

The Selfish Gene and After: A Personal Appraisal of the Dawkins Phenomenon

Abstract: This article is in commemoration of the 50th anniversary of the *The Selfish Gene* (TSG) by Richard Dawkins. The book was one of the most exciting intellectual debate of the 20th century on the understanding of genetic determinants of human cultures and subsequently, biopolitics. The debate involved the most renowned biologists, anthropologists and philosophers, and revealed the nuances of how scientific ideas are influenced by, and reflect, dominant political ideology. The debate continued for at least 5 decades since the publication of this book, and shaped the public perception of organic evolution and human social behaviours. The debate spread on all major academic campuses, including the Indian Institute of Science, Bangalore. As young researchers in ecology and evolution, my group of peers honed our own understanding of evolutionary biology from the Sociobiology Debate. I attempt here to describe the unfoldment of the novel ideas discussed in TSG, their scientific connotations and social implications from a participant-observer's perspective.

Keywords: Biology and ideology; Darwinism; Evolutionary biology; The Selfish Gene; Sociobiology debate.

I read *The Selfish Gene*¹ for the first time during my post-grad years. This first reading overwhelmed me by its exquisite explanation of the Darwinian evolution by natural selection in the most arresting, lucid language. This was a gem of popular science writing. The concise description of the process of evolution from the beginning of life in the first chapters is masterful, and astonishingly lucid. The absolutely novel "gene's eye view" of evolution of life stunned me on my first reading — in fact more than did E.O. Wilson's magnum opus, *Sociobiology*.² A second powerful insight was the conceptualisation of the "meme" as a unit of social/ cultural inheritance, as an equivalent to the gene in biological inheritance. This posited transmissible (learnable) social behavioural traits parallel to heritable genetic traits.

Yet there was something in the book that made me cautious. This was the period when Sociobiology Study Group in the US, led by Richard Lewontin, Stephen Jay Gould and Steven Rose, revealed that the logic and several

statements in this book as well as in Wilson's *Sociobiology*² and *On Human Nature*³ served to bolster the New Right ideology, legitimising racism and social-economic injustices.

Upon the subsequent readings of the book, I felt very uncomfortable to discern that some statements in *The Selfish Gene* (hereafter, TSG)¹ were scientifically untenable; they consisted of astonishing leaps in logic, without much empirical evidence, to explain complex human social behaviour in one fell swoop. My training in ecology taught me to deeply suspect any attempts at generalisation and confident predictions based on inductive logic, already warned by David Hume two centuries ago⁴. It's understandable that all intelligent minds would aspire to find a satisfactory explanation of astoundingly complex systems of the Universe — ecosystems, vertebrate brain and human societies — in terms of diverse functionings and associations of building blocks such as molecules. An explanation of the evolution of life in terms of evolving combinations of nucleic acids and amino acids, or that of the evolution of social interactions in terms of functional genes of individuals is intellectually stimulating and constitute scientifically testable/ falsifiable hypotheses. The logic underlying the view of the gene as the ultimate unit of evolution is simplistic: Complex cell functions can be explained in terms of the interactions of thousands of proteins, which are encoded by genes; hence genes are the basic units of any organism's life functions, including social behaviours; the behavioural traits are transmitted by the culturally transmissible memes ("culturgens" in Wilson⁵); ergo, social behaviour is explained ultimately by genes.

The Neo-Darwinian Context: In Neo-Darwinian view, the fundamental unit of evolutionary change in all taxa is the individual, — the unit whose fitness is subject to natural selection. Any supra-individual (such as the group) and infra-individual unit (such as the cell or the gene) is dubious from Darwinian perspective, because the Darwinian fitness of that unit would be difficult to surmise. Darwinian fitness of an individual is defined as the relative ability of an individual to survive and produce a greater number of viable, fertile offspring compared to others in the same population. If this individual is able to beget more viable offspring (that will live long enough to beget

more offspring), then it is "selected" over other individuals in the same population. Thus, evolution of more "fit" genotypes is propelled by the evolutionary tendency of all individual plants and animals to maximise the number of their offspring, whether by competition or cooperation with other members of the group. This is an exact equivalent of the neoclassical economic view of *homo oeconomicus*⁶ who is always propelled by profit maximisation motive, which elicits perpetual conflict of the individual against all others. Darwin himself imagined that in the case of social insects such as the honey bees, wasps, ants and termites, a majority of colony members are sterile females, who sacrifice or withhold their reproduction in order to maximise the offspring of the queen⁷. In these social insects, Darwin guessed, perhaps the unit of selection is the whole colony as a super-organism, rather than the individual. Darwin also mentioned the case of the suicidal stings of some bees: the death of the individual finds a reason in the advantage for the community. Thus a bee hive with altruistic members would beget more surviving offspring, and therefore more fit, than other hives that beget fewer offspring. This 'group selection' theory, most strongly reiterated in the 1970s by Williams⁸, was a major explanation of the evolution of altruism in societies. However, this was countervailed by more elegant explanations such as kin selection (more chances of the individual's genes surviving in the kin who receives altruistic aids) and reciprocal altruism between group members (you scratch my back, I will scratch yours); in both cases, the individual remains the unit of selection. And this individual, even when it is behaving altruistically, has an ulterior evolutionary motive of maximising its own genes — either in its cousins and nieces and nephews (kin selection) or in unrelated conspecifics with the chances of receiving similar aids ('reciprocal altruism'). So all individuals are ultimately selfish. This is the 'selfish' view of the living world, — a vision that Darwin's metaphors helped spread by a combination of the Hobbesian 'battle of all with all others' and Spencer's 'survival of the fittest', which applies to both neo-Darwinism and neoclassical economic theory. This view, when applied to society, takes the form of Social Darwinism, to explain and justify the existing social inequalities and inequities.⁹ TSG appeared to provide some scaffolding to this vision, which was in fact masterfully articulated in Wilson's magnum opus², published just a year before. This phenomenal book had a seismic effect on the fields of biology and anthropology, by suggesting that all social sciences can ultimately be explained in terms of evolutionary biology and genetic ontology of all social beings, and spawned the eponymous Sociobiology Debate, involving as it did several authorities

from multiple disciplines of biology and anthropology. TSG was a fundamental contribution to this remarkable movement on both sides of the Atlantic.

The Achievements of TSG: Aside from this general description of the "selfish" individuals to perpetuate its own genes by different biological and social means and machinations, TSG also taught the reader to recognise a fantastic possibility of a "gene's eye view", replacing the "individual's eye view" of evolution. In this novel perspective, the genes themselves are the agents who find the means of perpetuating themselves through their carriers — the bodies of organisms. The bodies of ants, wasps, lions and humans function like zombies, governed and directed by their own genes, with the primary goal of replicating and multiplying the copies of the genes across generations. It's the genes who decide when to make the individual kill and when to cooperate any other individual, with the primary objective, unbeknownst to the carrier individual, of producing as many copies of the genes as possible. The genes that failed to do so have gone extinct ("selected out"), while the selfish genes that persist are the fittest genes that maximise the number of their copies. This fantastic envisioning is a unique contribution of Dawkins. Philosophically, a profound implication of this gene's eye view of evolution is that the agency of conscious humans with great cerebral prowess is understood to be subservient to their ancestral genes. So whether an individual is saintly, kind, or devilishly cruel, whether an age-old social rule or cultural norm is supportive or oppressive of men and women, individuals are not to be held responsible, because they are only unconscious puppets, orchestrated by their genes that are ineluctably, evolutionarily, "selfish".

Darwin had dethroned humanity from its biblical role of the 'master of the world' down to a not-so-special descendent of a long lineage of organisms subject to the universal forces of natural selection. Now the TSG robs humanity of its historical agency, dignity, and power of shaping its own destiny, and describes all humans as machines designed and propelled by an invisible genetic software inherent in their bodies.

TSG as a Text of Sociobiology, and its Critique: My first visit to the Centre for Ecological Sciences, Indian Institute of Science, Bangalore was a turning point in my life. This was in 1988, on a kind invitation and support from my extraordinary mentor Prof. Madhav Gadgil. During that stay for the first 6 months, I received the fabulous tutorials by Professors M. Gadgil, N. V. Joshi and R. Gadagkar — all of whom had made profound contributions to population biology — the first two on theoretical

grounds, the last on empirical data and analyses of wasp social behaviour, and taught me to review the claims of sociobiology in a meaningful way. I learned the Darwinian bedrock of Sociobiological expositions by Wilson and Dawkins, and also recognised the unfortunate usage of a language that often misled the general readers to unscientific and (mostly) unintended interpretations. In many places, Dawkins used the metaphor of "selfishness" at the gene level, but he also used the same term in the usual lexical sense:

"The argument of the book is that we, and all other animals, are machines created by our genes. Like successful Chicago gangsters, our genes have survived, in some cases for millions of years, in a highly competitive world. ... I shall argue that a predominant quality to be expected in a successful gene is ruthless selfishness. This gene selfishness will usually give rise to selfishness in individual behaviour."¹⁰

No biologist can agree with this utterly illogical explanation of selfishness in humans, even when one understands that the first part of the quoted text is only a metaphor. But this metaphor is very often collated with the lexical meaning of the term, in sentences such as:

"The gene is the basic unit of selfishness."¹¹

Lay readers, for whom the book was written, are given to understand that ruthless selfishness in human individuals is inherent, genetically determined, and therefore it's futile (even undesirable) to correct that behaviour. Nevertheless, Dawkins also leaves a large space for culture to shape human behaviour, despite "genic selfishness", and does not describe altruism as subcutaneous selfishness with a hidden agenda of enhancing one's welfare. Michael Ghiselin¹² wrote, "Scratch an 'altruist', and watch a 'hypocrite' bleed", whereas Dawkins writes,

"An apparently altruistic act is one that looks, superficially, as if it must tend to make the altruist more likely (however slightly) to die, and the recipient more likely to survive. It often turns out on closer inspection that acts of apparent altruism are really selfish in disguise. Once again, I do not mean that the underlying motives are secretly selfish, but that the real effects of the act on survival prospects are the reverse of what we originally thought."¹³

Soon after I had submitted my doctoral thesis in 1989, I obtained the astonishing honour of getting an invited

visiting post-doc researcher position in Centre for Ecological Sciences and Centre for Theoretical Studies — even before I received my doctoral degree from the University of Calcutta. (That was the incredible generosity and affection Prof. Gadgil showered on me.) During the two-year period of my first post-doc research in human ecology, I had the immense fortune of engaging in sessions of vigorous arguments over sociobiology with my peers in CES, especially Seshagiri Rao and K. Chandrasekhar. The series of nocturnal sessions generated spectra of light but no heat. This was when the new edition of TSG¹⁴ was out, with two new chapters and 65-page long endnotes, defending and elucidating the original controversial sentences. This was also the period when I read all the contemporary publications pertaining to the famous Sociobiology Debate that enraptured all biologists. Most remarkable were the meticulous philosophical critiques by Michael Ruse, and by Philip Kitcher, whose *Vaulting Ambition*¹⁵ was given to me by Prof R. Gadagkar to review for the *Journal of the Ind. Inst. Sci.*¹⁶ (I was so happy and astonished by the trust he put on my ability.)

During this phase of my exposure to the literature of philosophy and sociology of science, I discerned another hidden ideological service of the sociobiology proponents to maintain the *status quo*, to provide an evolutionary explanation of unconscionable social injustices — war, racism, sexism, economic inequalities. The evolutionary explanation comes in the form of what critiques point out as the naturalistic fallacy — 'what exists must be what ought to be'. Cut-throat competition for wealth, merciless battles between groups of people over resources, patriarchal oppression of women, mayhem of the native people by conquistadors — are all unavoidable outcomes of millions of years of natural selection. These selfish behaviours may be seen, sociobiology argues, as adaptive traits for survival by maximising Darwinian fitness. In this argument, the proof of the evolutionary success of selfish traits like greed, cruelty and unfairness is that they exist in modern societies. A brilliant critique by Gould and Lewontin¹⁷ shook the foundation of this "adaptationist program". This paper is now a classic in the history of science, in which they showed that (a) the naturalist fallacy of believing 'whatever exists must be the best of all possible things in all possible worlds' is a reiteration of the absurd worldview of Dr Pangloss — a character in Voltaire's satire *Candide, ou l'Optimisme*; and that (b) every non-adaptive, neutral trait is, in this adaptationist frenzy, is believed to be an outcome of natural selection — no less absurd than the hypothesis that the entire architecture of San Marco cathedral was built only to hold the coat of paint on the surface of the spandrels above the lofty

columns and arches. Just as the belief that the human nose evolved as an adaptation to hold eye glasses.

The sociobiology debate around Wilson, Dawkins, Ghiselin, et al. corroborated that there is hardly any 'pure' science that is entirely bereft of ideological underpinnings and handles for political use and abuse.

A Corrective, Enlightened Explication: In the new and updated edition of TSG (1989), Dawkins himself regretted this "unfortunate" use of the metaphor of selfishness. Metaphors are valuable in empirical scientific research yet Gould showed how they could potentially limit the interpretation of evidence. In the case of the heritable "selfishness" of DNA, readers were inculcated to believe that "Genes are like Chicago gangsters"¹⁸, and we all inherit them. In this new edition, I was happy to find Dawkins' apologetic in his endnotes¹⁹:

"In 1975, when it was written, a socialist government which I helped to vote in was battling desperately against 23 per cent inflation, and was obviously concerned about high wage claims. My remark could have been taken from a speech of any Labour minister of the time. Now that Britain has a government of the new right, which has elevated meanness and selfishness to the status of ideology, my words seem to have acquired a kind of nastiness by association, which I regret. It is not that I take back what I said. Selfish short-sightedness still has the undesirable consequences that I mentioned. But nowadays, if one were seeking examples of selfish short-sightedness in Britain, one would not look first at the working class. Actually, it is probably best not to burden a scientific work with political asides at all..." (emphasis mine).

In light of the new endnotes of the 1989 edition, a re-reading of TSG reveals that Dawkins is — at least in this new edition — not a doctrinaire genetic determinist who believes that genes are the ultimate determinant of human development and destiny, or that cultural influences have no role to play in human social behaviour. Dawkins explicitly wrote²⁰:

"We have the power to defy the selfish genes of our birth and if necessary, the selfish memes of our indoctrination. We can even discuss ways of deliberately cultivating and nurturing pure, disinterested altruism... We, alone on Earth, can rebel against the tyranny of the selfish replicators."

What a wonderful liberatory statement, pregnant with a progressive political ideology that transcends the current

one that valorises selfishness as a virtue! Yet, this goes against some doctrinaire sociobiologists, "jealously protective of the importance of genetic influence," who criticised the above statements as "inconsistent with the rest of the book"²¹. Perhaps they were justified to a considerable extent, in view of Dawkins' definition of the gene as "the basic unit of selfishness"²². The conflation of "the unit of selection" with the "unit of selfishness" was scientifically inaccurate and misleading indeed. However, unlike Dawkins, the doctrinaire sociobiologists do not qualify their statements to the point of acknowledging the liberatory role of culture in human evolution. Paragraphs in their writings do seem to endorse right-wing Western ideology including sexism, racism and war. These are the times when "it is necessary to save sociobiology from the sociobiologists."²³

Subsequent books of Dawkins gave considerable credence to the cultural dominance *qua* education and memetic transmission dynamics, over biological imperatives. The astonishing speed of cultural inheritance, described by, among others, Boyd and Richerson²⁴ endorsed the power of the memetic transmission of behavioural traits. [I made the first memetic analysis of the spread of cast net-shooting techniques as 'cultural markers' among coastal fishers of Karnataka²⁵.]

Dawkins, Post-TSG: a Warrior Against Unreason:

These later writings have definitely extricated him from the doctrinaire genetic determinism and the sin of association with the new right, and establish him as the most authentic popular explicator of evolutionary biology. I am particularly fond of a passage in *The Blind Watchmaker*²⁶, in which Dawkins praises theologian William Paley's argument from design against the Darwinian evidence of gradual evolution by small steps of heritable changes in the species. Dawkins emphasised the sense of awe and wonder at the immense complexity of life underlying Paley's argument — the sense of wonder, which Dawkins laments is largely lacking in much of the contemporary academic pursuit of science. I find this especially relevant to my personal antagonism to the ongoing process of erosion of the sense of wonder in young minds, as well as in the mechanistic explanations of the world in many atheist circles. Dawkins' writings are not just about the roles of genes and memes in evolution; they also guide us to employ scientific understanding against doctrines of Unreason, including the Creationist movement and fundamentalist religion. This connects him to other great warriors of Reason, like René Dubos, Carl Sagan, Martin Gardner, and Stephen Jay Gould.

Dawkins remains my supreme *guru* of evolutionary biology, second only to Steve Gould. I feel fortunate to have breathed during a stretch of time in the same atmosphere that Dawkins breathes in.

Acknowledgements

I am grateful to Prof. Raghavendra Gadagkar for his encouragement to write this article for the benefit of public understanding of science, and OP Rana for valuable inputs for improvement of the MS. □

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Received: 13 March, 2026

Revised: 17 June, 2026

Accepted: 17 June, 2026

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