hands of common people.

I argue that literacy and democracy maintain a very close and dynamic reciprocal relationship with one another, which may be negative (a vicious circle) or positive (a virtuous circle). This looks reasonable: The more literate the people are, the more and the better they participate in the governing of their community; and the less literate they are, the less and poorer their involvement in public debate and collective decisions. However, nowadays, this statement is almost never made, and most people do not pay attention anymore to its key implications. Some tend to dismiss it by invoking apparent counterproofs in the history of the twentieth century, mainly the Soviet Union (USSR) and Nazi Germany, to which Cuba and China may be added. This is however a fallacious argument due to essentially three mistakes. The first is *literacy level neglect*: to consider (like the UN) as literate individuals those who are in fact closer to illiterates and to make no distinction within the large range of literacy conditions. The second mistake is *intentionality neglect*: to define literacy only as a skill, excluding the cultural and educational context that orients its productive, argumentative and creative use to either democratic or pseudo-democratic intentionality. The third mistake is *global context neglect*: to consider that literacy and these opposite types of intentionality could explain the whole variance in countries' social and political institutions, forgetting that each country is immersed in and constrained by the local and/or world context.

Literacy level and intentionality, if not also global context, provide an explanation for the fact that the USSR was "literate" but totalitarian. Actually, the USSR was not literate: the literacy campaign took many years to eradicate full illiteracy, and most new "literate" were poor ones. Moreover, from the beginning, literacy learning did not take place in the context of an educational policy giving priority to free and critical thinking, much to the contrary. And, finally, the hopes of an extension of the socialist revolution to the West were lost quite early (at least during 1919, cf. Hobsbawm, 1994, p. 376: "In Lenin's view, Moscow would only be the temporary headquarters of socialism until it could move to its permanent capital in Berlin"). The USSR has lived successively in war with its neighbours: first a civil war; then, before and after the war with Nazi Germany, the cold war. In contrast, intentionality to dominate Europe provides the main explanation for the case of Nazi Germany.

It is worth noting that even today the average literacy level of Western young people is inconsistent with a fair degree of knowledge and critical reasoning. In a study on 363 German-speaking young people (mostly from Austria), of whom 60% graduated from upper secondary school and 30% from university, there was an



astonishing acceptance of “scientific myths”: in a scale from 1 (sure it is false) to 7 (sure it is true), they accepted at 3.65 that “we only use 10% of our brain”, at 3.59 that “women swallow on average six pounds of lipstick in their life”, and at 3.21% that “men think about sex every 7 seconds” (Swami, Stieger, Pietschnig, Nader, & Voracek, 2012).

Returning to the main issue, let us examine the case of Cuba. Although full illiteracy was eradicated relatively soon after the revolution, Cuba’s situation was mainly due to literacy level and intentionality, and global context probably intervened as well, not only because of the latent war with USA and the embargo but also by contributing to increasing the role of intentionality. Finally, China is a very special case. This is a totalitarian capitalist system called communism. According to national censuses, illiteracy fell from 33.58% in 1964 to 6.72% in 2000. This is spectacular taking into account that the population almost doubled in the meantime. Concerning the adolescent levels of literacy, in PISA, 2012, Shanghai and Hong Kong were first and second, if we take the mean score, but also for those who are at least what I called productive literates (88% and 80%, respectively, vs. 58.6% for the mean OECD) and for those who are at least argumentative literates (62% and 50% vs. 29.5%). The problem is that Shanghai and Hong Kong (and Macao in 12th position) may be special cases within China (such data do not exist for the whole country). Even if they were representative, the kind of critical thinking required to perform well on the corresponding PISA’s reading tests does not specifically involve what distinguishes democratic from pseudo-democratic intentionality. We cannot know whether these literacy levels will favourably influence the political future of China. However, if this were not the case, the totalitarian regime might still be accounted for with reference to intentionality, and the competition for world dominance and leadership (global context) is more consistent with either a dictatorial (China) or a pseudo-democratic regime (USA). To synthesise: the reasons why literacy does not promote democracy in China tend to be, like in Nazi Germany, of the intentionality realm, although China is not so totalitarian as Nazi Germany and, in contrast, does not exhibit a racist and warlike ideology.

To illustrate this point on the relationship between pseudo-democracy, or even totalitarianism, and the lack of literacy grounded on democratic intentionality, I recommend rereading Orwell’s *Animals Farm*, written in 1945 (for a more detailed analysis, see Morais, 2016). Through this text, Orwell repeatedly addresses the role of literacy, to say that some animals, the pigs, read and write perfectly, while for the other animals, the success

of the lessons was highly variable and quite low for most. Such lessons are no more mentioned after the disappearance of Snowball (Trotzky). The written Seven Commandments left by the Old Major (Lenin) were crucial to confronting the successive decisions of Napoleon (Stalin), the new boss, but fewer and fewer other animals were able to read. It is interesting to see comments made on the Internet (in French) by the readers of the book: Almost all mention a denunciation of communism, but in general they do not refer to the lack of egalitarianism and of generalised literacy. Yet, one wrote: “only the literates have seen the manipulation” and “without literacy and a good education we are weaker to confront the lies”.

It is crucial to stress again and again that, in democracy, literacy must be free and consubstantiated with a flow of questions and ideas, open to analysis and criticism. It must be based on values, themselves the target of free discussion, such as cooperation and solidarity, a sense of responsibility, action for the common good, preservation of the dignity and rights of everyone regardless of their culture or prestige, and the acceptance of differences.

According to the UN, education comprises “all deliberate and systematic activities designed to meet learning needs” (UNESCO, 1997). The keyword is learning, which is important for all human societies. Should not thinking be free critical thinking? This characterises democratic societies and cannot be accepted, either by the totalitarian ones, or, at least in regards to critical thinking for all, by the pseudo-democratic ones. It is true that education includes literacy, but, in the traditional view, only to the extent that learning to read and write requires relevant and appropriate teaching. By contrast, in the view I adopt, literacy does not stop at the end of the learning process. Beyond education, literacy activities have profound effects on knowledge and thinking.

According to UNESCO (2015), the world’s poorest children are four times more likely not to attend school than the richest children, and five times more likely not to complete primary school. Among the 135 million children who entered primary school in 2012, 34 million will leave before completion. The most recent data (UNESCO, 2016c) indicate that in 2014 8.9% of children worldwide were not attending primary school, while adolescents not in lower or upper secondary education (ages 15–17) accounted for 16% and 37.2%, respectively. India and Pakistan, two powerful countries with the nuclear bomb and presented as democracies (and India as “the largest democracy in the world”, Das, Biswas, & Roy, 2015), are among the three countries with the highest percentages, with the difference being that in India (but not Pakistan) numbers increase with age

(2.9, 11.1 and 47 million). This may suggest that it is investing more on educating young children. The most terrifying conclusion, however, is that these countries, and many others for which the people's literacy is perhaps a reversed priority (people's literacy is dangerous to pseudo-democracies in general), will maintain high proportions of illiterates and semi-(il)literate for many years to come.

Literacy education requires teachers. The teaching profession, especially at primary level, has lost much of its former social prestige, in large part because wages became very low and therefore unattractive. In addition, teaching quality decreased because the quality of teachers' education decreased and because many of them face, for example in primary school, classes of 40–50 children. The point is the need for more and more teachers. UNESCO (2016d) calculated that there should be almost 69 million new teachers at both primary and secondary level (24.4 and 44.4 million, respectively) in order to reach the 2030 education goals. Capitalist society will probably find the solution, at least for the low class: A corpus of teacher-bots that will teach children, and, from adolescence, those who will produce, among other goods and services, the next generations of robots.

The biggest challenge that the democratic utopia has been facing in the last 20 or 30 years is the kind of literacy and education that the financial and ideological neoliberalism is imposing on the minds/brains of children and youth across the world.

### Three educational systems for three classes

The educational system of our pseudo-democracies is highly differentiated both in quality and aims. Instead of a *common* educational programme promoting knowledge and free and critical thinking, there are three educational systems: For a minority, education for entrepreneurship based on the human capital principle and its virtues (competition, merit); for a larger number, education for science and technology, health and education professions, administration, etc.; and, for the majority, professional studies to furnish the work market with executives.

The first educational trend is the pathway for reproducing capitalism and therefore for reproducing poverty, illiteracy and pseudo-democracy. Indeed, the hidden cause between these three terms, the one that explains all of them, is capitalism. Not that capitalists wish poverty, illiteracy and pseudo-democracy. They just wish to maintain and if possible increase their capital and patrimony. Whether they are aware or not of the consequences of this, whether they are convinced or

not that they make societies progress, is completely irrelevant.

Since the 1960s, the neoliberal academicians have been studying how the human capital produced by education contributes to economic growth. This has two consequences. First, the increasingly extended acceptance of the "human capital" concept makes human beings mere producers-consumers, moved by their own economic interests; their essence reduced to an economic value that must be optimised, they become an object of transaction and investors of themselves: they have a price (Baptiste, 2001; Walker, 2012). It must be noted that this changes the Marxian meaning of capital, which is the richness accumulated by not paying part of the value created by the worker (today this meaning is forgotten, in the same way as the work is no longer seen as creating value but as being a cost – for the capitalist, obviously). Capital becomes the ensemble of productive forces, including the worker, and the only thing that is left out of the capital is the capitalist, who is not part of the human capital and is not put on the market but plays with it. Being goods, their studies are also privatised and constitute a further opportunity for capitalist gains. The second consequence is that education ceases to be oriented towards the development of free individuals, creators of knowledge, carrying ethical values and the capacity to critique. The education of the children and adolescents of low class aims at the best possible adaptation to the market according to the capitalists' interests, and the education of the high class to reproduce the elite, financial gamblers and entrepreneurs, active and flexible (the elite, ensuring not democracy – this is the word to enchant the people – but meritocracy, because they are the deserving best). Today, this education for competition begins very early, at primary school and is further driven by private institutions and agencies like Junior Achievement, which started in the USA but now operate almost everywhere.

The second trend of education is very important. It must indeed be strongly supported. Poverty and illiteracy will not diminish if one limits the deepening of knowledge, discoveries and inventions. However, this trend of education concerns the middle class, and the middle class suffers, like the rich, from humanity neglect. It is understandable. They enjoy life and what they do. A part of them would love to become rich, but the largest part has an anxious fear that they or their children will fall into the lower class, which makes them generally conservative, although they may also have plenty of nice ideals. A nice figure, typical of these idealists, is Bernie Sanders. He proposes many important changes but he forgets some necessary

ones. His education programme is totally focused on “making college tuition free and debt free”. Low literacy is in his neglected field. Actually, he has a coherent middle class consciousness. Recently, he complained that 80% of the poor people do not vote, especially in the States with the highest inequalities (of money and of literacy). *The Guardian* (26th April 2016) wrote: “Sanders’ observation is as valid as it is disturbing.” Sanders’ observation is valid, but not disturbing, given that the poor tend to be illiterate or low literate (according to OECD, 2016, around 17% of US adolescents have quite basic literacy skills, and less than 10% have very high skills). Pseudo-democracies are winning even among the best-intentioned people. Illiteracy and low literacy are marginal in our thoughts, if not completely excluded. In the last decade, the economic policies of neoliberal governments have set most of the poor and illiterate nationals against immigrants and foreigners, exacerbating patriotism. This certainly contributed, for example, to the fact that, according to D. Runciman in *The Guardian* of the 26th October, while voters in the Brexit referendum with postgraduate qualifications split 75 to 25 in favour of remaining, “among those who left school without any qualifications the vote was almost exactly the reverse”. At a more local scale, opinion polls just before the election for Governor of Rio de Janeiro showed that a bishop of the Evangelist church, a homophobe supporter of female subordination to males, and nephew of a millionaire, was preferred 57% to 17% among the less educated and 54% to 19% among poorer people (*O Público* of 30th October).

A word remains to be said about the third educational trend, education for poverty: it must be abolished. All children and adolescents should be given an education of excellent quality and opportunities for good physical, cognitive and linguistic development from birth until university graduation.

Recently, I came across a “research article” from Indian authors, published by MIT Press (Medhi, Sagar, & Toyama, 2007), and subsequently found other papers in the same vein. It is actually a report on an interface aimed at allowing illiterate and low literate people from slum communities in Bangalore to be able to find information about potential domestic jobs and use a digital map without having to learn to read, acquire computer skills or need assistance. The authors interacted with 80 women and men for more than 180 hours. I mentioned earlier that in 2010 there were 287 million illiterates in India. Why are all energies not oriented instead towards helping them acquire literacy? To sell products in the market to those who would not need such products if they had been taught reading and writing and had become literate? Illiteracy as an occasion for profit! The profit-

making offer of technology-based solutions for the problems of illiterates and low literates, with a tricky combination of business and social motivations and effects, cannot be discussed here. To be clear, in that increasingly developing field known as ICT4D (“information and communication technologies for development”), only but a few ask without really answering: “Do designers carry an ethical burden in such circumstances, of ensuring the just use of technology?” (Toyama, 2010). My personal answer is: Yes, they do or, at least, they should.

### And so do scientists ...

We scientists or, more modestly, scientific researchers in all domains and all together, number in the millions. We are a force. All knowledge and technological development depends on us, is produced by us. Our collective responsibility regarding whom this development serves is therefore enormous, and no one can escape individual responsibility.

I know from experience that doing science is an exciting journey into the unknown. Still, there are situations in which the most passionate explorers have to look further. Noam Chomsky (*The Guardian*, the 20th may 2016) explained this in the following way:

It’s like seeing a child in the street and a truck coming rapidly. Do you say, ‘Look, I’m too busy thinking about interesting questions, so I’ll let the truck kill the child’? Or do you go out into the street and pull the child back?

Chomsky was referring to the state of the world. I want to name these entities: the truck is the infernal, interactive dynamics of capitalism, poverty, illiteracy and pseudo-democracy, and the child is (wo)mankind.

This sense of urgency is shared by an increasing number of people. Capitalism may irreversibly inhibit certain social characteristics of human beings, some biological such as cooperation and altruism, others cultural such as civic virtues (see Schwartz, 2007). It may happen that, as time goes by, these qualities languish and waste away. People might adapt and find it natural to live in a world completely dominated by the market and governments of the Big Brother type. Literacy changes the mind in a positive direction, but the division of humanity in segregated casts, namely the ultra-rich, the leading and managing elite, the informational and operational experts, the scientists and teachers, the subsistence-pensioned for life, and the guards and intervention troops, may establish in society if we do not wake up.

David Harvey (2014) reminded us that Mr Dombey (of Dickens’ *Dombey and Son*) had no objection to public education provided it taught the worker his proper

place in society. Why only the worker? Why not also the scientist? All human beings should, by definition, take part in the democratic ruling of their society; scientists are human beings; thus, scientists should ... Like philosophers and theorists in humanities, who are currently being dismissed and might disappear, scientists have a responsibility in and to society. That responsibility is not limited to progressing science. Unfortunately, most of them create knowledge either persuaded that it is innocuous, or not caring about its potential uses. Quite often, their passion makes them cognitively and affectively blind to the material and mental misery of the millions who live far from their campuses and research centres. Working in isolation or in very small groups, they are instead worried by the grants needed to accomplish their projects and how to manage both cooperation and competition with their peers. What they ask from government is to let them work in the best possible conditions. Scientists may sign petitions but do not organise themselves in a strong political movement to impose education for all, literacy for all, freedom for all and the effective right for all to debate and decide. Why?

So strange! Especially, knowing that scientists, like artists, are the most imaginative people on earth. Then, please, imagine listening to this:

A brotherhood of man / Imagine all the people / SHARING LITERACY WITH US / You may say I'm a dreamer / But I'm not the only one / I hope someday you will join us / AND THE WORLD WILL BE LITERATE AND FREE. (Adapted from Lennon, 1971)

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## Appendix

Norbert Truquin, the son of a metallurgist, began working aged 7 as a wool carder. For 3 years he was brutally treated, obliged

to sleep under a stairwell in a small cock reserve. Freed at age 10 after his boss's death, he became a beggar. He still could not read, but at 13 he listened to passages of the socialist Cabet's *Voyage en Itarie* (one of the many illustrations of the importance of oral transmission for learning to read amongst the working class). At 22, he was working in silk mills, having the experience of capitalist exploitation and living miserably. At 37 he was arrested for participation in the Commune of Lyon and, in jail, listened to Cortez's *History of Mexico Conquest*. Seduced by the new social experiences of the utopian agrarian communities in South America, he left for Argentina at 39, still illiterate, to help found a socialist colony. Later, probably in Paraguay and perhaps with his wife, he learned to read and write. At 54 he finished his autobiography, *Mémoires et aventures d'un prolétaire*, published one year later in Paris by the socialist editor Bouriand, which ended with a resounding call for a social revolution. Unsurprisingly and as in many other workers' autobiographies, the text includes many details, like his salaries and the price of bread.

Margareth Penn, from an illiterate family of English Methodists, had called herself Hilda. Hilda was only allowed to read the Bible and the books from Sunday school, and was obliged to read any other books aloud to her parents to verify that they were respectable. However, she found in the local cooperative library a way of reading many other books like *Robinson Crusoe* and *Tess d'Urberville*, which shocked her parents. Constrained by their censorship, aged 13 she decided to leave for Manchester and become an apprentice dressmaker. According to Lyons (p. 322), "reading was a symptom, not a cause, of Hilda's desire for liberation."

Victorine Brocher, born in Paris in 1838, lived in a revolutionary milieu. Her father was a shoemaker, republican and freemason, who had participated in the Republic instauration. When she was 10, the visiting National Guard, faithful to the Emperor, failed to find him at home, but Victorine saw their brutality against her mother before losing consciousness and, for one year, her memory. She would remember for all her life her father and friends' pledging fidelity to the Republic in front of her, before he went into exile. At 23, she married an alcoholic ex-officer of the imperial guard, apparently under pressure from her mother. Inspired by the reading of *Les Misérables*, which she borrowed one franc a day, Victorine began to live amongst the poor people and joined the "Internationale." She was 41 when the Commune took place, became an ambulance woman and fought on the barricades during the bloody week of May 22–29, 1871. After the Commune's crushing, Victorine returned home to learn that she had been condemned to death. Having escaped to Switzerland, she later reached London. In 1878, she came back to France where she participated in the anarchist movement as a member of the group who published the journal "The Social Revolution." In 1881, Victorine was delegate to the Socialist Congress of 1881. In 1887, aged 49, she married Gustave Brocher in Lausanne, and the couple adopted five orphans from the Commune. Three years later Victorine became a schoolteacher at the school created by Louise Michel. At 71, in Lausanne, she published her autobiography *Souvenirs d'une morte vivante* (of a living dead woman), and died at 83.