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A review of *The Blank Slate* by Stephen Pinker

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ABSTRACT

During the last two decades the nature-nurture debate has given rise to bitter feuding between those who believe that human nature is, to a great extent, pre-written in our genes and those who believe that our talents, personality traits, strengths and weaknesses are crucially influenced by our environment, culture and upbringing. This latest work by Pinker aims to shift the balance towards the nature end of the cline by arguing for a more scientific, biological study of the human mind or brain and questioning the importance of environmental factors in our cognitive growth and development. This paper begins with some background to the nature-nurture debate, specifically with regard to IQ, and attempts to evaluate its significance for teachers and learners of second languages. Are humans, or our students, blank slates onto whose brains can be written anything or are our brains pre-programmed to perform in different ways? There follows a critical analysis of Pinker's ideas and concludes with a discussion of the implications for second language acquisition studies.

Of Nature v. Nurture

DNA is a crucial component of human ability which determines, among a host of other things, neural processing speeds. This is a fact.

Neural processing speed determines our level of intelligence to a large degree, whether it be small g, for general or basic intelligence, or high g for excellent in everything. Intelligence has traditionally been measured by IQ tests where average scores among different ethnic groups have been found to vary significantly. For example, research compiled by Lynn (2006) has shown that Sub-Saharan Africans average 70, African Americans 85, white Americans 100, with 115 for Ashkenazi Jews (in a verbal component of the IQ test). Some have argued that Jews are therefore simply smarter.

Clearly this is a political issue which motivates racial tensions. Judging from this kind of data, some Conservatives, or American White Supremacists, have suggested that there are no grounds for allowing the African-American 12% of the US population to lay claim to 12% of the places at Harvard University.

On the other side of the political spectrum sit Liberal proponents of egalitarian and meritocratic educational systems who argue that failure of some ethnic groups, notably African Americans, to perform as well academically on average as their White American or Jewish American peers is simple testimony to racial prejudice and inequality in society. In other words, while members of all ethnic groups are born with equal average academic potential, they do not enjoy the necessary equal opportunity to fulfill this potential. For example, an African American child growing up in an economically and “academically” deprived neighborhood will likely not perform as well at school as a privately-educated White American with the same IQ growing up in an affluent area.

The scientific, determinist view is that you can't put in what God left out, and that "our progress and attainments are dictated by our genetic make-up". Richard Lynn, writing in *IQ and the Wealth of Nations*, argues that the finest minds in the history of mankind, the greatest pioneers of human achievement, Einstein, Galileo, Newton, and Faraday, for example, all originate from a small area of Western Europe. He also finds a high correlation between the wealth of nations and average national IQ.

On the other hand, Jared Diamond, writing in *Guns, Germs and Steel*, does not mention IQ at all. He describes the reasons for the prosperity or relative failure of nations purely in terms of geographical and environmental factors. Cold northern hemisphere climates create harsh environments where survival is determined by the development of human skills, knowledge and abilities, explaining the ascendance of European nations who also benefitted from the ability to travel large distances laterally (east-west) on horseback.

Pinker, Jewish himself, cleverly distances himself from "Nazi science", or "American pseudo science", and appears to position himself around the 70% nature, 30% nurture degree on the cline.

What value is this to linguists and the study of SLA?

Intelligence, with a capital I, has been shown to be a good predictor in many learning tasks, but language learning aptitude is much more specialized and in my opinion can be measured by IQ to a very limited extent. Vernon (1964), cited in Williams and Burden (1997: 19), isolates three kinds of Intelligence (A, B, and C). According to Vernon, Intelli-

gence A is what we are born with, but this can be affected by environmental factors from the moment of conception, and can therefore never be measured effectively. Intelligence B measures behaviour in context, which presumably is important in determining an L2 user's level of pragmatic competence. Intelligence C represents what is measured by IQ tests.

Howard Gardner suggests six or seven types of intelligence, linguistic being only one of them, and linguistic intelligence could also be further broken down. Williams and Burden claim that "people can become more intelligent and... schools can (and should) play a part in this" and that the validity of IQ tests has been overrated (1997: 19).

Genesee (1976) conducted research into French immersion students in Canada and found a high correlation between scores in an IQ test and French proficiency in a grammar, reading, writing test, but not with scores from the interview test. Cummins (1979) subsequently labelled two types of proficiency: Cognitive Academic Language Proficiency (CALP) and Basic Interpersonal Communication Skills (BICS). In other words, successful communicative language use relies on a number of other skills which are not related to the narrower set of skills assessed in formal learning situations.

Skehan (1989) surveyed a number of comparative IQ/L2 performance studies and found that there were too many variables for the effect of IQ as a predictor of language learning success to be isolated with confidence. However, he does suggest rather obviously that students with higher IQs performed better with self-paced instruction, with feedback, and are held back by the relative slow pace of lockstep

instruction. This appears to justify streaming of students according to ability in any kind of language program.

With reference to the way English is taught in Japan, through grammar-translation, with maximum de-emphasis of communication skills, the method of instruction, in large classes of up to 40, appears to favor students with high IQ in streamed high schools. Of course, the aim of English instruction is not to teach English communication skills which have value in the real world anyway, the goal being simply to provide another tool to measure student ability through formal testing. In this sense, however finely egalitarian or fair the system is, or used to be, the interests of the learner are not considered at all.

Even though we may consider that language aptitude is “probably the best single predictor of achievement in a second language” (Gardner, 1992: 215), along with motivation, it is clear that language teachers and learners have to look for the most efficient ways forward to achieve optimum language learning success. In this century I expect to see huge steps taken to advance individually-tailored language learning programs involving CALL. State-of-the-art CALL programs now include features which allow for test items to be pitched to the level of the learner depending on performance on previous tasks. In this sense, I sympathize with Krashen’s bitter distaste of lock-step approaches to all kinds of learning.

On Pinker, science and evidence.

Pinker comments on evidence and theories from a variety of fields related to cognitive science, or the study of intelligence, including

experimental psychology, linguistics, computer science, artificial intelligence, biochemistry, and neuroscience. He also discusses theories and findings from other fields such as anthropology, biology, genetics, evolutionary psychology, social and media studies, history, and philosophy, to name only a few. However, Midgley (2002) argues that evolutionary psychology, and much of what we call cognitive science, is not physical science and as such only provides conclusions which cannot be reported objectively. Certainly much of Pinker's writing is referenced to purely subjective conclusions of other commentators.

In the movie *Wimbledon*, the following exchange takes place between two tennis practice partners who find themselves standing in the pouring rain outside Wimbledon Lawn Tennis Club.

DIETER I suppose, in a few thousand years, the English will evolve webbed feet.

PETER Yes. Just about the same time the first German evolves a sense of humor.

Although this is a joke, and amusing to all except Germans, evolutionary biologists and psychologists will have to provide not only explanations for this kind of phenomena, but also some objective data and future human evolutionary models if they expect their field to be recognised as a science.

What evidence does Pinker put forward in support of the notion that the learners we receive for training are “blank slates” onto which we can write anything if we are skillful enough”?

It must first be pointed out that Pinker obviously does not aim to justify the above concept that the learners we receive for training are blank slates onto which we can write anything if we are skillful enough. In fact, one of the aims of the book appears to be to debunk theories supposedly held dear by conservative proponents of blank slate ideology, especially among “West Pole” connectionists in academia (p.76). For example, Pinker (2002) writes: “Education is neither writing on a blank slate (in contrast to prevailing theories such as Rote memorization) nor allowing a child’s nobility to flower...” (p.222). In fact, the question of who still believes that the human mind is largely tabula rasa is one that Malik (2002) believes is worth asking. Certainly the views of behaviorists such as J.B. Watson and B.F. Skinner are at odds with Pinker’s standpoint, but their influence waned such a long time ago that it is simply not worth donning boxing gloves, even with the supposition that attitudes born of strict behaviorism persist and pervade social attitudes (p.21, or the first two hundred pages of the book). Blackburn (2002) even considers that it’s likely that Locke himself did not believe the human mind was a Blank Slate and concludes: “Locke wanted only to deny innate ideas and innate knowledge, not innate powers or tendencies...”.

In this sense, the evidence Pinker puts forward to show that the human mind is a blank slate is only done so in order to allow him the chance to pull it apart. The problem is that Pinker therefore appears to be a Don Quixote, trying to spear windmills rather than enemies of

all humankind.

Nonetheless, here is a sample of some of the evidence in the book (p.74) to support the Blank Slate position, where nurture, environmental influence, and experience are seen to be the key determinants of human behavior.

- i) (p.75-78). The number of genes in the human genome is too limited to explain the diversity of human nature, which can instead be explained by variety of human experience, or environmental, “nurture” influences, which Pinker describes as “culture” (eg. p.31).
- ii) (p.78-83) Generic neural networks can mimic human cognition.
- iii) (p.83-100) Evidence of neural plasticity where the brain is shaped by the demands of the environment.

What evidence does Pinker put forward in support of the view that learners are pre-programmed in some way and with whom we may be able to do only a limited amount in some cases?

Pinker presents a large amount of what he terms evidence to support the view that our environment has a remarkably small influence or effect on our traits. He backs up his theory with four “bridges between biology and culture”: cognitive science, neuroscience behavioral genetics, and evolutionary psychology.

In the field of neuroscience, he cites the case of Phineas Gage whose personality traits changed following injury to his prefrontal lobes as a result of an accident working on the railroad (p.44). Of course, this change was only subjectively assessed by colleagues and could there-

fore be ignored, but it is interesting that Pinker avoids using the word *trauma* with an unfortunate individual who had part of his brain pierced by a metal spike. One could argue that this is an example of how experience shapes our personality, but Pinker appears to have no time, or not enough pages, to describe the other side of the coin. It's also strange that he classifies the above anecdotal evidence as purely neuroscientific rather than psychoanalytic.

By extension, this could be taken to mean that our learning experiences and environment have very little to do with our learning achievements, which could be predicted to a great extent by the innateness of our brain structure. Pinker quotes studies of Albert Einstein's brain which revealed "unusually shaped inferior parietal lobes" (p.44). It's possible that his brain did have an unusual structure, but we have no evidence of how it was structured at birth, how it changed as he grew older, or how much this was due to biology. Surely Einstein didn't produce his theory of relativity as an inevitable consequence of his brain attaining a certain size, shape, and structure. Finally, the waters are muddied by vague statements such as: "Differences in intelligence are not *entirely* learned" (p.44), (the italics are my own) suggesting simply that he is on a nature-nurture continuum along with everybody else.

He also comments that: "Becoming stronger at math.... does not bulk up part of the brain the way becoming stronger at weightlifting bulks up the muscles" (p.45). This comes in contrast to findings from research into some London taxi drivers' brains which indicate that they have changed shape, or become enlarged in certain areas, due to the requirement of memorizing thousands of street names and buildings

(Maguire, E. 2000).

He cites studies of identical twins, especially those reared apart but with identical traits, to prove that humans are genetically pre-disposed, or pre-programmed to specific personalities, levels of intelligence (p.47), and even political attitudes (p.283). Kennair (2002) asks: "Could it be that some of these thousands of observations had been as likely among non-twins, but when looking for similarity the most amazing traits pop out?" Wilkinson (2002) wonders why, as an adopted child, she had grown to become so alike her three biologically unrelated older sisters that at times her adoptive parents could not tell them apart. One pair of identical twins that I once knew were opposite in every way. One chose to specialize in the arts, the other in sciences, one got up at 4 am. when the other was going to bed, one enjoyed climbing mountains while the other went scuba-diving. I suspect this was due to the operationalization of advanced person avoidance strategies born of environmental factors such as a shared bedroom and mutual hatred.

But what of learners and pre-programming? There are two concepts in the statement above. The first is that learners, or people in general, are pre-programmed, or hard-wired in some way. Pinker certainly believes that they are. Much of Pinker's *The Language Instinct* (1994) is devoted to supporting the view, as the title suggests. Writing in *Words and Rules* (1999), Pinker cites conclusions from Gordon's research (1985) into children's learning of spelling rules in compound nouns, such as "mice infested", where the child subjects appeared to conform to an "innately specified architecture of their language system". Pinker agrees with Gordon's view that these spelling rules could not have been learned in any other way, through, for

example, being exposed to the language every day, or being taught by their parents -which is a highly dubious conclusion.

Similarly, in *The Blank Slate* he states: “Far from being empty receptacles... children are equipped with a toolbox of implements for reasoning and learning...” (p.223). Some commentators have suggested that it is obvious that humans need some kind of “software” to run their brains in the same way that computers need operating systems, but this admission does not mean that we are compelled to accept the determinist or nativist creed wholesale.

As far as language is concerned, Pinker points to Chomskian theory that: “Something in the head must be capable of generating not just any combination of words but highly systematic ones” (p.36). The fact that the bible has been translated into and understood in hundreds of non-Western languages is provided as evidence that we are pre-programmed as a species to use language (p.37). Cases of feral, or “wolf” children being unable to acquire language skills following capture and re-integration are not mentioned.

Regarding the second point, that “we may be able to do only a limited amount” towards shaping human development, there are strong echoes of Krashen’s theories of LAD (Language Acquisition Device) and Monitor, Natural Order, Input, Affective Filter hypotheses, in some of Pinker’s writing. Both confess to being influenced by Chomsky, although not in entire agreement with him. For example, Pinker writes: “learning is impossible without innately organized circuitry to do the learning” (*Words and Rules*, 1999, p.210). The implication is that our learners are hard-wired in different ways and the type and

quality of learning experiences will have little effect on their progress and achievement. One possible reason that Pinker doesn't mention Krashen at all in *The Blank Slate*, *The Language Instinct*, or *Words and Rules* is that Krashen's theories have been famously trashed, even by little-known commentators such as Gregg (1984), who was teaching ESL at Matsuyama University in Japan at the time of writing. Another reason could be that Krashen attempted to find similarities between first and second language learning, whereas Pinker writes about language learning in general. In this way, he could still take credit for enlightening second language acquisition theory without having to defend himself in the field. Similarly, Krashen claimed not to have anything to say about the way second languages should be taught, but it was not enough to save his theories from comprehensive rebuttal.

Nevertheless, Pinker espouses Darwin's view of the influence of evolutionary psychology in language learning. "Every bit of content is learned, but the system doing the learning is innately specified. Charles Darwin captured the interaction (of nature and nurture) when he called human language 'an instinctive tendency to acquire an art'" (*Words and Rules*, 1999, p.210). It appears Pinker takes these views very seriously without a hint of his usual humour. He also writes: "Because much of the content of education is not cognitively natural, the process of mastering it may not always be easy or pleasant..." (p. 223).

However, if language learning was an art that humans are innately attracted by and innately programmed to achieve, why does it seem to apply only to the learning of a first language and not a second or third? Even though more than half of the world's population is fully functional

in more than one language, how do we account for the millions of cases of Second Language Acquisition Failure, including mine? When is learning a second language cognitively natural, and when is it unnatural?

After all, for thousands of years humans have had to communicate in more than one language, plenty of time to evolve an infallible capacity to learn more than one language, one would have thought. Seafaring merchants, such as the Ainu in Japan, almost certainly had to master several languages to engage in overseas trade since pre-history. Perhaps schoolchildren's dislike of the study of Latin can be accounted for by the fact that they died out so long ago and that this dislike is evolving to become species-specific. Pinker doesn't tell us how long it will take for the study of written language to become instinctive. Similarly, as Midgley (2002) points out, we don't know how Stone Age man behaved, let alone when, or even why he evolved- we only have theories. As commented by Malik (2002) neither is it clear, from an evolutionary point of view, why the slave trade only came to be viewed as immoral over the past two hundred years. Jared Diamond, writing in *The Third Chimpanzee: The Evolution and Future of the Human Animal*, asks a bigger question when wondering why the human race is about to destroy itself. How can natural selection explain self-destructive tendencies in our species as a whole? Surely not simply because we have denied human nature.

That is precisely the limit of evolutionary psychology, another topic neatly avoided. Malik also suggests that mankind, society, and culture evolve through historical events and human agency rather than through evolutionary and biological processes.

What other evidence from studies in linguistics might indicate whether our language learners are “blank slates” or not?

My impressions from a cursory glance at the history of language teaching over the last one hundred years are as follows. Language teaching approaches developed by Palmer at the beginning of the twentieth century were based on habitualization of speech patterns, memorization of primary matter (rote learning), and Direct Methodology (Howatt 2004. p.273-274). Developments, or mood swings in theories of SLA over the past three decades have given rise to various trends which threatened to wipe out behaviourist (or Blank Slate) influences inherent in PPP (Presentation, Practice, Production) approaches. These trends included the communicative boom, learner empowerment through strategy training, the grammar revival, and task-based language learning, but have failed to result in substantial change in either classroom practice, textbooks, or learner achievement.

The fact is that much of language learning does involve messy, dreary memorization of primary matter. Evenso, backlash against behaviorist teaching was so strong that it took a while for “phrase learning” to creep back into language learning. Ironically, many fixed or semi-fixed phrases made available for learners to parrot, such as “long time no see” or “have a nice day”, have crept back into language classrooms under the guise of the name “strategies”, or “conversation strategies”. These are clearly different from the learner-empowering techniques for overcoming language problems which have become popular in the last two or three decades.

Nevertheless, evidence from several studies have sometimes, but

not always, shown that ID (Individual Differences) affect language learning outcomes and degree of success. These include aptitude, age, motivation, learner strategies, personality, and the effect of different types of instruction (Ellis, 1994; Skehan, 1989).

As I mentioned earlier, language learning aptitude is genetically pre-determined to a large extent, and clearly the same could be said for personality which governs, for example, levels of anxiety the learner brings to the learning task. However, although personality-linked affective states are apparent in ID studies, it is not clear if or how they can change through experience or as a result of the learning environment (nurture), along with learner beliefs about language learning (Ellis, 1994; p.472-3).

Regarding studies in anxiety, perhaps unfortunately, there is insufficient conclusive evidence that anxiety and achievement can be significantly correlated (Ellis, p.482). While it would seem common sense to attempt to minimize learner anxiety, Ellis and Skehan cite evidence from Scovel (1978) that there could be both positive, facilitating, “task-fighting” anxiety, and a negative, debilitating, “task-fleeing” anxiety, or even both working at the same time to cancel out any resultant measurable influence. Further, as Skehan (p.115) points out, it’s possible that anxiety may not be the cause, but perhaps the result of poor achievement. Finally, Skehan concludes that evidence of the relationship between learning and anxiety is rather weak, with a negative correlation of -0.30 .

The same cause-result, horse-cart dilemma is applies to the relationship between strategy use and motivation and language learning

success. However, there are additional dilemmas regarding the relationship between strategy use and language learning success. Strategy training aims to produce autonomous, self-paced, self-monitoring, teacher-independent learners who are capable of engineering their own learning environments and achievements.

Ironically, the approach to teaching strategies is often “blank slatist” in essence, involving efforts to re-program our students to change them from BLLs (Bad Language Learners) to GLLs (Good Language Learners) with behaviourist step by step presentation, practice, production approaches. How successful have these attempts been? O’Malley and Chamot (1990) report differences between groups trained in metacognitive and cognitive strategies respectively for listening, speaking and vocabulary learning strategies. They conclude: “The metacognitive group scored about 2+ whereas the control group scores were just below 2, reflecting differences in organization, sequencing, and comprehensibility” (p.174). However, as Ellis concludes, more longitudinal studies are needed to show the effect of strategy training. These could reveal if learners are simply displaying the behaviour required of them by researchers for short periods of time, instilling them with habits which are soon lost. Even if they are lost, this may not necessarily be a bad thing, since strategies are strictly compensatory and are needed less and less as gains in proficiency are made.

CONCLUSION

It sometimes seems that our learners have pre-determined routes and rates of progress towards learning success and failure and that teachers cannot therefore be praised or held responsible for either

event. However, McKie (2002) challenges Pinker's position with the following encouraging message for classroom practitioners: "And just because teachers try to improve the minds of their pupils, that does not make them a bunch of sinister mind-benders. They could just not do their jobs if they did not believe they could influence fledgling minds...".

Finally, I would agree with Keil's (2002) observation: "*The Blank Slate* is an attempt to convince the reader that it really is OK to be a nativist and an evolutionary psychologist without being a racist, supporting eugenics, or making a political statement". However, I would say that is definitely not acceptable to pass off evolutionary psychology as a science with something to teach us about learning languages, first or second. Keil sums up the rebuttal more neatly than others with the following: "It is one thing to embrace the idea of evolutionary psychology; it is quite another to be able to use it as an effective research tool for exploring the structure of the human mind". As Keil points out, we could reject evolutionary psychology, but still subscribe to a view of gene-related, or gene-constrained multiple intelligences which would determine second language learning to a large extent.

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