

# Jakob von Uexküll and the anticipation of sociobiology

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## The sociobiology of Wilson and Lumsden

When E. O. Wilson, a distinguished zoologist, published his *Sociobiology: The New Synthesis* (1975), it received some highly favorable and mixed reviews, as well as a number of impassioned attacks. Wilson's arguments impressed even friendly reviewers as audacious. Some critics saw nothing new or meritorious in his undertaking but likened it to theories that in the past 'provided an important basis for the enactment of sterilization laws and restrictive immigration laws ... and also for the eugenics policies which led to the establishment of gas chambers in Nazi Germany' (Allen et al. 1976: 183). The ensuing rancorous debates reflected the larger conflicts between 'left' and 'right' during the Cold War era. The details of these debates have been well chronicled (Caplan 1978), and there is no need to repeat them.

We wish to emphasize that, despite charges that sociobiology reflected a politically misapplied biological determinism, even Wilson's most severe critics have not claimed that sociobiology itself was a product of politics. In the description of sociobiology, as developed largely by Wilson, we see striking parallels to the scientific views of an earlier group of German scientists who, in invoking similar concepts, sometimes did have a political agenda. The parallels are a remarkable case of convergent evolution, i.e., the development of similar phenomena independently of one another. This convergence is by no means unique in science, especially in biology, but is particularly dramatic here. Furthermore, like Wilson, Uexküll, the founder of 'staatsbiologie', was anything but a supporter of the Nazi state. We must, however, generally pass over political and moral issues raised by the development of staatsbiologie — or 'Kulturbiologie', as it was later called — in Nazi Germany as beyond the scope of this article.

*Sociobiology: The New Synthesis* is, in Wilson's words,

an attempt to codify Sociobiology into a branch of evolutionary biology and particularly modern population biology. ... When the same parameters and

quantitative theory are used to analyze both termite colonies and troops of rhesus macaques, we will have a unified science of Sociobiology. (1975: 4)

In a subsequent work, coauthored by physicist Charles J. Lumsden entitled *Genes, Mind and Culture* (1981), the goal becomes more circumscribed and explicit: to apply the concepts developed in sociobiology to human cultures and to account for the origins and differences in those cultures according to the principles that describe other animal societies. The task involves tracing human qualities backwards in time, in order to identify the behavior and the rules by which humans adapt biologically to culturally changing societies. Lumsden and Wilson commence their study by identifying as the molecular units of cultural evolution the 'epigenetic rules'. These are a set of biological processes which are prescribed by the genes and which direct intellectual and sensory processes. The rules also respond to the physical and cultural environment, however, so they do not represent the mere expression of a genetically fixed trait. 'Genes are indeed linked to culture, but in a deep and subtle manner' (1981: 2).

Enculturation could be entirely dependent upon genes for particular traits; it could also be based upon altogether learned proclivities. Lumsden and Wilson, however, argue that theoretical considerations and evidence indicate that genes and culture co-evolve.

Gene-culture coevolution includes both genetic assimilation, in which epigenetic rules predisposing individuals toward advantageous culturgenes are strengthened by natural selection and culturgen assimilation, in which cultural innovation is speeded by the pre-existence of permissive epigenetic rules. (1981: 26)

The epigenetic rules include both primary processes, such as sensory filtering, perceptual constraints, and the like, as well as secondary rules which are built upon them and which affect particular patterns of behavior. Examples of the former include preferences of infants for visual patterns that are large and curved, which then become refined to preferences for bulls-eye designs, nonlinear arrays, and, finally, novel patterns. Secondary rules can then utilize these developmentally constrained preferences to create preferences for visual complexity which a given culture may (or may not) exploit to produce culture-specific artistic traditions. These, in turn, may selectively favor individuals in whom the rules are most strongly manifested.

Lumsden develops mathematical formulations which, he and Wilson claim, demonstrate that rather small biases can be seized upon by selection to produce marked differences in outcome. In this general form, their argument is in accord with most treatments of evolutionary theory, which, at least since the publication of R. A. Fisher's *Genetical Theory of Natural*

*Selection* (1930), have had no problem with generating large effects from small initial selective differences. The principle scientific reason for resistance to Lumsden and Wilson's views lies in an objection to the identification of 'epigenetic rules' with particular genes, a view that runs contrary to that of many developmental biologists who consider themselves epigeneticists (cf, Oyama 1985). The attempts by Lumsden and Wilson to account for the similarities and differences in human cultures was, nonetheless, a bold, heuristic approach.

### Jakob von Uexküll

Jakob von Uexküll's scientific career, like many of his ideas, was anything but conventional. Born into an aristocratic German family in Estonia, he had reached normal retirement age when, in 1925, he was called to the University of Hamburg for his first professorial appointment. Prior to that time he did not hold any academic chair, though he was active at the zoological station in Naples and that in Heidelberg. He developed the notion of the *Umwelt*, the environment as perceived by the organism, as well as neovitalistic doctrines. After coming to Hamburg, he worked primarily on environmental studies and invertebrate physiology, and on a theory of the State. While his attacks on mechanistic biology and espousal of vitalism were welcomed by a number of contemporaries, these were not a lasting contribution to science. His concept of the *Umwelt*, on the other hand, and of the *Kumpan*, played a major role in the development of European ethology (Honore and Klopfer 1990).

It is, however, a long essay of 1920, *Staatsbiologie*, which is of principal interest to us here. It represents an effort to describe the state as a biological entity. In keeping with his rejection of an evolutionary (Darwinian) paradigm, it is a static description. The state is represented as an organic whole, an organism. To be viable, the state must have a variety of organs with clearly defined and interdependent functions. He explores the idea of the state through several organic metaphors, for example, a tree with roots, leaves, and branches.

The analogies that Uexküll makes between the state and a living organism might seem superficial, but we should remember that the author wrote from the Goethean tradition of morphological analysis, not that of Darwinian evolution. This unorthodox perspective was a source of both strength and weakness. It enabled him to articulate startling new perspectives, yet it prevented him from developing their full implications. Goethe had attempted to put science on a humanistic rather than a mechanistic basis. This involved taking several positions that, even in his own

day, often impressed those in the scientific communities as eccentric. Goethe avoided, for example, mathematic calculations and rejected instruments such as prisms that would intervene between the object and the observer. The result was a form of study that straddled the growing divide between science and literature (Zajonc 1998). Working in this tradition, Uexküll developed an approach to biology that was, in its humanistic and literary orientation, akin to the psychology of Freud or Jung.

Analogies between the state and biological phenomena were, of themselves, no novelty. They had been made constantly by Ernst Haeckel and his school, generally in the name of an extreme nationalism. Most frequent were analogies of citizens to the cells of an organism which must work together to fight off disease. Also common were analogies of citizens to eusocial insects in a hive or nest (Gasman 1971; Haeckel 1900). Uexküll uses neither of these analogies; in fact, he explicitly rejects that of eusocial insects. Uexküll was highly skeptical about the theories of Haeckel and had only scorn for the rhetoric of 'race' and 'blood' (G. von Uexküll 1964), which generally accompanied these analogies. His criticism is that the shared life of citizens in a state is based on enormous differentiation, unlike what is found among cells or eusocial insects. Every individual has a different role and creates his or her own Umwelt, which is not interchangeable with that of another. Uexküll repeatedly emphasizes that the state is not synonymous with the people or 'Volk', but lies rather in the way in which individual human beings are organized. Most significantly, he rejects the idea of the people having a 'collective conscience', saying that conscience is 'possessed only by the individual human being' (1964: 52). Since he had not embraced Darwin's theory of evolution, Uexküll was unable to carry his analysis much beyond descriptions and analogies. His essay ends with a call for a biology of the state. This call was later to be taken up by both idealogues and serious biologists, though not at all in the spirit Uexküll had intended.

In his essay on *Staatsbiologie*, Uexküll often becomes involved in rhetorical confusion. The German word 'Gleichheit' can mean both 'equality' and 'sameness'. Uexküll several times attacks the notion of 'Gleichheit'. The intellectual context seems to suggest that he is rejecting the idea that human beings are basically the same, in which case he is arguing for what we in the United States now call 'diversity'. The tone, however, suggests an attack on the egalitarian ideals of democracy. There is a similar confusion when Uexküll declares that the 'monarchy' is a necessary form for every state, then explains in another section that the 'monarch' may be a president or prime minister. Purely as an empirical observation, what Uexküll says is more or less correct, since hardly any state seems to be

able to do without some sort of chief executive. Uexküll does not explicitly support any political agenda. The essay suggests that he was a traditionalist, even further from Nazi populism than from liberal democracy. He wished to create stability by grounding the tempestuous political fashions in the, from his perspective, almost changeless realm of human biology. He would use his aristocratic title, 'Baron', in at least some of his publications.

The confusions reflect a political naiveté. Uexküll was afraid of mob rule, and had little experience with the orderly functioning of a democracy. At any rate, he almost certainly wished to counter the careless use of analogies by the followers of Haeckel by placing these comparisons on a more scientific basis. What is first required for a biology of the state, he claims, is a detailed anatomic atlas. For this he admits to lacking the necessary competencies. Unfortunately, Uexküll's modest disclaimer, made in the final lines, to having a comprehensive theory of 'staatsbiologie' is easily overlooked. The essay's significance is in many respects akin to E. O. Wilson's first sketches of sociobiology (1975): a major figure in biology is here advocating the application of biological ways of thought and analysis to the study of social and political institutions.

Jakob von Uexküll recognized the danger represented by the Nazis earlier and more clearly than most of his illustrious colleagues. As head of the Center for the Study of the Environment on the grounds of the Hamburg Zoo, he tried to oppose the Nazis on a purely theoretical level, both in public statements and private meetings with Nazi officials including Alfred Rosenberg (G. von Uexküll 1964). Uexküll's attempts to retain intellectual autonomy for himself and his organization proved naive and ineffectual. His scorn for the rhetoric of the National Socialists limited his professional engagement. Eventually, he went into a melancholy retirement on a Mediterranean island. He died in 1944, just having heard the initial news of the officers' plot against Hitler and believing, to his great relief, that the Nazis had been overthrown (G. von Uexküll 1964).

### **Kulturbiologie**

The next notable attempt to apply biology to a vast range of social concerns was by Walter Scheidt, a colleague of Uexküll at the University of Hamburg, during the Weimar Republic. His essential insight, as articulated in his book *Kulturbiologie* (1930) is that organisms create an artificial environment, which they then pass on to future generations with their genetic material. Borrowing the terminology of Uexküll, he called this environment their collective 'Umwelt'. This environment

becomes essential not only for their biological survival but also affects their genetic inheritance.

Scheidt gave the concept of *Umwelt* a narrower and more mechanistic interpretation than Uexküll initially intended. According to Scheidt, culturally determined practices such as wars, persecutions, or priestly celibacy determine who will pass on biological material. The concept of a 'culturgen', as used by Lumsden and Wilson, the basic unit of cultural transmission, is almost identical to the concept of a 'Kulturgut' in the work of Scheidt (1932, 1934). Similarly, the notion of epigenetic rules in the theory of Lumsden and Wilson is nearly the same as what Scheidt called 'Güterlehre' (1932).

Scheidt never challenged the many racist notions that were widely accepted by scientists of his time, for example, that people from Africa were closer than other races to the apes. He did not, however, express them in a particularly virulent form. An admirer of Sigmund Freud, Scheidt did not lend much more than tacit support to anti-Semitism, although he regularly used publishers that promoted racist theories. For the most part, he was simply a theoretical scientist, apparently oblivious to many practical or social implications of his ideas.

He considered that the interrelations between culture and genetic inheritance could best be studied on a local level, in representative regions where relatively detailed historical documentation was available. His proposed method was to correlate events or customs which could affect the genetic pool of a region with such circumstances as the ability of a culture to provide capable leadership or to maintain a high level of agricultural production. Thus, for example, the political and economic decline of a region dominated by a large monastery might be attributed to the celibacy of its most capable members over generations. Similarly, the social decline following a war might be attributed to the killing off of the strongest and bravest members of the community, who then would be deprived of the opportunity to pass on their genetic material. Scheidt believed that each local region, studied with respect to the relation between cultural and genetic health, constituted a stone of a grand mosaic, and that enough of them might eventually yield a comprehensive picture, showing the relationship between culture and heredity. After the war, Scheidt ceased his scientific work, though he published a number of dull historical novels under the pseudonym 'Berchtold Gierer'.

Historically, *Kulturbiologie* was certainly linked with 'racial hygiene', which, in turn, provided the rationalization for the mass murder of the handicapped, Gypsies, Jews, and others by the Nazis. This linkage was inevitable in the social and intellectual climate of Germany following World War I. It was, however, probably not logically necessary. Perhaps,

had it been developed under very different circumstances, Kulturblogie could have been linked with left-wing movements for social reform, on the ground that the environment must be altered to accommodate human needs. It might also have been put in the service of traditionalists, on the grounds that human society should not change more rapidly than the environment.

### **Stengel-von Rutkowski**

The most cogent statement of the scope and content of Kulturblogie is provided by a 1943 publication, 'Zur Begriffs und Wortbildung in der Kulturblogie' ('On the formation of concepts and terminology in Kulturblogie') by Lothar Stengel-von Rutkowski, composed by him while serving in the medical corps of a German military unit on the Russian front. It lacks a bibliography and the other hallmarks of academic work, for which the author, explaining his situation, begs pardon, explaining that, lacking other resources, he has 'much time to think things over' (1943: 229).

Since science cannot be entirely divorced from the circumstances of conception, it is pertinent to add a bit about Stengel-von Rutkowski himself. In so many ways, he was a most unlikely person to author such a work. He was born in 1908 to the von Rutkowski family, a distinguished line embracing many scholars and priests in Lithuania, which was then part of Russia. The family name was a title of membership in the Polish nobility. When he was eight, both parents of the young Lothar von Rutkowski were massacred by the new Bolshevik government, and he saw them lying with 300 other victims in a mass grave. The trauma of the experience partially explains, though it can certainly not excuse, his later passionate embrace of the Nazi cause.

Lothar was then taken by an older brother to Germany, where he was adopted by the family of the distinguished historian Ernest Edmund Stengel. As a young man, Stengel-von Rutkowski became a protégé of Hans Günter, whose later exploits included picking 150 Jews to provide skeletons for a museum exhibition in Heidelberg (Deichmann 1996). Stengel-von Rutkowski also studied under Karl Astel, a prominent member of the SS who would later commit suicide rather than face the Nuremberg Tribunal.

Insecure about his German identity (he retained a Baltic accent), Stengel-von Rutkowski became particularly zealous in dedication to nationalistic causes. In addition to a few slim volumes of sentimental poetry, he published a book entitled *Was ist ein Volk?* (*What Is a People?*).

The historical record now requires that we briefly retrieve this atrocious work from its well-deserved oblivion. Even the preface is deeply disturbing. He announces that the book reflects 'practical experience in the first Office of Race and Settlement of the SS', and goes on to list a long series of racist institutions that he was associated with. The book itself, with a directness that most educated Nazis would have avoided, is filled with worshipful quotations from people like Alfred Rosenberg and the Führer himself. His involvement with the Nazi movement was indeed far from confined to rhetoric. He became a high-ranking member of the SS. He also directed the regional Office of Race and Politics in Thuringia and the National Socialist Association of Professors (Jensen 1995).

In 1940 Stengel-von Rutkowski joined the army, where he served in the medical corps of the Eastern Front. Ritter, who glosses over Stengel-von Rutkowski's career as a Nazi, claims he developed a more humane orientation when he treated both German soldiers and Russian prisoners of war. However that may be, he was eventually taken as a prisoner of war. After his release, he obtained a medical degree and settled in the German town of Korbach, where he lived until his death in 1991 (Ritter 1992).

But we must now concern ourselves with his essay of 1943. Biological laws, Stengel-von Rutkowski argues, apply to culture: the human psyche is causally bound to both genes and environment. For this reason, he believes, Kant's separation of mind and body must be rejected. It is possible, of course, that there are distinctive genes for the psyche, though it is also likely that it is primarily dependent on the same (somatic) genes that govern growth, hormonal processes, and the like. Even genes for psychic characteristics will modify the soma i.e., genes for mind and body, so they are not entirely distinct. Genes, in fact, form a society in which each influences the other. Nor can the external environment in which the genes are expressed be ignored. Factors such as language, history, traditions, are part of the human 'Umwelt', the environment as genes respond to it. Whatever their origins, these factors feed back upon genotype, through selection, and influence the next generation.

Race can be determined genetically, or in terms of selective forces, or geographically. There can be peasant races, or city races, or religious races. The term 'race', as Stengel-von Rutkowski defines it, refers to a collection of genes which, for reasons that are primarily cultural, set a particular group of people apart from the rest, causing them to breed primarily with one another. Because of the interaction with the environment, however, these genes may change: a member of one race may first become phenotypically, and, ultimately, through his descendants, genotypically assimilated by another race.

The most important point is the recognition of the duality of all cultural and biological events in the form of an interplay of heredity and environment. If the latter, the culture, is altered, the race, too, will ultimately be altered. The boundaries of a race are fluid, and they reflect cultural and political changes within the society as a whole. Cultural tradition promotes the preservation of a race, while cultural revolution promotes the creation of new races. The relative contributions of genes and environment to any human trait are impossible to isolate or measure.

Stengel-von Rutkowski offers these concepts, many of which show a remarkable prescience, anticipating current concepts of gene action in his effort to clarify how the study of biology can contribute to an understanding of culture. The similarity of *Kulturbiologie* to sociobiology is especially noteworthy when we consider the scientific context. In the early half of the twentieth century, genes were poorly understood vehicles of inheritance. Neither their physical structure nor their means of action had been clarified. For most biologists, genes stood apart from environmental agents in the determination of heritable characters. Weissman's dictum that somatic and germinal tissue were separate still held sway, and was to do so until Waddington (1966) popularized the concept of epigenesis, gene-environmental interaction.

There are good reasons to believe Stengel-von Rutkowski had, by the time he wrote the article on *Kulturbiologie*, at least seriously doubted Nazism. Almost all theorists of the Nazi movement — including Konrad Z. Lorenz, who was a member of both the Nazi party and its Office of Race Policy (Deichmann 1996) — held that natural selection ceases to work in conditions of civilization and domestication (Sax 1997; Proctor 1988). Stengel-von Rutkowski argued that it does not. This meant, however, that National Socialism could not claim to reinstitute natural selection and, thereby, return people to natural conditions. Racial modification, as Stengel-von Rutkowski sees it, is, in human societies, not the result of adaptation to some primeval natural conditions but rather the result of custom in interaction with the environment. There was, in other words, no point in aggressively reinstating 'natural selection' if it had never ceased to operate. Stengel-von Rutkowski neither attacks nor praises Nazism. Rather, he treats National Socialism as a phenomenon, an ethnic determinant (*Zuchtraum*) to be discussed alongside others which are at least equally authentic, including Bolshevism, Judaism, Christianity, and Liberalism.

One further indication that the author was no longer a believer in National Socialism is that he signed the article not with the Germanic 'Stengel', as he had done with previous work, but with the Slavic-sounding name 'Stengel-von Rutkowski'. This was amid vehement propaganda

directed against the 'bestial Slavs' and wholesale slaughter in Poland. In recognition of intellectual continuity with his previous work, he does refer to his earlier book on ethnic identity. On the other hand, he ironically refers to the work as 'my folk book' (1943: 232), rather the equivalent of 'my fairy tale'. Among the other ironic turns of phrase in the paper of 1943 is a reference to the way in which inherited psychology can modify appearance: 'To put it crudely, a Northern soul "might gaze heroically" out of the eyes of an "Eastern human being"'. He adds immediately that the deliberate exaggeration was meant as a joke (1943: 230), though only a few years before he had been one of the many people who had taken the rhetoric of Nordic heroism with utter seriousness. The irony, in this case, is clearly directed against his younger self, the Pole who had wanted to appear German. He closes his article with a sort of challenge: 'I hope for a lively debate' (1943: 237). We must, however, leave the question of to what extent, if at all, a possible repudiation of Nazism may redeem him morally. Our major focus, at this point, is on the theoretical ideas of his work.

### **A coincidence?**

There is no evidence that any English speaking biologist cited by Lumsden and Wilson, or by other contemporary sociobiologists, has ever seen the works by Scheidt and by Stengel-von Rutkowski that we have cited. We have also not uncovered any indirect or personal connections. Uexküll's work, on the other hand, is often cited, but apparently not often read. In all events, we know of no allusions in the biological literature to his seminal work, *Staatsbiologie* and its relation to sociobiology. This is hardly surprising. Germany of the mid-to-late thirties was not an inviting venue for American or English biologists, except in certain disciplines such as cellular biology. American and English biologists still do not generally make much use of German-language publications. The publications by Scheidt and Stengel-von Rutkowski often appeared in Nazi tracts, and they were not easily available outside of Germany. As for Uexküll, as already noted, he had gone into exile.

One other factor was the reluctance of scientists to make use of German war-time publications once the war ended. Too much had been tainted by the Nazi tyranny. A good example is the Pernkopf Anatomy, a classic medical text renowned both for its accuracy and its aesthetic qualities. A fierce controversy was recently ignited, as readers observed that some of the illustrations had been signed with a swastika and other Nazi insignia. The reference, it turns out, was compiled under Nazi supervision

and may possibly have made use of corpses from concentration camps (Wade 1996).

Was the similarity between Kulturbilogie and sociobiology, then, due to analogous intellectual climates? Social and intellectual analogies can certainly not fully explain the convergence. In the time of Scheidt and Stengel-von Rutkowski, the epigenetic point of view Stengel-von Rutkowski espoused had not yet been well articulated nor experimentally demonstrated. On the contrary, Nazi ideology, clearly postulated a 'hardwired' notion of gene action.

We are left then with the conclusion that the similarity is a remarkable coincidence, albeit one that had no discernable influence on the course of science. Had the Stengel-von Rutkowski manuscript of 1943 appeared in a western journal, Lumsden and Wilson might indeed have been scooped. Had Uexküll not withdrawn from the fray shortly after the Nazis came to power, he and Wilson might well have collaborated.

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