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« The question(s) of representation

Disturbance in representation: are there conditions of cultural adversity and felicity (the Theuth Effect)?

Joël Candau

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Abstract

I define the concept of “disturbance” in representation as the feeling of a functional and recurring inadequacy between the represented thing and the corresponding mental image. This inadequacy is manifested by the difficulty, and sometimes by the inability, of elaborating representations allowing, on the one hand, the best possible communication between individuals and, on the other hand, the optimal understanding of the consequences of our activity. The causes of this inadequacy may be pathological, social, or cultural. I analyse some of these cultural causes. In the first part of the article, I will provide a reminder of the main cognitive pillars of representation. Then, I will argue that the disturbance concerns not so much the representation itself as the undermining of these pillars, notably the faculty of attention. Finally, in the third and last part, I consider the hypothesis of a cultural variability of the disturbance, advancing the notions of cultural adversity and cultural felicity.

Keywords

attention, cultural adversity, cultural felicity, imagination, memory, the Theuth effect

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[Full text \(PDF file\)](#)

Introduction

Let us define the notion of “disturbance” in representation as the impression of a functional and recurrent incompatibility between the represented thing and the corresponding mental entity, whether the latter remains private, as is the case for most of our representations, or public, in oral or written form, or any other means to express our mental states. This incompatibility should not be mistaken for a gap, or a discrepancy between representation and what it represents. This gap exists and is indeed normal, it is inherent to representation, the natural purpose of which is to be distinct from the represented thing. There are many reasons for this. For starters: our mental states are *qualia*, they are always experienced in the first person, and since we are not clones, we logically deduce from their irreducibly phenomenological nature that the images of the world produced by each and every one of us are i) all slightly different from one another and ii) cannot be strictly identical to the represented thing since this thing is ontologically the same for everyone as we perceive it, except in the numerous cases of meta-representations.

The incompatibility we are dealing with here is the difficulty, if not inability, to develop representations allowing both for the best possible communication between individuals and the best possible understanding of the consequences of our activity. The causes may be pathological. For instance, a person suffering from Alzheimer’s disease may wrongly use the public representation “raspberries” to refer to strawberries, a common case of semantic paraphasia among those patients. Communication with others will then be altered, just like the activities potentially carried out. The reasons for this incompatibility may also be social, or cultural, and these are the ones I will be dealing with here. In the first part of this article, I will reiterate the main cognitive cornerstones of representation. I will then maintain that the disturbance is not so much a disturbance in representation *per se* as in those cornerstones that make it possible, and especially the main one: attentiveness. Finally, in the third and last part, I will consider the hypothesis of a cultural variability of disturbance, by exploring the notions of cultural adversity and cultural felicity.

The cognitive cornerstones of representation

Every human being is naturally capable of representing the world. Every second, we develop images of our environment through our senses and elaborate cognitive processes (the three cognitive pillars being attentiveness, memory and imagination). These mental, hence internal, entities are designed to represent the external realities

we experience at once and to which we pay attention. At the very least, they convey information on these realities. They can also represent a former experience stored in our memory. Actually, nothing prevents us from picturing the landscape of an exoplanet outside our galaxy, even without any empirical experience or (obviously) any recollection of it: in itself, this ability to imagine more or less thrives on our previous actions and/or the memories of past experiences. Therefore, we develop representations according to three modes: the attention we pay to our immersion and actions in the flow of the world, our use of already memorised representations (including in our sleep as dreams), and our imagination.

The degree of adequacy of representations with the world as it is changes according to the considered mode. In the first case, regarding the attention we pay to our ordinary and everyday social experiences, while we may expect the utmost truthfulness from our representations, yet it varies depending on the level of attention. This potential truthfulness results from one simple fact. In the long history of our phylogenesis, the most absurd representations of our physical world have been swept away by evolution, together with those who supported them. If there were – during the Middle Paleolithic era – a species of hominids who would think they were endowed with the power to fly from atop a cliff without the help of artifacts, this species would obviously have gone extinct because of the laws of gravity. With this example, I defend the thesis of representational objectivism. The physical world consists of objects with properties that are independent of the individuals who perceive them, and if every human being often manages to *scientifically* apprehend these properties (through categories and concepts and what I propose to call the “knowing mind”), it is because they have been improving this skill for hundreds of thousands of years. The natural selection of our representation modes contributes to the objectivity of our representation of the physical world.

To some extent, the same goes for our immediate representations of the social world, in other words the way we picture the individuals with whom we interact *hic et nunc*. For instance, with the exception of pathological cases, most human beings are highly skilled in deducing the other’s mental states from facial micro-expressions, including the so-called basic emotions (anger, fear, disgust, pleasure, sadness, surprise). Once more, if we picture a small group of hominids who, when meeting other groups, systematically mistake expressions of anger for expressions of pleasure, we have every reason to believe that the posterity of this group would soon be compromised. Therefore, according to this mode, it seems that there is not much room for an inadequacy of representation. It is indeed crucial that the latter is as reliable and operating as possible.

However, we must not fail to see the woods for the trees. Not all representations linked to our attentional economy are significant in terms of adaptability for the survival of species, on the contrary. I may have poetic thoughts (or not) at the sight of a beautiful sunset, feel (or not) compassion for someone who suffers, be moved (or not) when reading *In Search of Lost Time*, etc., while remaining adaptively efficient in the representation of physical and social stimuli, be they dangerous or good. In fact, countless representations induced by our attention during our ordinary and everyday social experiences are neutral from the perspective of natural selection and are therefore highly prone to inadequacy. I will come back to this in the second part.

With the second mode, and even more so with the third, the selective constraints on the degree of compatibility between representation and reality are weaker, if anything. Let us consider the representations developed from mnemonic traces.

Admittedly, if I wrongly recall that I can fly from my tenth-floor office – after all, false memories do exist¹ –, and jump at once through the window to go to an appointment, my false representation will be punished and, most probably, definitely annihilated. However, this example falls within the pathological category, full of absurd representations, as illustrated by psychotic deliria. However, when in *In Search of Lost Time*, the Narrator remembers Albertine's mole “at times on the cheek, at times on the chin,” to eventually recall that it was in fact just beneath the nose, on the upper lip,² these representational strayings are without real consequence. Outside the pathological category, the representations pertaining to this second mode can more or less play with reality – and make light of it – without any selective effect on the bearers of these representations.

This is all the truer for the third mode. In this case, and still with the exception of pathologies, the virtually endless liberties my imagination can take with reality do not seem to have adaptive effects. Painting *The Garden of Earthly Delights*, writing *Anna Karenina* or composing *Organ²/ASLSP* has no influence whatsoever on the *fitness* of our species. Incidentally, the act of creation,³ which is the major feature of the human identity, is based on these liberties.

To sum up, the disturbance in representation, as I have defined in terms of functional and recurrent inadequacy, is impossible only in the first mode and even in this case, only when our attentional economy has to process (represent) social stimuli having an adaptive importance for the species. In all other cases of the first mode, and every case of modes 2 and 3, disturbance is possible. It should be noted, however, that the second and third modes can only exist provided that experiential traces serve as a basis or springboard at the neuronal level. Therefore, one can hypothesise that representational biases in the first mode facilitate the emergence of inadequate representations in modes 2 and 3, through a domino effect. In this sense, mode number 1 is the key to understand the functional alterations of our representational system.

Shaken cornerstones?

In my opinion, the disturbance in representation is in fact a disturbance in attention when the latter must process the countless social stimuli that do not represent an adaptive issue for the species. This disturbance alters our representational ability and results in our memory and imagination producing inadequate representations. To represent the “real,” the world, the environment, whichever, one has to pay attention to it. However, we engage in so many activities today, we are subjected to so many stimuli, that we glide over the world, more and more, faster and faster, without paying due attention. Because we are living in societies of distraction, we are now more likely to represent the surface of things than their depth.

Contemporary iconorrhea is a topical example.⁴ It refers to the streams and floods of images that constantly assail us, *via* the media, advertisements, film, the Internet

¹Elizabeth F. Loftus, “Planting Misinformation in the Human Mind: A 30-year Investigation of the Malleability of Memory,” *Learning & Memory*, vol. 12.4, 2005, p. 361-366.

² Marcel Proust, *À l'ombre des jeunes filles en fleurs*, Paris, Robert Laffont, 1987, p. 712.

³ Wenfu Li, Xueting Li, Lijie Huang, XiangzhenKong, Wenjing Yang, Dongtao Wei, Jingguang Li, Cheng, Zhang Hongsheng, Qinglin, Jiang Qiu and Jia Liu, “Brain Structure Links Trait Creativity to Openness to Experience,” *Social Cognitive and Affective Neuroscience*, vol. 10.2, 2015, p. 191-198.

⁴ Joël Candau, *Anthropologie de la mémoire*, Paris, Presses Universitaires de France (PUF), 1996.

or augmented reality. This iconorrhea seems to transform our relationship to the present, the ever-quicker and exponentially growing diffusion of images contributing to both our getting bogged down in the present and a derealisation of what images are supposed to represent, a phenomenon occurring when one spends too much time on the Internet or playing certain video games.⁵ Iconorrhea would then result in an agnosis of the event – or to put it in Arendt's words (1961), to the dissociation between thought and know-how – under the guise of a series of shots perceived independently of each other as deprived of temporality. It is also possible that it changes our relation to the past, since the condensation of iconic memory makes it harder to develop a semantic memory.⁶

This hypothesis of an attentional dysfunction resulting from an information overload⁷ is now regularly mentioned when dealing with the “*Cyber Effect*.”⁸ Within the contemporary informational technosphere, a vast amount of information is circulating, the majority of which is supposed to be accessible to every inhabitant of the planet, provided that they possess the necessary infrastructure and equipment (electricity network, Internet access, computers or smartphones, etc.). While most researchers acknowledge that these digital techniques profoundly alter the human experience,⁹ they disagree on the nature of this change. Some of them consider that it is a positive one,¹⁰ pinning their hopes in the emergence of a huge collective intelligence, but many others emphasise pernicious consequences of this revolution of information.

For instance, Ophir, Nass, & Wagner¹¹ have demonstrated that the people highly involved in multitasking – a characteristic feature of new media usage – are more exposed to the interferences of irrelevant environmental stimuli and inadequate memory representations than people who engage less in this type of activity, which results in a decline of the cognitive skills of the former. According to Carr,¹² we process the large stream of information of the Internet in an incredibly superficial manner, which affects our attention and memory.¹³ Bakshy, Messing, & Adamic¹⁴ hypothesise that Facebook acts as a *bubblefilter*, which limits the individuals'

⁵ Fatih Canan, Ahmet Ataoglu, Adnan Ozcetin and Celalettin Icmeli, “The Association Between Internet Addiction and Dissociation Among Turkish College Students,” *Comprehensive Psychiatry*, no. 53.5, 2012, p. 422-426.

⁶ Joël Candau, *Mémoire et identité*, Paris, Presses Universitaires de France (PUF), 1998.

⁷ Joël Candau, “Du mythe de Theuth à l'iconorrhée contemporaine: la mémoire, la trace et la perte,” *Revue européenne des sciences sociales*, t. XXXVI, no. 111, 1998, p. 47-60.

⁸ Mary Aiken, *The Cyber Effect*, New York, Spiegel & Grau, 2016.

⁹ John Brockman (dir.), *Is the Internet Changing the Way You Think? The Net's Impact on Our Minds and Future*, New York, Harper Perennial, 2011; Sheila Jasanoff, *The Ethics of Invention Technology and the Human Future*, New York, Norton & Company, 2016; Laurence Scott, *The Four-Dimensional. Human Ways of Being in the Digital World*, New York, Norton & Company, 2016.

¹⁰ Len Fisher, *The Perfect Swarm: The Science of Complexity in Everyday Life*, Philadelphia, Basic Books, 2009; Benjamin C. Storm and Sean M. Stone, “Saving-Enhanced Memory: The Benefits of Saving on the Learning and Remembering of New Information,” *Psychological Science*, vol. 26.2, 2015, p. 182-188.

¹¹ Eyal Ophir, Clifford Nass, Anthony D. Wagner, “Cognitive Control in Media Multitaskers,” *Proceedings of the National Academy of Sciences*, vol. 106.37, 2009, p. 15583-15587.

¹² Nicholas Carr, *The Shallows. What the Internet Is Doing to Our Brains*, New York, Norton, 2010.

¹³ Manfred Spitzer, *Digitale Demenz: Wie wir uns und unsere Kinder um den Verstand bringen*, Munich, DroemerKnaur, 2012.

¹⁴ Eytan Bakshy, Solomon Messing and Lada Adamic, “Exposure to Ideologically Diverse News and Opinion on Facebook,” *Science*, vol. 348, 2015, p. 1130-1132.

exposure to perspectives transverse to ideological borders. As a matter of fact, the Internet as a whole could have the same effect, to a certain extent, since the network is discriminatory against the ethnic minorities.¹⁵ This bubble of togetherness, of the “likes,” of what is identical to oneself, would reduce the experience of human diversity as well as the ability to imagine it.

According to Dunbar¹⁶, the quality of social relations and cognition on social networks is relatively low compared with face-to-face interactions. Aiken¹⁷ maintains that the addiction of some parents to mobile phones (nomophobia) prevents them from spending enough time interacting with their children to help them develop their non-verbal communication skills. Numerous researchers consider that a new psychiatric condition called *hikikomori*, which takes the form of a complete withdrawal of young Japanese from any social life, results from the proliferation of technologies and lifestyles they have induced in Japan.¹⁸ According to Fisher, Goddu & Keil,¹⁹ the opportunity to search for information online leads individuals to overestimate their knowledge (thus resulting in a bias of their representations of the world), considering their brain as way more active than what the brain imaging techniques reveal. The all-digital school may alter the contents passed on to the children.²⁰ Lastly, these digital technologies are conducive to every manipulation of representations. For example, the very fact of changing the speed of images can alter the representation of an everyday life scene. Thus, Caruso *et al.*²¹ have demonstrated that watching a slowed-down video showing an armed robber shooting with a gun heightens the impression that the shooter intended to shoot to kill, in comparison with the same video run at normal speed.

In short, we may no longer be able to represent the world, or not as well. This would result from the transition from an in-depth knowledge, which requires time and is necessarily selective, to a superficial knowledge, open to the four winds and thus very often blown away by them, especially because the attentional process goes through a bottleneck.²² If future researches confirm these pessimistic hypotheses, then one should rule in favour of Plato, who in the myth of Theuth blamed his contemporaries for being “illusion scholars,” because they would try to “remind themselves from the outside, by foreign impressions, rather than from the inside, by themselves” (*Phedra 274b-275b*).

¹⁵ Nils B. Weidmann, Suso Benitez-Baleato, Philipp Hunziker, Eduard Glatz and Xenofontas Dimitropoulos, “Digital Discrimination: Political Bias in Internet Service Provision Across Ethnic Groups,” *Science*, vol. 353, 2016, p. 1151-1155.

¹⁶ Robin Dunbar, “Social Cognition on the Internet: Testing Constraints on Social Network Size,” *Philosophical Transactions of the Royal Society B*, vol. 367, 2012, p. 2192-2201.

¹⁷ Mary Aiken, *The Cyber Effect*, New York, Spiegel & Grau, 2016.

¹⁸ Jonathan Watts, “Tokyo Public Health Experts Concerned About ‘Hikikomori,’” *The Lancet*, vol. 359, 2002, p. 1131.

¹⁹ Matthew Fisher, Mariel K. Goddu and Frank C. Keil, “Searching for Explanations: How the Internet Inflates Estimates of Internal Knowledge,” *Journal of Experimental Psychology: General*, 2015, DOI: <http://dx.doi.org/10.1037/xge0000070>.

²⁰ Philippe Bihouix and Karine Mauvilly, *Le Désastre de l'école numérique*, Paris, Seuil, 2016.

²¹ Eugene M. Caruso, Zachary C. Burns and Benjamin A. Converse, “Slow Motion Increases Perceived Intent,” *Proceedings of the National Academy of Sciences*, vol. 113.33, 2016, p. 9250-9255.

²² Michael N. Tombu, Christopher L. Dux, Paul E. Asplund, Douglass Godwin, Justin W. Martin et René Marois, “A Unified Attentional Bottleneck in the Human Brain,” *Proceedings of the National Academy of Sciences*, vol. 108.33, 2011, p. 13426-13431.

Representation, cultural adversity and cultural felicity (The Theuth Effect)

Though proven, it is very unlikely that the phenomenon I have just described in the second part is universal. As always with human beings, this natural ability – attention – is indeed inflected by the inherently cultural nature of our species.²³ In *Phedra*, Plato explicitly postulates the effect of a cultural invention – namely writing – on our cognitive faculties, an effect I have called the Theuth Effect.²⁴ In this sense, one can hypothesise that depending on the considered cultural matrix,²⁵ the proliferation of superficial representations at the expense of in-depth representations is then more or less pronounced. From the perspective of our representational abilities, there would then be conditions for cultural adversity and cultural felicity.

This hypothesis is not self-evident in my discipline. It breaks away from the anthropological preconception (in the sense of anthropologists' preconception) according to which cultural matrices are immeasurable, notwithstanding the fact that they are often the object of a comparative approach. Few researchers will deny that the development of an individual – development that is here considered in all of its acceptations: anatomical, physiological, motor, cognitive, emotional and sensory – depends on the interaction of an individual's gene pool with an environment. In the same way, few researchers will question the idea that this environment fosters an optimal development (conditions of felicity) or on the contrary, slows and hampers it (conditions of adversity). Eventually, the majority of researchers will acknowledge the idea that felicity or adversity can take a variety of forms: physiological, physical-environmental, socio-environmental, social. For example, at my birth, I could have been struck with osteogenesis imperfecta (physiological adversity), or been born in Marilyn Monroe's body, or the body of boxing world champion Muhammad Ali (physiological felicity). I could have been born in the most arid regions of Sahel (physical-environmental adversity) or in the middle of chernozem fields in South America (physical-environmental felicity). I could have grown up in the 1980s near Bohpal, in India (socio-environmental adversity) or in a farm in Dordogne (socio-environmental felicity). Finally, my primary school socialisation could have taken place in a slum in Kibera, Kenya (social adversity) or in Manhattan's Upper East Side (social felicity).

Anyway, the idea that physiological, physical-environmental, socio-environmental and social adversity/felicity constitute relevant variables with regards to the factors

²³ Trey Hedden, Sarah Ketay, Arthur Aron, Markus, Rose Hazel and John D. E. Gabrieli, "Cultural Influences on Neural Substrates of Attentional Control," *Psychological Science*, vol. 19.1, 2008, p. 12-17; Sarah Ketay, Arthur Aron and Trey Hedden, "Culture and Attention: Evidence from Brain and Behavior," *Progress in Brain Research*, vol. 178, 2009, p. 79-92; Sawa Senzaki, Takahiko Masuda, Akira Takada and Hiroyuki Okada, "The Communication of Culturally Dominant Modes of Attention from Parents to Children: A Comparison of Canadian and Japanese Parent-Child Conversations during a Joint Scene Description Task," *PLoS ONE*, vol. 11.1, 2016, DOI: e0147199.

²⁴ Joël Candau, "The Theuth Effect. What Does Culture do to Our Brains?," *Unesco Encyclopedia of Life Support Systems (EOLSS)*, 2017 (in press).

²⁵ I use this term to define the processual aspect of both culture and its effects on the development of an individual's skills. A cultural matrix is a socio-ecological configuration factor of a profound and temporarily stable sharing (i.e. of practices and representations) between the individuals involved in the matrix. What is commonly referred to as a "society" or "culture" often consists of a mosaic of cultural matrices that can differ greatly.

influencing the anatomical-physiological, motor, cognitive, emotional, sensory development of an individual is widely acknowledged by the scientific community. However, one potential form of adversity or felicity is virtually never taken into account: the cultural form. What is more, simply raising the issue of a potential cultural adversity, and conversely, of a potential cultural felicity, triggers strong reactions. The reason for this is that in the majority of social sciences, including anthropology, “culture” is the object of a syllabus: all cultural matrices are equal, an issue regarded as solved forever and ever. It is the cornerstone of the discipline, even if some scholars, such as Nettle,²⁶ wonder whether individuals benefit from cultural traditions or are oppressed by them, while others discuss “harmful cultural practices.”²⁷ Most anthropologists embrace the principle of axiological neutrality, often rightly so. However, this results in the impossibility of considering the potentially harmful effects of culture on our ontogeny, for instance – as far as our present issue is concerned – on the development of this cognitive faculty that is our representational system. The dominant view among anthropologists is all the stronger than whichever cultural matrix is considered, it is often congruent with that of the people living in this matrix. In general, these people regard their culture as globally “good,” and often superior to others. For anthropologists, the prevailing view is that there is no such thing as a “bad” culture.

However, determining whether every cultural matrix allows one to use one’s representational faculty to its fullest is an empirically sound question. Significant data implies that this faculty varies in range and intensity depending on the environment, especially the family one, and on the level of education. On a Cartesian diagram, this variation could be represented by a positive straight line, the lower part of which would gather the cultural matrices in which our representational ability would hardly be used; and the upper part of which would gather the cultural matrices favouring, either in a voluntarist or “evoked” manner, the development of this ability in every individual involved in these matrices. Between these two extremes, one would then find the cultural matrices promoting intermediate forms of development, the gradient of which could vary both in range and intensity. Following this hypothesis, a newborn baby situated in one of the lower parts of the gradient would be infinitely less likely to develop an optimal representational ability throughout its socialisation, than a newborn baby located in one of the upper cultural matrices. The developmental valence (DV) of this representational ability may then vary on a -/+ axis.

With this hypothesis, I do not compromise with the axiological neutrality principle consisting in avoiding any presupposition on what these cultural matrices are worth in terms of dignity.²⁸ The issue raised here is a different one altogether. It is that of the DV of a cultural matrix with regards to the optimal development, in a given context, of an individual’s representational skills. When the matrix fosters this optimal development, the DV is positive. When it hampers it, the DV is negative. From a programmatic perspective, it is the developmental efficiency of the cultural

²⁶ Daniel Nettle, “Beyond Nature Versus Culture: Cultural Variation as an Evolved Characteristic,” *Journal of the Royal Anthropological Institute*, vol. 15, 2009, p. 223-240.

²⁷ David W. Lawson, Susan James, Esther Ngadaya, Bernard Ngowi, Sayoki G. M. Mfinanga and Monique Borgerhoff Mulder, “No Evidence that Polygynous Marriage Is a Harmful Cultural Practice in Northern Tanzania,” *Proceedings of the National Academy of Sciences*, vol. 112.45, 2015, p. 13827-13832; Matthias Rieger and Natascha Wagner, “Polygyny and Child Health Revisited,” *Proceedings of the National Academy of Sciences*, vol.113.13, 2016, p. E1769-E1770.

²⁸ The issue of the dignity of cultural matrices is yet legitimate *a posteriori*. When dealing with totalitarian cultural matrices, this is hardly debatable.

matrix that is to be assessed and obviously not its dignity. Let us now illustrate the variability of this DV with two cases of cultural adversity and two cases of cultural felicity.

What can be the effects on our representations of a totalitarian cultural matrix, or one that is pervaded with misology, relying more on the category of emotions than those of reason and attention? Recent works help us answer this question. Voigtländer & Voth²⁹ have shown that German people born during the 1920s and 1930s would show a degree of antisemitism two to three times higher than their fellow countrymen born before or after this era. For instance, they picture Jews as “a population with too much influence over the whole world” or “responsible for their own persecution” way more often than other Germans. Obviously, this is a result of the Nazi indoctrination – a prototypical case of cultural adversity – they have undergone during their childhood, and especially in school.

Talking about the totalitarian cultural matrices, one may wonder which open or closed societies – to quote distinctions established by Bergson and Popper – provide the best opportunities for the optimal development of representational faculties. It is a known fact that the very large and open groups are more likely to innovate³⁰ than the closed groups which seem to hamper adaptive cultural evolution,³¹ cognitive risk-taking and tolerance to doubt. According to the 2003 report on development in Arabic countries,³² 4.4 book translations per million inhabitants have been published in these countries over the first half of the 1980s (less than one book per million people yearly), while in Hungary and Spain, the figures for the same period were respectively 519 and 920 book translations per million people. If we accept that the translation of works is an efficient means of exposure to new knowledge and representations, isn't the lack of openness in this field a criterion of cultural adversity?

According to several experimental works,³³ reading works of fiction improves our ability to imagine the mental states of others and ourselves, a faculty called “theory of the mind.”³⁴ It fosters the awareness of others and ourselves, both in children and adults. Engaging in reading, provided that the characters are deep and the circumstances different from the daily routine, leads individuals not only to infer what the characters of the story think and are going to do, but also to get emotionally involved. In this way, reading improves the explicit theory of the mind (that which is culturally acquired, not to be mistaken with the implicit theory of the mind, regarded as “pre-connected”) of readers, both from a cognitive and emotional point of view.

²⁹ Nico Voigtländer and Hans-Joachim Voth, “Nazi Indoctrination and Anti-Semitic Beliefs in Germany,” *Proceedings of the National Academy of Sciences*, vol. 112.26, 2015, p. 7931-7936.

³⁰ Michael Muthukrishna, Ben W. Shulman, Vlad Vasilescu and Joseph Henrich, “Sociality influences cultural complexity,” *Proceedings of the Royal Society B*, vol. 281, 2014, DOI: 10.1098/rspb.2013.2511.

³¹ Jared Diamond, “The Tasmanians: the Longest Isolation, the Simplest Technology,” *Nature*, vol. 273, 1978, p. 185-186; Joseph Henrich, “Demography and Cultural Evolution: How Adaptive Cultural Processes Can Produce Maladaptive Losses-The Tasmanian Case,” *American Antiquity*, vol. 69.2, 2004, p. 197-214.

³² UNDP & RBAS, *Arab Human Development. Report 2003. Building A Knowledge Society*, New York, United Nations Publications, 2003.

³³ Cecilia M. Heyes and Chris D. Frith, “The Cultural Evolution of Mind Reading,” *Science*, vol. 344, 2014, p. 1357; David Comer Kidd and Emanuele Castano, “Reading Literary Fiction Improves Theory of Mind,” *Science*, vol. 342, 2013, p. 377-380; Keith Oatley, “Fiction: Simulation of Social Worlds,” *Trends in Cognitive Sciences*, vol. 20.8, 2016, p. 618-628.

³⁴ David Premack and Guy Woodruff, “Does the Chimpanzee Have a Theory of Mind?,” *Behavioral and Brain Sciences*, vol. 1.4, 1978, p. 515-526.

We can therefore consider that a cultural matrix promoting this type of activity offers, at least with regards to this faculty, propitious conditions for its development, in other words conditions of cultural felicity.

Let's go over one last example. Listening to music from an early age improves the child's ability to imagine the temporal structure of information as well as future events, not only in the field of music but also during speech processing,³⁵ which is confirmed by other works.³⁶ Enhanced sound environments consequently improve the individuals' representational abilities. One can then argue that a cultural matrix with all of the involved individuals benefiting from an ambitious musical education program thereby meets a criterion of cultural felicity.

Interested readers may refer to other works³⁷ for numerous, similar examples. Every one of them gives sound evidence that cultural matrices can have a negative or positive effect on the development of our representational abilities, and more generally on all of our cognitive, emotional, sensory and motor faculties.

Conclusion

According to Berry *et al.*,³⁸ the words used by the Cree Indians to define intelligence can be translated into English as: *wise, respects, respectful, listens, pays attention, thinks hard, thinks carefully*. These words are at the heart of what Crees call "good thinking." In 2004, Patrick Le Lay, CEO of the television channel TF1, declared: "What we are selling to Coca-Cola is available human brain time," a "mission" that this media, like many others, fulfils through what Martin-Juchat & Staii³⁹ have called the industrialisation of emotions. What becomes of our representational activity when our attention is fostered by the Crees' way of thinking, which on this particular point seems to offer conditions of cultural felicity? And when it is captured by television for the benefit of a soda seller, which rather seems to fall within the category of cultural adversity? To put it differently, what does culture do to our brains?

The scientific world has to tackle this issue. Neglecting the Theuth Effect is damaging to anthropology, since its study offers a new perspective on cultural diversity, comprehended in terms of felicity or adversity. Even more serious, this negligence may have harmful effects on contemporary societies. Where the DV is negative, there is nothing we can do to improve it. Where it is deteriorating, we do not know how to reverse the process. Where it is positive, we cannot ensure its upholding or draw on a model to implement it elsewhere. Besides, we have a

³⁵ Christina T. Zhao and Patricia K. Kuhl, "Musical Intervention Enhances Infants' Neural Processing of Temporal Structure in Music and Speech," *Proceedings of the National Academy of Sciences*, vol. 113.19, 2016, p. 5212-5217.

³⁶ Nina Kraus, Jessica Slater, Elaine C. Thompson, Jane Hornickel, Dana L. Strait, Trent Nicol and Travis White-Schwoch, "Music Enrichment Programs Improve the Neural Encoding of Speech in At-Risk Children," *The Journal of Neuroscience*, vol. 34.36, 2014, p. 11913-11918; Travis White-Schwoch, Kali Woodruff Carr, Samira Anderson, Dana L. Strait and Kraus Nina, "Older Adults Benefit from Music Training Early in Life: Biological Evidence for Long-Term Training-Driven Plasticity," *The Journal of Neuroscience*, vol. 33.45, 2013, p. 17667-17674.

³⁷ Joël Candau, "What Does Culture Do to Our Brains? The Theuth Effect: Cultural Adversity and Cultural Felicity." [Online] <https://halshs.archives-ouvertes.fr/halshs-01326773/> [accessed 7 June 2017].

³⁸ John W. Berry, Ype H. Poortinga, Marshall H. Segall and Pierre R. Dasen, *Cross-Cultural Psychology. Research and Applications*, Cambridge, Cambridge University Press, 2002.

³⁹ Fabienne Martin-Juchat and Adrian Staii (eds.), *L'Industrialisation des émotions. Vers une radicalisation de la modernité ?*, Paris, L'Harmattan, 2016.

tendency to systematically reduce issues, which to various degrees are also collective issues since they are linked to the DV of cultural matrices, to strictly individual issues (dispositional orientations). When people suffer from representational dysfunctions, or other cognitive impairments, the causes can be individual, but there is also a chance that they are environmental. This reductionism prevents us from coming up with the best possible answers. It prevents us from making the political and cultural choices that could improve the development of individuals' skills. In contrast, an in-depth study of the DV of cultural matrices should be fruitful. A great deal of historical and anthropological data confirms the idea that, when significant efforts are made in a given society to improve the cognitive, emotional, sensory (and so on) abilities of individuals, the chance that this society collapses is lower than in societies where the opposite tendency is observed. In a global context showing an increase in cultural exchanges, the identification and assessment of what enlightens or obscures our minds is scientifically relevant. By simultaneously comprehending the extraordinary power of human culture and the tremendous plasticity of our brain, we will certainly verify that our genetic legacy does not entirely define our destiny.

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