Opinion

Homo artefactus

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Are the differences between humans and other animals “one of degree and not of kind,” as Charles Darwin concluded in his book, The descent of man! Derek C Penn from UCLA and his co-authors claim that Darwin was mistaken [1] and that the profound biological continuity between human and nonhuman animals masks an equally profound discontinuity between human and nonhuman minds.

Minor anatomical changes between humans and their closest relatives—chimpanzees, gorillas and orangutans—made humans bipedal mammals. Bipedality engendered, as an evolutionary starter, a number of successive innovations that culminated in a qualitative break that highlights human uniqueness. The front limbs became hands. From the ancient Greek dichotomy—Anaxagoras: man has brains because he had hands, versus Aristotle: man has hands because he had brains—we now have enough reasons to accept Anaxagoras’ standpoint. Hands enable us to move objects, but touching is also a source of emotion that we consciously feel as pain or pleasure [2]. Using our hands, we emit and receive signals of favour and sympathy, as well as of aversion and threat. Thus, the hand as a motor organ is also a fundamental emotional and social organ.

Released from the requirement for locomotion, the hand allowed humans to modify natural objects for specific purposes—to create artefacts. From a simple coarse-chipped flint to contemporary machines, artefacts have evolved continuously. Every improvement represented new knowledge, deposited no longer in a human body and its memory carriers—the genome and the brain—but in the structure of the artefacts themselves. Unidirectional, ratchet-like progression of artefact creation may be the main reason why human cultural evolution, as a continuation of biological evolution, has become rapid and cumulative. During the course of evolution, the movement and shuffling of things in space and time and the assembly of artefacts have become less apparent, successively internalized, reduced to mere pretended and simulated actions. The virtual manipulation with objects of the external world has become the process we call thinking.

Thinking permits us to conceive and create material artefacts, such as tools and machines, but also abstract artefacts that function as complex symbols: concepts and institutions. Simulating actions by thinking enables humans to live within time, recalling past events and imagining future ones. Gestures transmuted into a spoken language and words have become principal elementary signs and symbols of the material world. Social grooming, widespread in monkeys and apes to serve as social glue, has been transformed into verbal fondling of the partner and into gossiping. An artefact, manufactured by one individual, can be exchanged for another one, produced and owned by another person, even an alien. Commerce, markets, division of labour, increasing group size, science, art, technology, urbanization and warfare all have their origins in human artefactation. Reciprocity in exchanging artefacts seems to be a kind of human-specific altruism.

According to the theory of “niche construction,” modifying environments by organisms can have major evolutionary consequences [3]. For the human species, artefactation has become the dominant form of niche construction. In contrast to our ancestors, who lived and evolved in the African savannah, contemporary humans live in artificial environments, largely constituted by artefacts. The human being is not a “denatured animal,” as once dubbed by the French novelist Vercors, but a “surnatured animal.” Artefacts and cultural evolution have had little effect on human nature anchored in the genome. The capacity of artefactation is part of human nature, but the products of artefactation, both material and symbolic artefacts, stand out of Nature and fill the universe with stuff sui generis.

In the early 1930s, the psychologist Lev Vygotsky [4] ingeniously accorded “symbolic activity a specific organizing function that penetrates the process of tool use and produces fundamentally new forms of behaviour.” Humans have a primate brain, shared with our nonhuman relatives. However, in terms of contemporary neurobiology, some of its modules and circuits must have been repurposed to serve “higher” functions: speech, self-consciousness, abstract reasoning, emotions consciously apprehended as feelings and the Maslowian “metaneeds” directed towards “higher” values such truth, beauty, perfection, justice, order, playfulness and meaningfulness.

In parallel, the evolution of artefacts, originally constructed on purpose and under control of their constructors, has gradually become a process independent of human intentions and control. It seems probable that artefacts will soon assume an independent existence as novel autonomous agents, pursuing their own permanence by self-maintaining, self-improving and self-reproducing. So far, they have mainly thrived by parasitizing humans, who strive for physical survival, for easing labour and for comfort and entertainment. Continuously, and almost unnoticeably, artefacts have strengthened their domination over human affairs, enslaving their master-creators, making humans craving for, and addicted to, artefacts, eventually themselves becoming artefacts. The joint trajectory of biological and cultural evolution can be traced as a path from Homo artefactiens to Homo artefactus.
Conflict of interest
The author declares that he has no conflict of interest.

References