Response by the authors

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Reply to: **A Salles** (in this issue)

In her commentary to our article on proactive epigenesis, Arleen Salles constructively criticizes aspects of our approach that, she suggests, merit further analyses and justification [1]. We welcome her contributions that we consider both pertinent and useful to the development and application of our ideas. In particular, as Salles argues, core concepts should be more clearly defined, and normative claims must be justified.

Epigenetic proaction deals with a unique characteristic of the human brain: the extended postnatal maturation period of more than 18 years during which the fast-growing synapses are epigenetically stabilized or eliminated in response to the physical, social and cultural environment [2]. Its proactive character is linked to the projective-anticipatory style of brain cognitive functions to the extent that it may be viewed as steering evolution by contributing to the cultural imprints that are stored in our brains. The question we analysed in our article is as follows: Can we proactively modify our socio-cultural environment to constructively interact with the developing neuronal architecture of our brains? The issue of whether such interaction is desirable is also raised but not discussed in depth. Originally, the notion of proactive epigenesis was introduced as a method connecting neuroscience to education, leaving open which values would be chosen for selection [3,4]. In view of this neurobiological-cultural symbiosis, we can describe this process both as a “neuralization” of the normative process itself and as a “culturalization” of the brain through the selective stabilization of neuronal circuits [5].

As Salles correctly notes, we make certain normative claims that need to be further justified, such as suggesting “a modest quest for universally shared values”, or the value of “peaceful societies”, for these

are not self-evident. Some concepts, such as “the good life”, are also open to interpretation. And why talk about ethical “innovation” and the actual genesis of “new” moral rules, instead of refining existing moral rules? A first simple answer is to look at the genesis of the golden rule. With the Babylon code of Hammurabi, the basic rule of social relationships was “An eye for an eye”: that a person who has injured another person is to be penalized in similar kind and measure. It may look as mankind’s first attempt at equality. In the Judeo-Christian cultures, a first set of “moral rules”—or biblical laws relating to ethics—is presented in the Decalogue Exodus 20, 2–17. It includes honouring one’s parent and prohibitions, among others, against murder, theft, dishonesty and coveting but does not include explicitly “the golden rule”. The golden rule was invented possibly independently in several civilizations, for instance, by Confucius 551–479 BC in a negative form: “do not do to others what you do not wish done to you”, and in a positive form by Mô-Tzu 470 BC–ca. 391 BC “he who loves others will be loved in his turn; he who causes others to profit will profit in his turn”. It is first expressed in the Old Testament in Leviticus 19:18: ca. 400 (538–332) BC in a positive form “love your neighbour as you love yourself”. The golden rule may be viewed as some kind of “advance” in the issue of social reciprocity by offering a way of life that privileged social harmony and personal accountability. This example illustrates the genesis of new ethical rules along with the evolution of human society.

Can we say that new rules are “better adapted”? Or that there is “moral progress”? These are importantly normative issues of what we mean not only by a moral rule, or a new moral rule, but also what counts as adaptation (and to what), and what constitutes progress (by what values). A response

may come from the distinction we have drawn between innate predispositions to ethical judgement and moral rules, which evolve with the development of civilization. One does not anticipate that, during the past 300,000 years, dramatic changes in the human genome affected the human brain organization involved in ethical judgement including empathy and prosocial behaviour. To the extent that this distinction can be upheld, epigenetic proaction includes the network of causal connections between the neurobiological, socio-cultural and contingent historical perspectives and which let a moral norm to be enunciated at a given moment of human history. We must take into consideration the evolution of society, and in particular, the consequences of scientific and technological progress and take a dynamic view of nature. We can exert considerable influence over this development, and to some extent select who we want to be or become. In this context of application, the additional conceptual clarifications and normative justifications that Salles calls for become particularly crucial.

References

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