

# Notas sobre *The Social Conquest of Earth*

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Notas sobre el libro de E. O. Wilson *The Social Conquest of Earth* (Nueva York y Londres: Liveright, 2012). Una búsqueda del origen y naturaleza de la humanidad más seria que el mito de este año, [Prometheus](#).



## *Prólogo*

"There is no grail more elusive or precious in the life of the mind than the key to the understanding of the human condition" (1). Gauguin's painting *D'où Venons Nous / Que Sommes Nous / Où Allons Nous* — (*Wilson seems to present this as an analogue of our self-search and of the persistence of what Gauguin calls "our primitive soul"*).

## **I - Why Does Advanced Social Life Exist?**

### ***1. The Human Condition***

7: "Religion will never solve this great riddle. Since Paleolithic times each tribe—of which there have been countless thousands—invented its own creation myth." The dreamtime, in which supernatural beings spoke to shamans and prophets.

8: "The creation myth was the essential bond that held the tribe together. It provided its believers with a unique identity, commanded their fidelity, strengthened order, vouchsafed law, encouraged valor and sacrifice, and offered meaning to the cycles of life and death." "The truth of each myth lived in the heart, not in the rational mind. By itself, mythmaking could never discover the origin and meaning of humanity. But the reverse order is possible. The discovery of the origin and meaning of humanity might explain the origin and meaning of myths, hence the core of organized religion. // Can these two worldviews ever be reconciled? The answer, to put the matter honestly and simply, is no."

To know what we are, "We need to understand how the brain evolved the way it did, and why" (9). This is a scientific not a philosophical question: "There is a real creation story of humanity, and one only, and it is not a myth. It is being worked out and tested, and enriched and strengthened, step by step" (...) "we need answers to two even more fundamental questions the query has raised. The first is why advanced social life exists at all, and has occurred so rarely in the history of life. The second is the identity of the driving forces that brought it into existence". We have learned about our identity and makeup from worms and fruit flies: "We have no less to learn from the social insects, in this case to add background to the origin and meaning of humanity" (10).

*Wilson es un etólogo del comportamiento animal, y un especialista en hormigas. No sería de sorprender que en su enfoque haya más analogías de las aceptables entre hormigas y humanos—una vez hechas las distinciones pertinentes, quizá no lleguen a apreciarse plenamente las diferencias cruciales.*

## 2. Where Do We Come From?

### 2. *The Two Paths to Conquest*

"We are an evolutionary chimera, living on intelligence steered by the demands of animal instinct. This is the reason we are mindlessly dismantling the biosphere and, with it, our own prospects for permanent existence" (13). Wilson se atiene a la noción del [jet-lag paleolítico](#)—hemos evolucionado demasiado deprisa, y estamos fuera de paso con el entorno natural y con nosotros mismos: "There was no time for us to coevolve with the rest of the biosphere. Other species were not prepared for the onslaught. This shortfall soon had dire consequences for the rest of life" (15). "Wherever humans saturated wildlands, biodiversity was returned to the paucity of its earliest period half a billion years previously. The rest of the living world could not coevolve fast enough to accommodate the onslaught of a spectacular conqueror that seemed to come from nowhere, and it began to crumble from the pressure" (16). (*La invasión alien somos nosotros, podría decirse*).

Los grupos humanos se basan en alianzas flexibles entre diversos grupos y círculos:

"The necessity for fine-graded evaluation by alliance meant that the prehuman ancestors had

to achieve eusociality in a radically different way from the instinct-driven insects. The pathway to eusociality was charted by a contest between selection based on the relative success of individuals within groups versus relative success among groups. The strategies of this game were written as a complicated mix of closely calibrated altruism, cooperation, competition, domination, reciprocity, defection, and deceit" (17).

"As a result, the human brain became simultaneously highly intelligent and intensely social. It had to build mental scenarios of personal relationships rapidly, both short-term and long-term. Its memories had to travel far into the past to summon old scenarios and far into the future to imagine the consequences of every relationship" (17).

La idea central del libro es la comparación y contraste entre la socialidad de los insectos y la humana, y sus orígenes evolutivos respectivos:

"The insects could evolve to eusociality by individual selection in the queen line, generation to generation; the pre-humans evolved to eusociality by the interplay of selection at the level of individual selection and at the level of the group" (20).

### ***3. The Approach***

"Viewed through time from the beginning to the attainment of the human condition, each step can be interpreted as a preadaptation" (22). *(Observo que este énfasis en la preadaptación, [o exaptación como la llama Gould](#), aparece también enfatizada en el libro de Ian Tattersall Masters of the Planet—por fin parece que está haciendo fortuna esta noción entre los evolucionistas más influyentes. En este capítulo se trata del desarrollo de la socialidad en los australopitecos y primeros homo—enfatizándose la noción del control del fuego y de un campamento fijo como puntos de inflexión del desarrollo de la vida social).*

### ***4. The Arrival***

Hay mayor frecuencia de especiación en los mamíferos que forman grupos sociales: "social groups tend to stay apart from each other during breeding, thus creating smaller populations, making them subject to both quicker genetic divergence and higher extinction rates" (35)—algo que parece compadecerse bien con la historia evolutiva de los homínidos. Se trata aquí la adaptación a nuevos ecosistemas, nuevas dietas, nuevos nichos ecológicos, por parte de los homínidos. El impulso final a la evolución del Homo sapiens moderno lo proporcionó la concentración de grupos en lugares protegidos.

### ***5. Threading the Evolutionary Maze***

Aquí viene a convenir Wilson (sin mencionarlo) con el mismo panorama de evolución de la socialidad que presentaba [Derek Bickerton en Adam's Tongue](#): "The advantages of cooperation in the harvesting of meat led to the formation of highly organized groups. The

earliest societies consisted of extended families but also adoptees and allies. They expanded to a population as large as could be sustained by the local environment" (Wilson 47).

## 6. *The Creative Forces*

¿Qué fuerza evolutiva fue la que propició el surgimiento del tipo de socialidad humano? Durante mucho tiempo el consenso mayoritario en evolucionismo ha favorecido la teoría de la aptitud inclusiva, basada en la selección natural de los genes pertenecientes al individuo y a su grupo de familiares, derivando de ahí los comportamientos altruistas que promueven la socialidad: "Unfortunately for this perception, the foundations of the general theory of inclusive fitness based on the assumption of kin selection have crumbled, while evidence for it has grown equivocal at best. The beautiful theory never worked well anyway, and now it has collapsed" (51). Ahora Wilson defiende la selección multinivel, con gran importancia dada a [la selección grupal](#): "The creation of new groups by humans, at the present time and all the way back in to prehistory, has been fundamentally different (...). Their evolutionary dynamics, driven by both individual and group selection" (52).

Hay una cita de Darwin que justifica la selección multinivel y de grupo, y la preponderancia de los grupos cohesionados y formados por altruistas. Aunque Wilson cita esta otra de *The Descent of Man*:

"Now if some one man in a tribe, more sagacious than the others, invented a new snare or weapon, or other means of attack or defence, the plainest self-interest, without the assistance of much reasoning power, would prompt the other members to imitate him; and all would thus profit. The habitual practice of each new art must likewise in some slight degree strengthen the intellect. If the new invention were an important one, 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. If such men left children to inherit their mental superiority, the chance of the birth of still more ingenious members would be somewhat better, and in a very small tribe decidedly better. Even if they left no children, the tribe would still include their blood-relations; and it has been ascertained by agriculturists that by preserving and breeding from the family of an animal, which when slaughtered was found to be valuable, the desired character has been obtained."

*(Se observará que también sostiene la cita la noción de inteligencia tecnológica: la comunicación de tecnologías aumenta la inteligencia grupal; es "la inteligencia de las masas" antes de David Weinberger).*

Hay una dinámica contraria irresoluble de altruismo y egoísmo en las sociedades humanas: "Because all normal members have at least the capacity to reproduce, there is an inherent and irremediable conflict in human societies between natural selection at the individual level and natural selection at the group level" (54)—al contrario que en las sociedades de insectos, donde falta la capacidad reproductiva de los individuos subordinados. El nivel de selección individual promueve en los humanos el comportamiento egoísta, cobarde, interesado; mientras que el comportamiento generoso, virtuoso, altruista es promovido por los valores sociales y la



selección de grupo. "It was therefore inevitable that the genetic code prescribing social behaviour of modern humans is a chimera. One part prescribes [traits that favor success of individuals within the group](#). The other part prescribes the traits that favor group success in competition with other groups" (53).

Wilson observa que debido a la estructura poblacional y ciclo vital de los mamíferos no puede desarrollarse entre los humanos un tipo de socialidad como el de los insectos. (*Quizá habría que matizar, "de modo natural"—aunque quizá sea factible mediante ingeniería genética y el control artificial de la reproducción semejante futuro indeseable, en parte imaginado por Huxley en Un Mundo Feliz*).

Las consecuencias de la dinámica evolutiva de los humanos, que nos hace lo que somos:

- Intensa competencia grupal y territorial
- Inestabilidad de la composición de los grupos: conquistas, divisiones, alianzas, etc.
- Guerra inevitable entre los valores sociales y los intereses egoístas e individuales, productos respectivamente de la selección grupal e individual
- "The perfecting of quick and expert reading of intention in others has been paramount in the evolution of human social behavior" (56).
- "Much of culture, including especially the content of the creative arts, has arisen from the inevitable clash of individual selection and group selection" (56).

## **7. Tribalism is a Fundamental Human Trait**

(*El tribalismo, la tendencia a afiliarnos a grupos, la tenemos según Wilson en nuestra propia constitución, lo hacemos por naturaleza y compulsivamente; algo que permite explicar las actitudes irracionales de los individuos hacia grupos de iguales, bandas, equipos de fútbol, etnias y naciones, credos religiosos.... donde lo que menos importa es la fundamentación supuesta del grupo, y lo primordial en realidad es el grupo mismo y la sensación de pertenencia e identificación*): "To form groups, drawing visceral comfort and pride from familiar fellowship, and to defend the group enthusiastically against rival groups—these are among the absolute universals of human nature and hence of culture" (57). "The social world of each modern human is not a single tribe, but rather a system of interlocking tribes, among which it is often difficult to find a single compass" (57). Experimentos psicológicos demuestran la tendencia a la afiliación aunque sea en grupos arbitrariamente asignados: "Strong favoritism was consistently shown to those labeled simply as an in-group, even with no other incentive and no previous contact" (59) (*Algo que puede explicar algunos comportamientos patológicos en la Administración, supuestamente desapasionada, como son [la falacia democrática de los órganos](#) o la solidaridad interna de los comités y comisiones*). Diferentes partes del cerebro regulan la respuesta automática a la afiliación grupal: por ejemplo el racismo instintivo y primitivo de la amígdala se modera cuando el contexto sitúa a los miembros de otra raza como pertenecientes a un grupo afiliado, información procesada por partes corticales del cerebro asociadas al aprendizaje avanzado. (*Una paradoja plantea el tribalismo. Los valores humanos son en gran medida culturales, y vienen a expresar la afiliación a un grupo. Son por tanto limitadores con respecto a la potencial naturaleza*

*humana—pero a la vez ésta sólo puede manifestarse y expresarse plenamente mediante la integración en un grupo y un entorno cultural. Hay así una tensión o dialéctica entre comprensión de la naturaleza humana y participación en ella. El observador de la dinámica de los grupos humanos puede sentirse ajeno a la dinámica que observa, pero ha de integrarse igualmente en un grupo propio).*

## **8. War as Humanity's Hereditary Curse**

*(De esto hablamos algo en [Somos hijos de la guerra](#)), llevando las conclusiones evolutivas un poco más lejos que Wilson, en el sentido de la guerra como supervivencia del grupo más apto... para la guerra. Ver su p. 91). También para Wilson, la guerra ha sido una constante de la historia humana, y el conflicto entre grupos algo que ha definido a los humanos a lo largo de toda su historia. Las pacíficas sociedades primitivas sin conflictos no existen. Los conflictos grupales ya existen entre los chimpancés, pero los humanos tendemos por naturaleza a expandirnos hasta agotar los recursos y disputarlos a los vecinos.*

## **9. The Breakout**

La emigración del Homo sapiens *out of Africa* se limitó a grupos pequeños, con lo cual la variabilidad genética dentro de Africa es mucho mayor. Hubo sin embargo un cuello de botella poblacional en una gran sequía en el que la población de Africa descendió a unos miles de individuos con riesgo de extinción completa. A Europa llegaron los Homo sapiens hacia el 42.000 A.C.; a Australia y Nueva Guinea ya en el 50.000 A.C.—los aborígenes descendientes directos de los primeros emigrantes. En America entraron hace unos 16.500 años; y las islas del Pacífico son las más recientes, hace entre 3000 años y el año 1200.

## **10. The Creative Explosion**

Tres hipótesis sobre la explosión cultural: 1) debida a una mutación cognitiva reciente en el Homo sapiens. Comparativamente con el inmovilismo de la cultura neandertal. 2) Evolución más gradual, ya comenzada en el Homo sapiens arcaico. 3) Teoría de alzas y bajas, con un surgimiento inicial y una crisis debida al cuello de botella poblacional—con recuperación a partir de 60.000 años atrás. Wilson combina las tres hipótesis. Las mutaciones genéticas se hacen más frecuentes al crecer la población, y ese mismo hecho produce más innovaciones culturales. La deriva genética también actúa más durante la expansión de pequeños grupos de poblaciones aisladas, produciendo diversidad. 88: "As a result, skin color, height, percentages of blood types, and other nonvital hereditary traits shifted a bit in one direction or another over distances as short as a few hundreds of kilometers." *(Y es a esta peculiar combinación de origen común y dispersión geográfica en pequeños grupos a lo que debemos las "razas" humanas, o sea, la variabilidad genética identificablemente ligada a la dispersión territorial, aunque muchos científicos se niegan a admitir ningún concepto científicamente viable de diferencia racial).* El entorno cultural es en todo caso mucho más influyente para el comportamiento individual que las diferencias genéticas. Sin embargo: "A recent study has

found that variation in the number of people one person has in contacts or in social ties, as well as variation in transitivity—the likelihood that any two of a person's contacts are connected to each other's contacts—are both about half due to heredity. On the other hand, the number of other group members whom individuals view as friends is not genetically influenced, at least not within ordinary statistical limits of the measures taken" (90). "Bands and communities of bands with better combinations of cultural innovations became more productive and better equipped for competition and war. Their rivals either copied them or else were displaced and their territories taken. Thus group selection drove the evolution of culture" (91). (*Es el motor de lo que llamamos la historia*). La agricultura surgió independientemente en ocho emplazamientos distintos, entre 9000 y 4000 años antes de Cristo. El desarrollo cultural puede llevar en el futuro a un posthumanismo que pare Wilson sería indeseable pues iría al servicio del nepotismo y el privilegio: de la herencia biológica que tenemos no nos libraremos, pues es lo que somos.

### ***10. The Sprint to Civilization***

Tres niveles de civilización hay: las bandas de cazadores-recolectores y agricultores primitivos, sociedades igualitarias; las poblaciones con élites y jefes, que gobiernan directamente en todos los asuntos para evitar fisión e insurrección, suprimiendo rivales y fomentando la rivalidad con pueblos vecinos. Y tercero, los estados, con sistema de control delegado o burocracia. Las poblaciones tienden a la expansión y adquisición de los recursos del vecino siempre que pueden. No hay diferencias genéticas conocidas que demuestren diferencias entre las poblaciones en procesamiento de lenguaje o matemáticas—pero podrían descubrirse. Los rasgos de personalidad están notablemente bien distribuidos entre las poblaciones, a pesar de los estereotipos nacionales. Los básicos son: "extroversion versus introversion, antagonism versus agreeableness, conscientiousness, neuroticism, and openness to experience". Los rasgos caracteriológicos son en buena proporción hereditarios. La complejidad social se desarrolló en torno a los estados y a la escritura; Wilson remite al análisis de Jared Diamond en *Guns, Germs and Steel* para explicar el mayor desarrollo de unas áreas frente a otras y la difusión de las innovaciones.

## **III. How Social Insects Conquered the Invertebrate World**

### ***12. The invention of eusociality***

Las hormigas, evolucionadas a partir de las avispas solitarias para constituir sociedades complejas. Hay un millón de veces más hormigas que humanos, aunque su biomasa total viene a ser parecida.

### ***13. Inventions that Advanced the Social Insects***

Coincidió el desarrollo y diversificación de las hormigas con el de las angiospermas. "Species of ants multiplied, as more and more niches opened for them to occupy" (125). Son

carnívoras, pero herbívoros indirectos, utilizando a los pulgones que absorben savia de las plantas. "*The more elaborate and expensive the nest is in energy and time, the greater the fierceness of the ants that defend it.* This is a concept I will later connect to the origin of eusociality itself." (130)

## IV. The Forces of Social Evolution

### 14. *The Scientific Dilemma of Rarity*

"Eusociality, the condition of multiple generations organized into groups by means of an altruistic division of labor, was one of the major innovations in the history of life" (133). But it is extremely rare: "Only 15 of the 2,600 families are known to contain eusocial species." (136). "Yet of all the nonprimate mammals in the world save the mole rats, and of all the primate species that lived across the tropical and subtropical regions for millions of years, only one, an offshoot of the African great apes, an antecedent of *Homo sapiens*, crossed the threshold into eusociality" (138).

### 15. *Insect altruism and eusociality explained*

"The selfish-gene approach may seem to be entirely reasonable. In fact, most evolutionary biologists had accepted it as a virtual dogma—at least until 2010. In that year Martin Nowak, Corina Tarnita, and I demonstrated that inclusive-fitness theory, often called kin selection theory, is both mathematically and biologically incorrect." (143) Insect societies of ants and bees are superorganisms and their origin can be explained through the selection of the reproducing individuals: "Group selection occurs, in the sense that success or failure of the colony depends upon how well the collectivity of the queen and her robotic offspring does in competition with solitary individuals and other colonies. Group selection is a useful idea in identifying precisely the targets of selection when queens (and their colonies about them) are competing with other queens. But multilevel selection, in which colonial evolution is regarded as the interests of the individual worker pitted against the interests of its colony, may no longer be a useful concepts in which to build models of genetic evolution in social insects" (146). (*Esa selección multinivel, y de dinámica contradictoria entre tendencias individuales y grupales, es en cambio la que sí se da para Wilson en los humanos; los principios de evolución de la sociedad y el altruismo en insectos y primates son fundamentalmente diferentes*).

### 16. *Insects Take the Giant Leap*

Explica Wilson las condiciones necesarias para que los insectos solitarios desarrollen un modo de vida social: a partir de una preadaptación, por ejemplo un nido compartido con los padres,



basta con una presión ambiental determinada para dar el salto: "When all the necessary conditions occur—namely the right pre-eusocial traits are in place, a eusocial allele also exists in the population, even if at very low levels, and, finally, environmental pressures exist that favor group activity—the solitary species will move across the threshold into eusociality. The surprising aspect of this evolutionary step is that the eusociality gene does not need to create new forms of behavior. As in the case of many random mutations generally, it need only silence a preexisting behavior, thus halting the dispersal of parents and grown offspring from the nest. // As a result of the cancellation, the family stays home. Looking at the matter the other way, the eusociality gene they share with the mother queen has turned them into robots, expressing one state of her own flexible phenotype. In this sense, I have argued, the primitive colony is a superorganism. It is essentially a kind of organism in which the working parts are not the usual cells but pre-subordinated organisms." (151). "In crossing the line to eusociality, a single allele that disposes daughters to stay can be fixed in the populations at large if the advantage of the little group over solitaires outweighs the advantage of each offspring leaving to try on its own" (153). "Although some individual direct selection may play a role in the origin of eusociality, the force that targets the maintenance and elaboration of eusociality is by necessity environmentally based group selection, which acts upon the emergent traits of the group as a whole" (155-56). "This origin of an anatomically distinct worker caste appears to mark the 'point of no return' in evolution, at which eusocial life becomes irreversible" (157).

### ***17. How Natural Selection Creates Social Instincts***

After the heyday of behaviorism and Skinner in the 1950s, "In the two decades that followed, the idea of instinct shaped by natural selection defeated this perception of the brain as a blank slate. At least it did so for animals. For two more decades, however, the blank slate was kept alive for human social behavior. Many writers in the social sciences and humanities continued to insist that the mind is entirely the product of its environment and past history" (158). Basic principles of evolutionary genetics: "One of the principles is the distinction between the unit of heredity, as opposed to the target of selection in the process that drives evolution. The *unit* is a gene or arrangement of genes that form part of the hereditary code (...). The *target* of selection is the trait or combination of traits encoded by the units of heredity and favored or disfavored by the environment" (162). "Traits (targets) that are acted upon exclusively by selection between groups are those emerging from interactions among members of each group. These interactions include communication, division of labor, dominance, and cooperation in performing communal tasks" (163). Wilson emphasizes that the amount of phenotype plasticity is itself subject to natural selection. Finally, "It is easy to confuse proximate and ultimate causation in particular cases, and especially in the complex multilevel process of human evolution" (165). E.g. bipedality etc. are important preadaptations, but the definitive cause of human sociality is the development of the human brain.

### ***18. The Forces of Social Evolution***

Possible sources of altruism and sociality: Wilson favors group selection, i.e. "that hereditary altruists form groups so cooperative and well-organized as to outcompete nonaltruist groups" (166). In the case of hymenoptera, "the belief that haplodiploidy and eusociality are causally

linked became standard in general reviews and textbooks of the 1970s and 1980s" (170), now discredited, like kin selection and inclusive-fitness theory; "there are mathematical difficulties with the definition of  $r$ , the degree of relatedness. These difficulties render incorrect the oft-repeated claim that group selection is the same as kin selection expressed through inclusive fitness" (171). "Most biologists who knew inclusive-fitness theory only from a distance were surprised to learn that when measures are actually calculated there is no consistent biological concept behind the 'relatedness' parameter" (173). "If there is a general theory that works for everything (multilevel natural selection) and a theory that works only for some cases (kin selection), and in the few cases where the latter works it agrees with the general theory of multilevel selection, why not simply stay with the general theory everywhere?" (175). Wilson seems to point out that some theorist were reaching foregone conclusions, instead from going from the problem to a viable theory: "Almost all research in inclusive-fitness theory has been the opposite: hypothesize the key roles of kinship and kin selection, then look for evidence to test that hypothesis" (175).

"Kin selection, if it occurs at all in animals, must be a weak form of selection that occurs only in special conditions easily violated. As the object of general theory, inclusive fitness is a phantom mathematical construction that cannot be fixed in any manner that conveys realistic biological meaning" (20). *So we find in Wilson here a strong argument against methodological apriorism and formalism, and a defense of multilevel selection and group selection against the traditional "selfish gene" approach.*

### ***19. The Emergence of a New Theory of Eusociality***

In social insects: "Grouping by family can accelerate the spread of eusocial alleles, but it does not of itself lead to advanced social behavior. The causative agent of advanced social behavior is the advantage of a defensible nest, especially one expensive to make and within reach of a sustainable supply of food. Because of this primary condition in the insects, close genetic relatedness in primitive colony formation is the consequence, not the cause, of eusocial behavior" (185). *(Lo cual no sé si es muy compatible con la noción anteriormente expuesta de la modificación del comportamiento como origen: lo de las crías quedándose en el nido en lugar de irse):* "Crossing the threshold to eusociality requires only that a female and her adult offspring fail to disperse to start new, individual nests. Instead, they remain at the old nest" (185)—*(Y entonces eran parientes, to begin with??)*. In ants or bees, "the queen and her workers have the same genes that prescribe caste and division of labor, although they vary extensively in other genes. This circumstance lends credence to the view that the colony can be viewed as an individual organism or, more precisely, an individual superorganism. Further, insofar as social behavior is concerned, descent is from queen to queen, with the worker force as an extension of each in turn. Group selection still occurs, but it is conceived to be selected as the traits of the queen and the extrasomatic projection of her personal genome" (186). "The natural history of the more primitively eusocial animals, and especially the structure of their nests and fierce defense of them, suggests that a key element in the origin of eusociality is defense against enemies, including parasites, predators, and rival colonies" (186)—*Y es este elemento eusocial el que sí cree Wilson que es extensible a las sociedades humanas, diferentes sin embargo de los insectos sociales en la capacidad de reproducción de todos los individuos*). In insects, "Group-level selection drives changes in the insect colony life cycle and social structures, often to bizarre extremes, producing elaborate superorganisms" (187). In

contrast, the human species has achieved a "culture-based social condition" (187). How?

## V. What Are We?

### 20. *What Is Human Nature?*

"If raw, untransformed human nature were to be revealed, and the philosophers's stone thus attained, what would it be? What it would look like? Would we love it? A better question may be: Do we really want to know?" (191). "The very existence of human nature was denied during the last century by most social scientists. They clung to the dogma, in spite of mounting evidence, that all social behavior is learned and all culture is the product of history passed from one generation to the next" (191). (*En el libro de Carlos Beorlegui [La singularidad de la especie humana](#) aparece una discusión al respecto, y una clasificación que distingue cuatro posiciones, biologista rígida, biologista flexible, culturalista flexible y culturalista rígida. Wilson aparece, en una versión anterior de su pensamiento, como biologista flexible, y Beorlegui promueve la postura culturalista flexible, según la cual la naturaleza humana es por la propia biología de la especie extremadamente adaptable y moldeable por el entorno cultural. Por cierto que en el presente libro Wilson ha modificado algunas posiciones evolucionistas genetistas de las que eran criticadas por Beorlegui*). "I believe that ample evidence, arising from multiple branches of learning in the sciences and humanities, allows a clear definition of human nature. But before suggesting it, let me first explain what it is not. Human nature is not the genes underlying it. They prescribe the developmental rules of the brain, sensory system, and behavior that produce human nature. Nor can [the universals of culture](#) discovered by anthropologists be defined collectively as human nature. (192). "If the genetic code underlying human nature is too close to its molecular underpinning and the cultural universals are too far away from it, it follows that the best place to search for hereditary human nature is in between, in the rules of development prescribed by genes, through which the universals of culture are created. // Human nature is the inherited regularities of mental development common to our species. They are the 'epigenetic rules', which evolved by [the interaction of genetic and cultural evolution](#) that occurred over a long period in deep prehistory" (193). "The behaviors created by epigenetic rules are not hardwired like reflexes. It is the epigenetic rules instead that are hardwired, and hence compose the true core of human nature. These behaviors are learned, but the process is what psychologists call 'prepared'" (194). Against the "blank-slate" brain and the promethean gene of the 1970s and 1980s: "This biologically nondimensional view of social evolution was further deduced from a kind of second key hypothesis, the psychic unity of mankind. This opinion held that human culture evolved during too short a time for genetic evolution to have occurred, at least beyond the all-purpose promethean genotype that separates humanity from other animal species" (197). But "The explosion of new mutations that occurred following the breakout from Africa some 60,000 years ago created large numbers of such potentially adaptive new genes. It would be surprising that genetic evolution has not occurred in different populations as they colonized the rest of the world" (197-98). Genes for milk digestion, for sickle-cell anemia, & older too: "Put together, [such intertwined coevolutionary

processes] form a class of genetic changes different in kind from the local acquisition of lactose tolerance. They are universal in modern humanity and also ancient, their origins predating the emergence of modern *Homo sapiens* and at least in some cases even the human-chimpanzee split of more than six million years ago. Working at the level of cognition and emotion, their effect on the evolution of language and culture has been both deep and wide. They make up much of what is intuitively called "human nature" (198-99). E.g. incest avoidance has been [theorized by anthropologists, as a basis for human culture](#), but "For the explanation of the origin of exogamy as an instinct of profound genetic value, however, one need look no further than the universal pattern followed by all other primate species" (200). The example of relative universals for color terms and color perception. (*A Wilson se le escapa en sus especulaciones sobre el color la importancia de la asociación del rojo al peligro debido al color de la sangre*).

## 21. How Culture Evolved

"As defined broadly by both anthropologists and biologists, culture is the combination of traits that distinguishes one group from another. A culture trait is behavior that is either first invented within a group or else learned from another group, then transmitted among members of the group" (213). (*Bueno, se refiere a comportamiento y no a genes obviamente: pero queda la duda de si las proprensiones cognitivas no aprendidas y desarrolladas en el seno de un grupo existen y son heredables*). "The elaboration of culture depends upon long-term memory, and in this capacity humans rank far above all animals" (214). Culture as collective memory of a community—Wilson remembers the culture of his childhood Mobile, most of it now lost. "The great gift of the human brain is the capacity—and with it the irresistible inborn drive—to build scenarios. For each story in turn, the conscious mind summons only a minute fraction of the brain's accumulated long-term memory. How this is done remains controversial. One group of neuroscientists argues that fragments of long-term memory are transformed from long-term storage and congealed into working memory to make scenarios. A second school believes, with the same data, that the process is achieved simply by the arousal of long-term memory—with no transfer from one sector of the brain to another needed" (215-16). Blank-slate theory of learning dismissed: "the brain has a complex inherited architecture. As a consequence of the way it was built, the conscious mind, one of the architecture's products, originated by gene-culture coevolution, an intricate interplay of genetic and cultural evolution" (217). Cognitive archaeology as the reconstruction of cognitive process and complexity. "And what of speech? A conscious mind able to generate abstractions and piece them together in a complex scenario might, it seems, also generate a syntactical language, with sequences of subject, verb, and object" (218). Neanderthals and FOXP2 gene, they may have had language; their children's brains matured faster. "What was the driving force that led to the threshold of complex culture? It appears to have been group selection. A group with members who could read intentions and cooperate among themselves while predicting the actions of competing groups, would have an enormous advantage over others less gifted. There was undoubtedly competition among group members, leading to natural selection of traits that gave advantage of one individual over another. But more important for a species entering new environments and competing with powerful rivals were unity and cooperation within the group. Morality, conformity, religious fervor and fighting ability combined with imagination and memory to produce the winner." (224).



## 22. *The Origins of Language*

"The clue to the advance of *Homo*, I believe, lies in the crucial preadaptation that had carried the few other evolving animal species in the history of life that have managed to cross the eusociality threshold. Every one, without exception, from the two dozen or so insect and crustacean lines to the naked mole rats, defended a nest from which members could forage for enough food to sustain the colony" (225). *Homo habilis* began establishing campsites: "Now they selected defensible sites and fortified them, with some staying for extended periods to protect the young while others hunted. When controlled fire at the camp was added, the advantage of this way of life was solidified" (226). Tomasello et al. "point out that the primary and crucial difference between human cognition and that of other animal species, including our closest genetic relatives, the chimpanzees, is the ability to collaborate for the purpose of achieving shared goals and intentions. The human speciality is intentionality, fashioned from an extremely large working memory. We have become the experts at mind reading, and the world champions at inventing culture" (226). Mind reading essential to human social networks, they cooperate and read others' intentions better than chimpanzees: "Humans, it appears, are successful not because of an elevated general intelligence that addresses all challenges but because they are born to be specialists in social skills. By cooperating through the communication and the reading of intention, groups accomplish far more than the efforts of any solitary person" (227). They developed shared attention, common cooperative goals, and a theory of mind, "the recognition that their own mental states were shared by others" (228). "Language as the grail of human social evolution, achieved. Once installed, it bestowed almost magical powers on the human species" (228). Tomasello: "What is language if not a set of coordination devices for directing the attention of others?" (qtd. in Wilson 229). (*Not addressed by Wilson, but there is an important argument regarding the growth of language BEFORE complex intentionality, and one tied to socio-ecological transformations proper to the human lineage, which is put forward by Derek Bickerton. See my summary/review of [Adam's Tongue](#). Strange that Wilson does not address this issue, being a specialist in ants. The displacement symbolism of language and the social sharing of attention may have converged from different cognitive roots, and given rise to complex language through emergence*).

"Unlike communication in bees and other animals, human language became capable of detached representation, in which reference is made to objects and events not present in the immediate vicinity—or even in existence" (230). Chomsky vs Skinner, special module? Perhaps both right, but Skinner more so: there is a time in early childhood with special ability to learn, but no special brain module for grammar, although "there does appear to be a biasing epigenetic rule for word order embedded in our deeper cognitive structure, but its final products in grammar are highly flexible and learned" (235); "the rapidly changing environment of speech does not provide a stable environment for natural selection" (235), so no inscribed language module. "It is not going too far, I believe, to add that the failure of natural selection to create an independent universal grammar has played a major role in the diversification of culture and, from that flexibility and potential inventiveness, the flowering of human genius" (235).

### ***23. The Evolution of Cultural Variation***

Con frecuencia se entiende mal el condicionamiento genético de la cultura y el comportamiento, como si un elemento dado dependiese de una alternativa tajante entre determinismo y constructivismo cultural: "What genes prescribe or assist in prescribing is not one trait as opposed to another but the frequency of traits and the pattern they form as cultural innovation made them available. The expression of the genes may be plastic, allowing a society to choose one or more traits from among a multiplicity of choices. Or else it may *not* be plastic, allowing only one trait to be chosen by all societies" (236). "Biologists who study development have discovered that the degree of plasticity in the expression of genes, like the presence of the genes themselves, is subject to evolution by natural selection" (237). Small variations like the alteration in the amount of an existing protein, produce finely-tuned changes in structure or behavior. "Cultural variation in humans is determined mostly by two properties of social behavior, both of which are subject to evolution by natural selection. The first is the degree of bias in the epigenetic rule very low in dress fashion, very high in incest avoidance. The second property of cultural variation is the likelihood that individual group members imitate others in the same society who have adapted [*adopted?*] the trait ('sensitivity to usage pattern')." (*Aquí podría hablarse de los "early adopters", las modas e influencias de las élites y vanguardias, y del principio de "dónde va Vicente, donde va la gente"*).

### ***24. The Origins of Morality and Honor***

(*Este es uno de los puntos principales del libro de Wilson, identificando la peculiaridad del comportamiento social humano y de los dilemas morales como resultado de una tensión entre dos principios selectivos: selección individual, y de grupo, que han dado forma a la especie humana por selección multinivel*). "The dilemma of good and evil was created by multilevel selection, in which individual selection and group selection act together on the same individual but largely in opposition to each other. Individual selection is the result of competition for survival and reproduction among members of the same group. It shapes instincts in each member that are fundamentally selfish with reference to other members. In contrast, group selection consists of competition between societies, through both direct conflict and differential competence in exploiting the environment. Group selection shapes instincts that tend to make individuals altruistic toward one another (but not towards members of other groups). Individual selection is responsible for much of what we call sin, while group selection is responsible for the greater part of virtue. Together they have created the conflict between the poorer and the better angels of our nature" (241). (*Habría que matizar que la cuestión queda un tanto desdibujada por el hecho de que la selección individual no sólo selecciona al individuo frente a otros individuos del grupo, sino también frente a seres o grupos de seres de otras especies que compiten por los mismos recursos; y la selección de grupo no sólo selecciona a un grupo frente a otros grupos de la misma especie, sino también frente a otros seres o grupos que compiten por los mismos recursos. Wilson tiene otras definiciones más restrictivas:*) "Individual selection, defined precisely, is the differential longevity and fertility of individuals in competition with other members of the group. Group selection is the differential longevity and lifetime fertility of those genes that prescribe traits

of interaction among members of the group, having arisen during competition with other groups" (242). (*Son definiciones que a mi entender no agotan todo el terreno de la competencia por la vida, la reproducción y los recursos*). "To see human nature as the product of this evolutionary trajectory is to unlock the ultimate causes of our sensations and thought. To put together both proximate and ultimate causes is the key to self-understanding, the means to see ourselves as we truly are and then to explore outside the box" (242). "Group selection in its turn promoted the genetic interests of individuals with privilege and status as rewards for outstanding performance on behalf of the tribe" (243). (*Not quite, I think: group selection promotes the dynamics of the whole tribe as against competitors, not the genetic interests of any individuals. That is individual selection, which nonetheless may work within the cultural ecosystem of the tribe in the way Wilson says, through the promotion of ideologies and modes of behavior which have arisen through group selection. Which may give rise to the paradox pointed out by Wilson next, one that I further comment on in [Sociobiological Key Largo](#)*).

"Nevertheless, an iron rule exists in genetic social evolution. It is that selfish individuals beat altruistic individuals, while groups of altruists beat groups of selfish individuals. The victory can never be complete: the balance of selection pressures cannot move to either extreme. If individual selection were to dominate, societies would dissolve. If group selection were to dominate, human groups would resemble ant colonies" (243). Vs. overestimating the importance of kin selection in groups: "Kinship influences the structure of the network, but it is not the key to its evolutionary dynamics as is wrongly posited by inclusive-fitness theory. Instead, what counts is the hereditary propensity to form the myriad alliances, favors, exchanges of information, and betrayals that make up daily life in the network" (243). "Our instincts desire the tiny, united-band networks that prevailed during the hundreds of millennia preceding the dawn of history. Our instincts remain unprepared for civilization" (244). (*Bueno, los de algunos más que los de otros, será... Algunos bien que maximizan la civilización*). "We worry. We ask, to whom in this shifting global world of countless overlapping groups should we pledge our loyalty?" (245). Social empathy: "unless people are psychopaths, they automatically feel the pain of others" (245). (*Pero a veces si no son de nuestro grupo no parece importar mucho, ¿no?*). Pfaff: brain's ability to "lose" oneself psychologically and transfer one's identity a bit to another person; often in the clash of emotions; "The brain of our Janus-like species is a supremely complex system of intersecting nerve cells, hormones, and neurotransmitters. It creates processes that variously reinforce or cancel one another out, according to context" (245). Meeting of cooperators will not necessarily promote the rise of cooperation: "Only group selection, with groups containing more cooperators pitted against groups with fewer cooperators, will result in a shift at the level of the species toward greater and wider instinctive cooperation" (248). (*Una cuestión quizá oscurecida aquí es con quién se coopera: no con miembros de la misma especie, sino con miembros del mismo grupo. Si bien la especie es en diversos contextos un grupo, en sentido amplio. Quiero decir que lo que fomenta la selección de grupo no es sólo la cooperación, sino también la capacidad de confrontación con otros grupos: si no estrictamente la hostilidad hacia otros grupos, sí las alianzas variables y cambiantes, de manera que "los nuestros" y "los otros" se dividen según líneas muy móviles, pero una vez delimitados en un caso dado se les aplica una norma inflexible: together we stand, divided we fall; los nuestros siempre tienen razón; a los otros, no hay que darles ni agua. Así, la selección de grupo fomenta, creo, la cooperación entre el grupo, la capacidad de flexibilizar el grupo mediante alianzas, Y LA HOSTILIDAD frente a los grupos rivales. [Somos hijos de la](#)*



guerra. También se ve esta característica humana con especial y desagradable claridad en las escenas en que hay que elegir rápidamente bandos en un conflicto: ya sea en las obras históricas de Shakespeare, en *Juego de Tronos*, o al comienzo de la Guerra Civil española. O conmigo, o contra mí: hasta Jesucristo lo dijo). Otra regla social es la lucha contra el parasitismo: "Relentless ambivalence and ambiguity are the fruits of the strange primate inheritance that rules the human mind. To be human is also to level others, especially those who appear to receive more than they have earned. Even within the ranks of the elite, delicate games are played to achieve ever higher status while steering through the successive ranks of jealous rivals. Be modest in demeanor, ever modest, is the necessary stratagem" (249). (*Donde hay mucha cooperación social, se potencia también mediante selección individual el parasitismo. Parasitismo lo hay a todos los niveles: desde el establecido por ley, privilegiando a las élites, hasta el que se basa en sortear o vulnerar las leyes. De ahí las dinámicas contrarias, de potenciación del parasitismo, y de las estrategias antiparasitarias, de las que habla Wilson. Esas estrategias son por una parte pro-sociales, y por otra antisociales, en la medida en que la misma existencia de la sociedad fomenta el parasitismo. Quizá lo complejo de esta dinámica no quede bien captado en la descripción de Wilson*). "Since everyone knows the game, people are always willing to counter it if they safely can. They are acutely sensitive to hypocrisy and ever ready to level those on the rise whose credentials are anything less than impeccable. All levelers, which means just about everybody, have a formidable armament at their disposal. Roasts, jokes, parodies, and mocking laughter are remedies to weaken the haughty and over-ambitious" (249). (*También lo son la simulación de trabajar, donde el parasitismo se junta con el antiparasitismo; el sabotaje, la hostilidad a los poderosos....*). "People gain visceral pleasure in more than just leveling and cooperating. They also enjoy seeing punishment meted out to those who do not cooperate (freeloaders, criminals) and even to those who do not contribute at levels commensurate with their status (the idle rich)." (250). "In the brain, the administration of such 'altruistic punishment' lights up the bilateral anterior insula, a center of the brain also activated by pain, anger, and disgust" (251). "Our species is not *Homo oeconomicus*. At the end of the day, it emerges as something more complicated and interesting. We are *Homo sapiens*, imperfect beings, solidering on with conflicted impulses through an unpredictable, implacably threatening world, doing our best with what we have" (251). Most values in human societies stand the test of biology-based realism; others do not—"such as the ban on artificial conception, condemnation of homosexual preference and forced marriages of adolescent girls". Scientific knowledge of human nature will benefit ethical reflection, even if the result seems relativistic to some.

## **25. The Origins of Religion**

Sobre el extraño predominio de los creyentes en un país educado como EE.UU.: "There are historical reasons why fundamentalist Protestants make up such a large percentage of Americans, which I leave to historians to explain. But to those who believe that their culture might be broken by ridicule and reason, I say think again. There are circumstances under which intelligent, well-educated people equate their identity and the meaning of their lives with their religion, and this is one of them" (257). "The evidence that lies before us in great abundance points to organized religion as an expression of tribalism" (258). "The illogic of religions is not a weakness in them, but their essential strength" (259). Los líderes religiosos



debian con frecuencia sus visiones a estados mentales alterados, alucinógenos o cerebros delirantes. Por ejemplo San Juan y su Apocalipsis. "Johns dreams have exercised a profound effect on the many millions of perfectly sane and responsible people view the world and to a varying extent order their lives. His declarations may be thought true, but, in my sober judgement the image of a baleful Jesus threatening to cleave dissidents with a first-century sword is so far out of line with the remainder of the New Testament as to make a simple biological explanation preferable" (263). Orígenes del la creencia en la otra vida, en las visiones de los muertos en los sueños, y aún más en alucinaciones inducidas. ¿A quién se dirige en realidad la obediencia jurada a las religiones? "Is it to an entity that may have no meaning within reach of the human mind—or may not even exist? Yes, perhaps it really is to God. But perhaps it is no more than a tribe united by a creation myth. If the latter, religious faith is better interpreted as an unseen trap unavoidable during the biological history of our species. And if this is correct, surely there exist ways to find spiritual fulfillment without surrender and enslavement. Humankind deserves better" (267).

## ***26. The Origins of the Creative Arts***

Brain is most aroused by patterns having c. 20% redundancy, common to primitive art and modern design. "A quality of great art is its ability to guide attention from one of its parts to another in a manner that pleases, informs and provokes" (271). Universals in taste for landscape: people "want to be on a height looking down, they prefer open savanna-like terrain with scattered trees and copses, and they want to be close to a body of water, such as a river, lake, or ocean" (271-2). Conflicts in human mind due to 2 types of natural selection: "we can expect a continuing conflict between components of behavior favored by individual selection and those favored by group selection. Selection at the individual level tends to create competitiveness and selfish behavior among group members—in status, mating, and the securing of resources. In opposition, selection between groups tends to create selfless behavior, expressed in greater generosity and altruism, which in turn promote stronger cohesion and strength of the group as a whole. // An inevitable result of the mutually offsetting forces in multilevel selection is permanent ambiguity in the individual human mind, leading to countless scenarios among people in the way they bond, love, affiliate, betray, share, sacrifice, steal, deceive, redeem, punish, appeal and adjudicate. The struggle endemic to each person's brain, mirrored in the vast superstructure of cultural evolution, is the fountainhead of the humanities" (273-74). Scope of the humanities described as a sum of disciplines and concerns, language, philosophy, jurisprudence, history, etc.: "Such may be the scope of the humanities, but it makes no allusion to the understanding of the cognitive processes that bind them all together, nor their relation to hereditary human nature, nor their origins in prehistory. Surly we will never see a full maturing of the humanities until these dimensions are added" (275). Importance of dreaming and storytelling for innovation: "In the early stages of creation of both art and science, everything in the mind is a story. There is an imagined denouement, and perhaps a start, and a selection of bits and pieces that might fit between" (275). "Science grows in a manner not well appreciated by nonscientists: it is guided as much by peer approval as by the truth of its technical claims. Reputation is the silver and gold of scientific careers" (276). Picasso, "Art is the lie that helps us to see the truth" (277). Creative explosion in the Paleolithic c. 35,000 years ago in Europe. "From this

time on until the Late Paleolithic period over 20,000 years later, cave art flourished. Thousands of figures, mostly of large game animals, have been found in more than two hundred caves distributed throughout southwestern France and northeastern Spain, on both sides of the Pyrenees" (279) (*O sea, en mi vecindario inmediato...*). Complexity of art in primitive cultures. Piraha, no numbers or concept of counting, no terms for colors, no creation myths, do not draw, yet they have songs. "Music is closely linked to language in mental development and in some ways appears to be derived from language" (283).

## VI. Where Are We Going?

### 27. *A New Enlightenment*

"Given our miserable lack of self-understanding as a species, the better goal at this time may be to choose where *not* to go" (287). "The more we learn about our physical existence, the more apparent it becomes that even the most complex forms of human behavior are ultimately biological." (288). "Yet, by any conceivable standard, humanity is far and away life's greatest achievement. We are the mind of the biosphere, the solar system, and—who can say?—perhaps the galaxy. Looking about us, we have learned to translate into our narrow audiovisual systems the sensory modalities of other organisms. We know much of the physicochemical basis of our own biology. We will soon create simple organisms in the laboratory. We have learned the history of the universe and look out almost to its edge" (288). We are the result of multilevel natural selection, individuals competing with individuals and collaborating in groups competing with groups: "The opposition between the two levels of natural selection has resulted in a chimeric genotype in each person. It renders each of us part saint and part sinner" (289). Wilson vs. the theory of inclusive fitness and kin selection, replacing it with "standard models of population genetics applied to multiple levels of natural selection" (289), a mathematical critique of inclusive fitness was developed from 2004 to 2010; "group selection is clearly the process responsible for advanced social behavior" (289-90). "We understand too well that no one is so wise and great that he cannot make a catastrophic mistake, or any organization so noble to be free of corruption. We, all of us, live out our lives in conflict and contention" (290). "Gossip has always been the favorite occupation, in every society from hunter-gatherer bands to royal courts. To weigh as accurately as possible the intentions and trust-worthiness of those who affect our own personal lives is both very human and highly adaptive. It is also adaptive to judge the impact of others' behavior on the welfare of the group as a whole. We are geniuses at reading intentions of others while they too struggle hour by hour with their own angels and demons" (290-91). Early humans created gods in order to understand the universe, and as an analogue at a cosmic level of their own tribal authorities. Religions have been crucial to the identity of groups, "To question the sacred myths is to question the identity and worth of those who believe them" (292). "Why, then, is it wise openly to question the myths and gods of organized religions? Because they are stultifying and divisive" (...) "Because they encourage ignorance, distract people from recognizing problems of the real world, and often lead them in wrong directions into disastrous actions"

(292) —they passionately encourage altruism in the group but often confrontation with other groups. Belief will be weakened by scientific analysis of its causes. "Another trend against the misadventure of sectarian devotion is the growth of the internet and the globalization of institutions and people using it. A recent analysis has shown that the increasing interconnection of people worldwide strengthens their cosmopolitan attitude. It does so by weakening the significance of ethnicity, locality, and nationhood as sources of identification" (...) Inevitably, it will weaken confidence in creation myths and sectarian dogmas" (293). Importance of realizing present danger of exhausting natural resources: "if we save the living world, we will also automatically save the physical world, because in order to achieve the first we must also achieve the second" (294). "Another principle that I believe can be justified by scientific evidence so far is that nobody is going to emigrate from this planet, not ever" (295) "The same cosmic myopia exists today a fortiori in dreams of colonizing other star systems. It is an especially dangerous delusion if we see emigration into space as a solution to be taken when we have used up this planet" (296). No aliens visiting us, if exist and have achieved wisdom: "It would be enough to settle down and explore the limitless possibilities for fulfillment on the home planet" (297).

[El origen \(del lenguaje\)](#)

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