

Evolutionary Self-Selection of Humans by Intellect-Driven and Weapon-Enabled Homicide: A Hypothesis

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Abstract

I hypothesize and substantiate that intellect (in this manuscript- the ability to imagine, conceptualize, foresee, and act creatively) and subjective interest, which came to us along with our mental sophistication, played a fundamental role in human evolution. As soon as clever individual hominids began making weapons with stone tools, homicide with weapons became a primary conflict resolution practice among conspecifics and hominin groups. In each generation, the better weapons made by more sophisticated minds drove humans to more adventures and conflicts to gain higher privileged positions and more personal/group resources. By physically eliminating less sophisticated individuals, homicide, enabled by invented weapons and driven by intellect and subjective interest, acted as a dominant selective evolutionary mechanism that critically sped up the evolution of humans, steering the progress towards more intelligent individuals and society.

As a result of this multi millennia-long self-selective process, we, the humans, exterminated other, weaker hominids and progressed to utterly sophisticated creatures- Homo sapiens sapiens.

Keywords: intellect, homicide, self-selection, human evolution, conflict resolution. evolution acceleration, self-creation, weapons.

Arguments, substantiation and discussion

Thousands of papers are devoted to the possible mechanisms of human evolution, involving bipedalism, fire usage, diet, cooking habits, tool-making, verbal language, etc. Also, more than a dozen theories of human

evolution (1,2), including pulsed climate variability theory (3), self-domestication, (4), social brain hypothesis, (5), and several other; sociality and different aspects of sociality involving hypothetical theories are also in discussion. The amount of data on the possible biomolecular mechanisms of brain tissue enlargement is intensively growing (6,7), but the main question: by what specific evolutionary mechanism/s did the speedy transition from small-brained hominids to larger brained Homo sapiens occur, remains unanswered.

Fig 1 is possibly the most banal picture for palaeoarchaeologists. However, it is a source for interdisciplinary thoughts about human evolution: what evolutionary forces and mechanisms could be responsible for the rapid growth of the human brain beginning from Homo habilis?

From this picture, one can see several conclusions:

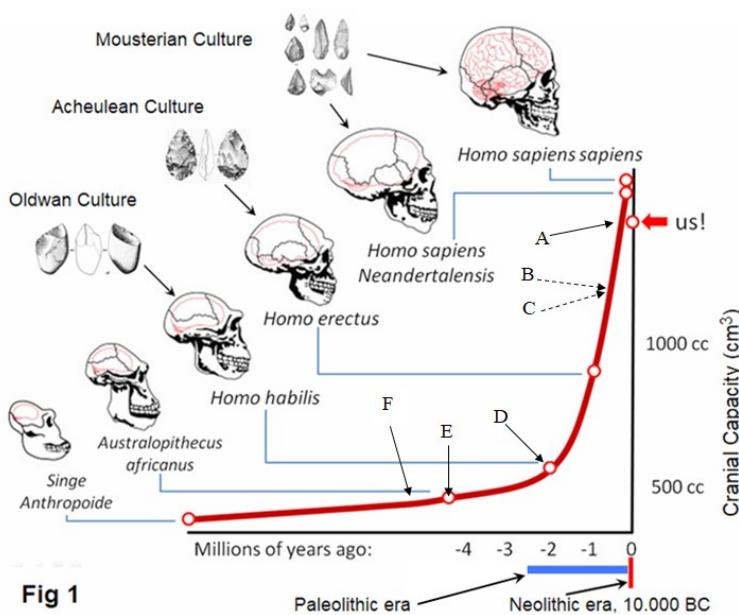


Fig 1. Brain size increase among our hominin ancestors. To this well known basic picture I added the initial time points of processes, typical for the mentioned above theories of human evolution. A- Self-domestication B- Controlled fire usage, diet and cooking habits. C- Appearance of proto-human language. D- Stone tool-making. E- Bipedalism. F- Pulsed Climate variability in East Africa. The time points of theories involving social factors and processes (such as social brain hypothesis, social exchange, dominance-social competition, intelligence, multilevel selection, kin theory, gene-culture co-evolution) are not mentioned, because of high uncertainty of the time of their initial appearance and intervals of action.

-Human brain enlargement was profoundly accelerated at the end stages of our evolution towards Homo sapiens evolution, and thus, the brain enlargement and our development are strongly linked.

-No other lineages except our general lineage of Homo sapiens sapiens survived- all our evolutionary cousins are extinct.

-The most significant brain volume change, the evolution from *Homo habilis* to *Homo sapiens sapiens*, reached in the same, Stone Age. Apparently, some factors critically sped up brain enlargement and accordingly, human evolution in stone ages. Since our lineage is currently the sole existing and highly sophisticated entity among all hominids, it is reasonable to theorize that we had a very powerful, intellectual, decisive difference from others that gave us an incontestable evolutionary advantage over our ancestral cousins from the beginning of divergence.

-The exponential growth of hominin brain size is not typical for natural evolution unless cataclysmic or drastic environmental changes are registered for that period. (The Pulsed Climate variability theory suggests some periodic climate changes for 400-800 Kyr time periods in Pleistocene, in East Africa, however it does not provide direct mechanisms for the hominin brain enlargement (3)). In order to get such targeted and speedy changes, presented in Fig 1, some additional mechanisms inhibiting the reproduction of small-brained individuals had to be involved/activated at these stages. The suppression of reproduction of less effective or unwanted qualities is the core mechanism of man-involved artificial selection. Thus, the curve itself indicates that at least some artificial/unknown selection elements were in effect during that period of our evolution.

-None of the mentioned in the caption to Fig 1 hypothetical theories, besides bipedalism and stone tool-making, were continually effective for the period of rapid brain growth- for the past two 2 million years. While tool-making was gradually progressing up to our times, bipedalism, which became effective since 5-6 Mya (8), was already a feature of *Homo Erectus* and may have had subtle improvements in the next two million years.

Concerning sociality-involving mechanisms of human brain enlargement, it is essential to have in mind that:

1- Evidently, sociality played a very important role in the final stages of human development, giving humans extra leverage of safety and multi-parametric effectiveness in many aspects – spreading any novelty and experience among the members of the groups, collaborating, communicating, learning from each other, establishing family and common traditions of behavior, facilitating better transition of the acquired knowledge to the next generations, etc (9). Though, as a rule, sociality is accompanied primarily by decreasing the number of tasks and simplifying/ modernizing/ making more “professional” and specific the functions for each individual. By this biological strategy, the load on the brain of each member of the society either decreases or is redirected;

instead of complex and responsible individual decision-making, each individual makes tasks programmed genetically, or prescribed by the group traditions and taboos, in case of humans.

2. When we split from neanderthals, around 4-500 Kya we both shared equal brains. Later, in their new habitat, neanderthals lived in smaller groups (10-30 members (10) versus 100-200 members in human groups 250 Kyr ago (11)), though, by the time, had developed bigger brains than humans (12).

These two assumptions together point to the notion that sociality could not be a critical evolutionary factor of the human brain size increase. Thus, within such an approach to the problem, the only factor which could be more or less adequately responsible for the brain size increase remains stone tool-making. If stone tool-making was the factor that affected human evolution, by what mechanism could that happen?

From some point in our distant history, using stone tools, our ancestors began to make and use simple weapons from other materials as well (such as wood, bones, animal skin) (13, 14). With their less than 500 gram brains, apes (15) go to war using different objects. It is reasonable to believe that a "brainy," subjective human equipped with specially-made weapons would be unstoppable in his rush going into conflicts with other, less armed individuals.

Did the weapon-making and their use affect brain enlargement, and our evolution? Evidently, the first weapons were intended for hunting, but must be qualified as combative weapons when used against conspecifics. Who would first invent and use weapons? Presumably physically weaker, but with higher brainpower individuals (16), because the physically more powerful could overpower the prey or a rival by simpler, more available means, for example, a branch of a tree, used as a club. This is a key premise: during human history, new and better weapons overwhelmingly had to be invented by smarter individuals because the better weapon was their main tool-argument of survival, both for hunting and dealing with physically more powerful conspecifics and external rivals. Accordingly, the evolutionary dominant selective pressure was towards individuals with higher intellect and brainpower.

However, was the evolutionary selective pressure towards smarter individuals alone enough for the speedy enlargement of the human brain according to the rules of Darwinian natural selection? The growth of the curve in Fig 1, beginning from two million years ago, is reminiscent of the pattern of the speedy artificial selection,

while the portion of it beginning from ten to two million years is typical for natural selection. Accordingly, a valid question arises; did we pass through a kind of artificial selection during the stone ages, that deselected small-brained individuals?

Based on the logic above, it is reasonable to make several assumptions.

1-Our direct predecessors were the first apes to make and use specially-made weapons for hunting, and apparently, in warfare.

2-Specifically, the weapons made early humans prone to aggressive homicide in conflicts by giving the owner of the weapon confidence in his superiority over the rival.

3-Better weapons gave evolutionary advantages to our direct ancestors over the other hominin lineages.

4- Homicide with the use of a weapon, in turn, became an unprecedented self-selective factor of evolution.

Assumption number one is discussed by Charles Darwin. In 1871 he wrote, "If one man in a tribe... invented a new snare or weapon, the tribe would increase in number, spread, and supplant other tribes". In a tribe thus rendered more numerous there would always be a rather better chance of the birth of other superior and inventive members"

Assumption number two is somewhat disputable, but the majority of psychologists will support it because of its fundamental nature in subjective relations - better armament gives aggressive superiority over the poorly armed.

Assumption number three and four are disputable, and this manuscript is explicitly devoted to their justification, in line with the mentioned Darwinian statement, where Darwin emphasizes mostly the hunting power of the tribe equipped with snare and weapons.

Many authors draw largely theoretical assumptions that along with growing mental capabilities, subjectivity-driven conflicts were also intensified in our past. (See for example (17)). The conflicts within the members of the group and wars between the tribes could and had to be carried out by weapons (because weapons were already in their hands). At this point it is reasonable to hypothesize that poorly armed, mentally inferior, and accordingly, badly self-organized were losing to intellectually more competitive and better-armed individuals on individual and group levels and were being physically removed from the further competition of survival. This process had two elements in it: 1- Darwinian selection of evolutionary winners by a single criterion- mental

capabilities (conflict resolution requires mostly better judgment and better weapons, rather than just physical superiority), 2- artificial deselection of unfit simply by killing- blocking their reproduction. Accordingly, both elements favored the selection for advanced brains capable of making better weapons and better decisions. Next, the winners with more brainpower were capable of "valuing" and choosing more desirable partners, thus having more and better offspring, creating better living conditions for the group or tribe, thus increasing their safety, quality of life, and the area of the habitat.

The person-person homicide (18,19) with weapons on the individual level within the genetically close groups in essence had a profound evolutionary, man- involved selective effect, since the killer, as an "evolutionary" winner over the weak, was gaining the exceptional power to be reproduced in the next generation not by the rules of natural selection, but by simply killing the competitor.

In the wars between already slightly genetically deviant groups wars were eliminating the whole group (or males of the group, if the interbreeding was still possible) due to summarily lower potentials, especially intellectual qualities. In this case, along with the strong selective evolutionary progress, expansionistic benefits were also coming into effect, since the winners were gaining more space and resources.

The details and motives of different types and aspects of homicide (20) and inter-tribal wars (21,22,23,24) are perfectly substantiated and described by many authors. In this paper, I am stressing the reader's attention **on only one single aspect:** on the intellect and interest driven dominant mechanism; on the intra- and inter-tribal homicide with the use of weapons that was, in my opinion, speeding up the evolution of humans by self-selection towards more clever individuals.

It seems striking that Homo sapiens was created "too fast," in a time frame of 10-20 of thousands of generations. Different apes, such as gorillas, chimpanzees, and orangutans (having life span, reproductive rates, infant maturation periods and number of group members approximately comparable to humans) who were established as species well before humans, still exist, but we are the only "Homo Sapiens" around: all our evolutionary cousins are extinct. How could that happen? If we take into account the homicide with weapons among conspecifics and within diverging tribes, we may hypothesize that we were the ones who killed our ancestral cousins. Equipped with constantly improving weapons, generation after generation, we became more aggressive

and confident because of the weapons and killed all competing subjects in historic times. We did not kill other apes, gorillas, chimpanzees, and orangutans in their forests but presumably killed less competitive, less brainy hominids who were fighting for the same resources within the same habitat. Perhaps this was the mechanism that exterminated our ancestral cousins, who were slightly deviant from the general Homo Sapiens-sapiens evolutionary line but lost to us according to the Competitive Exclusion Principle (25,26).

Humans were killing other humans in conflicts mainly because of their self-interests; territory, material goods, and other resources, but the biological and societal outcome of this homicide was the astonishingly quick change of human nature, biology, genetics, and physical appearance. By eliminating weaker competitors within the group, tribe, and neighbors on conflicting occasions, we acted as "self-selectors," artificially sped up our evolutionary progress towards smarter people, and "created" ourselves in a historical blink, beyond traditional natural evolutionary methodology, and tools.

The main arguments against this hypothesis may come from currently dominant opinions based on some evidence that for the time frame 50,000 to 10,000 years ago, the rate of intra-group and inter-group homicide was at 2%-4%, and approximately similar, observed for humans and chimps (27). The humans and chimps diverged 5-7 million years ago. We progressed into current humans. Evidently, chimps also had progression from ancient chimps to current ones. However, chimps are still unable to make stone tools and effective weapons, while we did and now are building much more sophisticated ones.

At first glance, the similar homicide rates in both humans and apes may seem instrumental for rejecting any hypothesis about the homicide-involved selection or acceleration of evolution. Nevertheless, if we consider the difference in the motives of killing and especially the methods- use of made weapons, the outcome will be seen as critically different. In apes, in general, a more aggressive, more powerful, and possibly more brainy individual kills a weak one, and accordingly, the selective pressure was towards more powerful, aggressive, possibly more intelligent apes. In the case of weapon-equipped humans, the selection pressure was solely towards smarter, intelligent individuals who were making better weapons and better organizing their tribes for more efficient warfare. In other words, the highly focused "self-selective power" of humans, just by one

criterion, one decisive element- to eliminate exclusively the mentally less capable, was much more efficient evolutionary than more chaotic ape killings with a broader scope and much less emphasis on “brainy” aspects.

In Fig 2, a qualitative illustration of these assumptions is presented. More aggressive humans having better judgment and equipped with better weapons (pool of people right from arrow 1) were killing “weaker” humans within the same scope-judgment and weapons (red Gaussian distribution). By eliminating less capable (left portion under the curve, from arrow 2), the mean value of the whole curve was shifting right (arrow

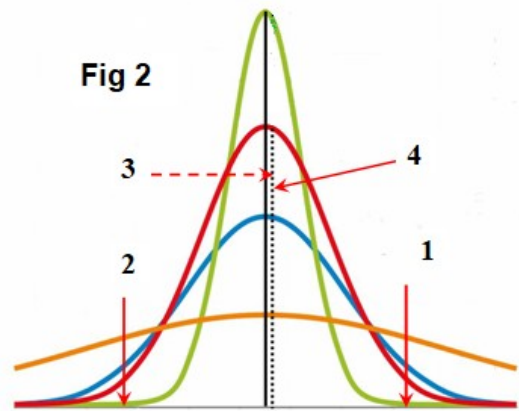


Fig 2. Qualitative illustration of the homicide-induced changes in the distribution of individuals of certain qualities among hominid hypothetical groups.

3) towards an overall slightly more sophisticated by mental capabilities pool of individuals and society (mean value at arrow 4). Further, in the next generation, the slightly smarter society could make slightly better weapons, be slightly better organized, and better perform other tasks under the control of better brains.

In the case of apes, the killings had no strongly selective component to them. The killed could be less sophisticated in many aspects (lines green, blue, orange, etc.), but the outcome could not be specific and strongly directional because of the multiplicity of factors of the “weakness.” Accordingly, the “ape-cide” without sophisticated weapons did not yield more “brainy” apes but went as a regular, natural, biological evolutionary process.

Fig 2 may also be illustrative for pointing out the difference between Darwinian multi-factorial, natural, slow, adaptive selection and artificial, fast selection, where aims of the selector are achieved by active, targeted removal from further propagation of all with unwanted qualities, in favor of chosen one or few.

A fundamental evolutionary postulate tells that “selection is not about survival per se but reproductive success” (28). Which means that natural selection is accomplished by the winners -the most successful individuals, who leave more offspring, and thus, in multiple generations, prevail over the unfit. In the case of artificial selection, the selector physically removes from further propagation undesirable traits, thus giving space to chosen ones,

independent of their overall biological survival strengths. Such a process is strongly targeted and way faster than the evolutionary success of winners could ever be. The mechanism of artificial selection, in essence, is the physical deselection of the unwanted. In humans' case, the evolutionary drivers worked from both extremes of the Gaussian distribution of individual qualities; at the leading edge by the increased reproduction of winners according to the principles of natural selection, and at the lagging edge, by the physical removal of less capable from reproduction, according to the principles of artificial selection. The speedy enlargement of the human brain and the disappearance of evolutionary cousins point to the fact that we went through an artificial selective process, where only we could play the role of the acting selectors. Accordingly, the driving force of the process had to be our growing intellect. The actors and subjects were also we, and the main mechanism of the process was the extermination of less capable by the weapons invented by brighter minds. Thus, intelligence - the ability to make weapons, be better organized, and overpower rivals by using weapons, was the driving mechanism for both, natural and self-selection.

It is important to stress that the intensity of homicide is secondary because the continual accumulation of new quality, centered only around intelligence, during thousands of generations gives astronomical growth of quality, even at the rates of 1% of weapon-based homicide in a generation. Self-selection for intelligence is a unique lineage since it provides further evolutionary improvements in other qualities already by default- by better minds. Even current human sexual unique dimorphism: the female beauty and male masculinity and determination, social settings and other, hardly explicable qualities can be considered as mostly the selective results of homicide, since it is axiomatic that in a smarter society not only weapon-makers, but other members also become selectors- actors in choosing positives and rejecting the bad, ugly, unwanted, unwise, antisocial. Such societal setting also favored the deselection of the less competitive, mostly by the rules of artificial rather than natural selection.

According to studies on the motives of homicide (20, 29, 30), the most intense types of it were due to male-male conflicts. From the logic of the process described, it follows that killing the male competitor with weapons was mostly not a process of alpha male dominance establishment, but conflict resolution on individual and group level, for the subjective, primarily not sexual interests, according to individual and group overall qualities,

potentials, and mental capabilities. This was the reason that alpha male dominance is now negligible in our culture because any alpha male pretender will face a smarter person who will challenge him with his better brain and more sophisticated methods of fight, weapons, and revenge. That is why at the end stages of our evolution, our teeth became smaller and brains – bigger, because we were living and fighting with brains, but not with bigger teeth or thoughtless aggression.

Low-intensity internal killings are registered in many species. For the subject of this paper, it is important to understand, in general, why do people kill each other? In my opinion, two fundamental factors are responsible for this phenomenon.

1- The principle of biological expansion: every individual tends to occupy more space and leave more viable offspring who will occupy more space in the next generation.

2-We, the humans, are self-interest holders (subjects) and individual decision-makers. Living in a community with others, we have conflicts with one another. Beginning from the times of stone tool-making, as subjects having some means of communication (body language, sign language, other ways of non-verbal communication, verbal language (31), conflict resolution implied the use of compensations or adequate compromises in order to re-establish peace between the parties. Due to our intellect, we judge and evaluate the compensation. If it is not

satisfactory for one side, and that side thinks it can achieve more, it escalates the conflict to the next level. (Fig 3). On this new level, new agreements can be achieved, and the conflict can be solved. If the new conditions are still unsatisfactory for one of the sides, it keeps escalating the conflict. At a certain point, the conflict reaches an edge (level 4), beyond which, if no one yields, a homicide comes into

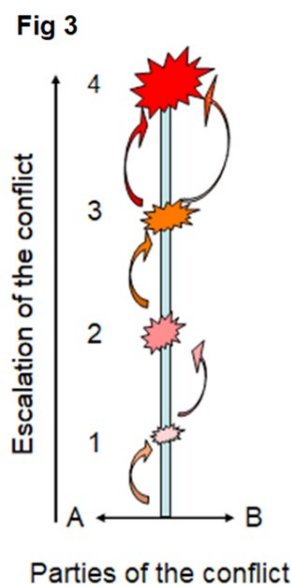


Fig3. Dynamic logic of the conflict.

-In an open conflict between two subjects, (individuals, organized groups, states) there is an initially aggressive side and an opposite, moderate side, which, if cornered, may go into escalation at some point.

The conflict gets more and more escalated if neither side yields. (1-3). At the culmination homicide comes into effect (4)

effect- the stronger side annihilates the weaker side, and the conflict is solved. The process of conflict escalation

is based on the subjectivity of conflicting sides: both are right and determined according to their standpoints, and no one wants to yield.

This hypothesis offers a general biological mechanism of human evolution from the early stone age up until Neolithic times. Moreover, the most controversies about the human anatomical changes, including the decrease in teeth size, skull changes, sociality, and other unique human qualities and habitual manifestations, could be easily and even fundamentally explained by the self-selective effects of intellect and interest- driven and weapon-enabled homicide.

I am substantiating humans' homicidal aggressive biological behavior at individual and group levels specifically under the principle of biological expansion. Despite the fact that the phenomenon of biological expansion is not mentioned among biological rules and laws, the foundation and the core philosophy of all biological is the tendency of living organisms to expand. All individuals (and the species, accordingly) tend to occupy more space and leave more offspring for the next generation.

The social nature of humans does not contradict this global biological principle: being social and emphatic towards each other, we are utterly aggressive as competitive, intelligent individuals and as interest holders and politically divided subjects. As individuals, we are all driven by higher biological urges that control human behavior in our everyday and social lives by default.

As with any other hypothesis, this hypothesis also has no direct experimental and factual proof. However, it is based on fundamental biological principles- the logic of biological expansion, inherent biological drivers of evolution, psychology of subjective intellectual behavior, conflict resolution, and amply published, mostly theoretical assumptions about the widely spread multi-motive homicide in our hominid past. I understand that it deviates from most of the existing theories of human evolution (which are also, in essence, hypothetical) and the standpoints of many renowned scientists in the field. At the same time, to my knowledge, it has no direct factual archaeological and anthropological contradictions.

I believe that putting this hypothesis forward with the arguments above may stimulate new research and bring more substantiated evidence in this fundamental topic of evolution.

Conclusions

I hypothesize that:

- Homicide with weapons, as a conflict resolution tool, in essence, came to us along with our mental sophistication. The higher mental sophistication and better weapons made by the sophisticated minds drove humans to more adventures and conflicts to gain more resources and higher privileged positions.
- Because of the survival advantages of better-minded and better-armed individuals, and deselection of mentally less capable, the selective evolutionary pressure was towards intelligence, and better, and presumably, bigger brains.
- During this continual process in generations, homicide with constantly improving weapons, driven by self-interest and subjectivity, "acted" as a leading, highly selective, self-improving evolutionary mechanism that critically sped up human evolution towards smarter individuals, and by intra-social evolutionary mechanisms- an advanced society.
- From the initial time-point when the "first hominids" made and used weapons, self-selection on the basis of intelligence became dominant over traditional natural evolutionary factors and provided our speedy transition towards Homo sapiens sapiens.
- The results of this seemingly chaotic and multi millennia-long intellect, interest, and subjectivity-driven, conflict-resolving homicide with weapons are harshly impressive. We, the humans, exterminated all our evolutionary cousins and progressed to solely planet "owning," utterly sophisticated creatures- Homo sapiens sapiens, who are continuing to organize interrelations based on better minds and better arms.

Acknowledgments

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Since this manuscript offers a hypothesis from an interdisciplinary viewpoint, it refers to just some examples from ample publications, important for the substantiation of particular aspects of the hypothesis.

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