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"If there is nothing beyond the organic…"

Heredity and Culture at the Boundaries of Anthropology in the Work of Alfred L. Kroeber

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"If there is nothing beyond the organic…" Vererbung und Kultur an den Grenzen der Anthropologie bei Alfred L. Kroeber

Als Alfred L. Kroeber Anfang des 20. Jahrhunderts daran arbeitete, die Anthropologie als akademische Disziplin zu etablieren, definierte er Kultur, aufbauend auf das bereits von seinem Lehrer Franz Boas Geleistete, als ein Phänomen *sui generis*. Damit wollte er nicht zuletzt die aufstrebende Genetik seiner Zeit für eine Koalition gegen den damals in Nordamerika vorherrschenden Hereditarianismus gewinnen. Das Ziel war, für die Anthropologie einen klar umschriebenen Raum innerhalb der akademischen Arbeitsteilung zu schaffen. Um die Grenzlinien dieser Arbeitsteilung zu festigen, überschritt Kroeber sie jedoch in Richtung Biologie: Er entwickelte seinen Begriff der Kultur in enger Anlehnung an den Begriff der Vererbung – als unabhängig von Vererbung (Kultur als superorganisch) und gleichzeitig als analog zu Vererbung (Kultur als neue Art der Vererbung). Im Beitrag werden die prekären Grenzlinien der Anthropologie zu Beginn des 20. Jahrhunderts kurz zusammengefasst, um dann Kroebers Ideen zum Kulturkonzept zu präsentieren, wobei der Fokus auf den Einfluss gelegt wird, den die veränderte Landschaft um den Begriff der Vererbung auf seinen Kulturbegriff hatte. Auf der Grundlage des historischen Fallbeispiels werden zwei allgemeine Schlussfolgerungen gezogen: erstens, dass der Begriff der Kultur verschiedene Rollen in Erklärungen der menschlichen Existenzweise spielen kann, und zweitens, dass der Weismann'sche Begriff der harten Vererbung keine eindeutig einseitige historische Wirkung auf das Erstarken des Hereditarianismus zu Beginn des 20. Jahrhunderts in Nordamerika hatte, sondern auch einen Kroeber'schen Kulturbegriff zu etablieren half. Kultur konnte damit unabhängig von Vererbung gedacht werden.

Schlüsselwörter: Kultur, Vererbung, Kulturanthropologie, superorganisch, harte Vererbung, Alfred L. Kroeber, Franz Boas

Keywords: culture, heredity, cultural anthropology, superorganic, hard inheritance, Alfred L. Kroeber, Franz Boas.

"If there is nothing beyond the organic, let us quit our false and vain business and turn biologists…" said anthropologist Alfred L. Kroeber (1916b: 296) in 1916 – a time when ideas about heredity were changing profoundly, when genetics was establishing itself as an experimental science, when hereditarian thinking was gaining wide acceptance in the US, and – last but not least – when American anthropology was emancipating itself from being a mu-

seum-based profession to become an academic discipline. In face of all this, Kroeber was fighting, as his teacher Franz Boas already had, to establish the boundaries and autonomy of the new academic discipline of anthropology, especially the boundaries and autonomy of cultural anthropology. Not surprisingly, this struggle involved strong opposition to certain kinds of hereditarian thinking and a divide within the field of anthropology that in general exists within academia, broadly speaking between the natural sciences and the humanities, today often framed as the 'two cultures' of science, with reference to Charles P. Snow (1969).

Kroeber tried to accomplish his boundary work by focussing on a concept of culture that not only saved man from being just another animal but provided cultural anthropology with a distinct phenomenon to study. He defined culture not only as independent of but also as analogous to biological heredity. To make this move, which is a move towards autonomy from biological perspectives, Kroeber used the biologists's own concept of heredity and stressed that a Weismannian, that is a non-Lamarckian concept of inheritance, was necessary to perceive culture as autonomous. In other words, Kroeber was crossing boundaries in order to secure them – with conceptual bricks from the other side.

At times when disciplines or fields are formed, other disciplines or fields – in this case mainly biology – serve as "both matrix and whetting stone", as historian Ross (2003: 211) has claimed, with reference to the social sciences in general. The present article can thus be taken as a case study on the dialectics between concepts, in this case heredity and culture. How are they traded between disciplines and how are contrasts between concepts used to arrive at an epistemic object that can be appropriated? To isolate such a field-defining subject matter is, I argue, important in order to mark off and defend a certain territory within the academic division of labour.[1] Within this context, this article has two specific aims: firstly, to illuminate the development and role of the concepts of heredity and culture within Kroeber's cultural determinism (i.e. the claim that culture explains culture) and how this demarcation differs from earlier landmarks in the development of the concept of culture; secondly, to address the impact of the concept of Weismannian heredity, what we now call 'hard inheritance', on the development of hereditary thought. The question is: did the spread of a Weismannian concept of hard inheritance, with its denial of Lamarckian 'soft inheritance', encourage hereditarian ideas or not?

The material I use is not new, but the interpretation and the conclusions I draw from it are novel. Historians and anthropologists, such as Stocking (1968: 258–269), Harris (1968: 121), Peel (1971: 143–146), Cravens (1978: 105–120), Freeman (1983: 34–50), or Degler (1991: 96–100), have addressed Kroeber's writings on the Lamarckian inheritance of acquired characteristics. Yet they did not see the full significance of Kroeber's work in under-

standing the development and role of the concept of culture in our explanations of human existence. In addition, when anthropologists provide an account of Kroeber's cultural determinism, they still ignore the importance of Kroeber's use of Weismannian ideas (e.g. Patterson 2001). Although my aim is not to justify Kroeber's point of view, I shall nonetheless claim that we can make historical sense of it only if we acknowledge its Weismannian underpinning. Furthermore, while the contemporary anthropologist Ingold (2001) criticizes Kroeber for relying on a physical-cultural divide within anthropology and thus for splitting human beings into different compartments, this paper takes a step back. It seeks to explain what Kroeber did, why he did it, and what we can learn from his case when writing the history of the concept of culture. This is the first goal of the paper. The second is, as mentioned, to illustrate what we can learn from Kroeber's case when writing accounts of the historical impact of the concept of hard inheritance. So far, Kroeber has not featured prominently in such accounts (see e.g. Paul 1995: 40–49) or in historical accounts of the history of hereditarian ideas in general (e.g. Ludmerer 1972).[2]

In the first part I will discuss the shifting boundaries of anthropology at the beginning of the twentieth century. This part illustrates why Kroeber needed something with which to oppose to hereditarian thinking. In the second part I will analyse how Kroeber used a Weismannian or non-Lamarckian concept of heredity to secure the boundaries of cultural anthropology, which shows why he wanted geneticists to enter into a coalition with him in order to oppose hereditarianism. I will end, in the third part, with conclusions on the concept of culture as *explanans* or *explanandum* and on why Kroeber's case is important when writing a cultural history of heredity.

The Shifting Boundaries of Anthropology at the Beginning of the Twentieth Century

As sciences are organised into disciplines, or sub-disciplines, conceptual boundaries are constantly being drawn and redrawn. The space of ideas is delineated into areas of autonomy and exclusive authority over problems. During the Enlightenment, anthropology had conventionally been defined as 'the science of man'. At the beginning of the twentieth century, anthropology in America was thought to consist of four parts: archaeology, linguistics, physical anthropology, and cultural anthropology (also called ethnology). At the same time, anthropology stopped being a mere museum-based activity and became an academic discipline, with the usual incumbent outward signs: curricula, degrees, journals, associations, and the like.[3] There was a need to define the boundaries of anthropology in relation to other academic disciplines and areas of research such as psychology, biology in general,

and genetics in particular. And there was also a need to define the internal relationship between physical and cultural anthropology, since these two fields had different affinities. The first tended towards the natural sciences, the second towards the humanities and the emerging social sciences, both methodologically and conceptually. This tension, created by what was later termed the 'two cultures' of science, is felt and debated in so-called 'four-field anthropology' in America still today. In the eighteenth and nineteenth centuries, when anthropology took shape as part of the general rise of the social sciences, anthropology was still dominated by a unified outlook, aiming to knit physical and cultural perspectives together in order to arrive at a general 'science of man'. In the twentieth century the two drifted apart. We can illustrate the change by looking at Franz Boas and his student Alfred L. Kroeber.[4]

Franz Boas (1858–1942), founding figure of academic anthropology in the US, was educated as a scientist. He made important contributions to physical anthropology and regarded this field as central in understanding the cultural differences within and between groups of people. Heredity, a phenomenon considered part of physical anthropology, was for him one of several factors an anthropologist had to take into account to understand the development and behaviour of individuals and the differences discernable between them. In *Changes in the Bodily Form of Descendants of Immigrants* (1912), his famous study on the formative influence of environmental factors, he built his arguments for the plasticity of bodily characteristics on anthropometric evidence.[5] In 1904, reviewing the history of anthropology, he described the state of the art of anthropology in the following manner:

> At the present time anthropologists occupy themselves with problems relating to the physical and mental life of mankind as found in varying forms of society, from the earliest times up to the present period, and in all parts of the world. Their researches bear upon the form and functions of the body as well as upon all kinds of manifestations of mental life. Accordingly, the subject matter of anthropology is partly a branch of biology, partly a branch of the mental sciences. Among the mental phenomena language, invention, art, religion, social organisation and law have received particular attention. (Boas 1904: 513)

But he also noted: "Among anthropologists of our time we find a considerable amount of specialization of the subject matter of their researches according to the divisions here given." (ibid.: 513–4) Today, 100 years later, Segal and Yanagisako (2005: 29) state that after Boas "no one has actually worked creatively in more than two of the four fields".

The 'first Boasian', his student Alfred L. Kroeber (1876–1960), was already more specialised and tried to distance himself from one of the four fields, namely the field of physical anthropology. Kroeber never contributed anything important to physical anthropology and focused on the historical development of cultures. "The other parts were secondary and marginal and owed their significance to their contribution towards an understanding of

culture history", as the anthropologist David Bidney (1965: 268) writes. In part this was certainly due to the success of Boas in giving culture history a secure foundation on which his students could build. It was certainly also the "personal inclination of the investigator", a factor Boas (1904: 514) mentioned himself with respect to the ongoing specialisation within four-field anthropology.

Kroeber had his personal inclinations, not always in harmony with his teacher.[6] Born in 1876, in Hoboken, New Jersey, he grew up in a German-Jewish intellectual environment in New York and received Columbia's first PhD in anthropology in 1901, the ninth in the whole US, supervised by Boas. He did not have a background in a natural science and wrote his doctoral dissertation on the decorative symbolism of the Arapaho (Kroeber 1901). On the basis of careful fieldwork according to Boas's strict methodological standards, Kroeber showed that the Arapaho did not themselves operate according to the anthropologist's binary opposition between decorative and realistic art.[7] On completing his PhD he was immediately given a permanent position. His job was to build up a department of anthropology at the University of California, Berkeley. By 1907 he was an important figure in the discipline and is seen even today as the most influential figure after Boas in the establishment of cultural anthropology in the US. He made important contributions to American anthropology, especially with respect to the languages, kinship systems, and cultures of the Native Americans of California (Kroeber 1917b, Kroeber/Dixon 1919, Kroeber 1925, 1939). With his *Handbook of the Indians of California* (1925) he became the leading figure in North American ethnography. His *The Natural and Cultural Areas in Native North America* (1939) carved out the major 'culture areas' – as opposed to natural, geographic areas – and introduced the concept of 'culture climax', which was thought to replace the concept of culture centres, then common in diffusion studies.[8] He also contributed important work to linguistics and archaeology.[9] His *Anthropology* (1923) was the first general textbook on anthropology and was widely used, assessing the state of the new academic discipline whose establishment was one of his major concerns. As the quotation from Kroeber in the opening of this article shows, he was concerned whether there was enough room for what he calls the 'superorganic' and for those that wanted to study it professionally.[10]

Even though the disciplinary and institutional history of cultural anthropology is not a focus of this study, the following episode from the politics of science illustrates that cultural anthropologists like Kroeber had genuine reasons to be afraid they might be forced to become biologists. There was a practical pressure to secure the boundaries of anthropology in the spirit of the Boasians.

Between 1916 and 1918, Boas and his students fought for acceptance in the US scientific bureaucracy. At issue were the posts on the National Re-

search Council's Committee on Anthropology. For historians of anthropology the story is well known. George E. Hale, the Director of the National Research Council, asked William H. Holmes (1846–1933), an important figure in pre-Boasian American anthropology and defender of a racial interpretation of cultural differences, to organise the Committee on Anthropology. Holmes chose Aleš Hrdlička (1869–1943) to take the lead. Hrdlička defended physical anthropology as an independent discipline. One of their goals was to prevent Boas and his students gaining control over the committee, thus preventing cultural anthropology from becoming too influential. Both Holmes and Hrdlička regarded cultural anthropology as unscientific, as not being a 'hard' science, as Cravens (1978: 110–115) reports. Yet they could not totally ignore Boas. Holmes thus put Hrdlička, Boas, and Charles B. Davenport (1866–1944) – geneticist and leader of the American eugenicist movement – on the list for the committee. Finally, Hale dropped Boas from the committee because of Boas's anti-war activism. In April 1917, Madison Grant (1865–1938), a wealthy advocate of racism, who published his best-selling book *The Passing of the Great Race* in 1916, offered money for the committee's work in exchange of membership. The committee consisted then of Holmes, Hrdlička, Grant, and Davenport. In the end it was Davenport who was selected by Hale in February 1918 to represent the interests of the Committee on Anthropology to the National Research Council's Division of Medicine and Related Sciences. Thus, a geneticist who defended racist and eugenic doctrines came to represent anthropology within the scientific bureaucracy of the National Research Council – at a time when there were already academics educated as anthropologists and capable of the job.[11]

As the involvement of Holmes already indicates, the struggle of cultural anthropology for acceptance and autonomy from genetics and physical anthropology coincided with the struggle for emancipation from the older generation of anthropologists such as Holmes, who were not trained as anthropologists and were predominantly oriented towards a racial hereditarianism. Last but not least, it was linked to the general dominance of racism and eugenics in the US at that time. There were thus three important contexts of cultural anthropology's formative years in the US: the institutional demarcation from genetics and physical anthropology, the emancipation from the older generation, and the dominance of racial hereditarianism. I cannot go deeper into these contexts here; important in this study on the dialectic relationship between the concepts of heredity and culture in Kroeber's work is simply that these are three main contexts in which Kroeber worked as a young academic.

That Kroeber perceived a danger (and wanted others to perceive such a danger) is also evident from the language of war and territory that he used. According to him, biology was a discipline that "forged its weapons, taught itself their use, conquered a territory, and stands forth a young giant of prow-

ess" in order to "annex the antiquated realm of history that lay adjacent" (Kroeber 1916a: 34).

Yet, in an astonishing twist, Kroeber used the biologists's own concept of hard inheritance in order to reinforce cultural anthropology's opposition both to the institutional hegemony of biologists and to the scientific hegemony of hereditarianism. According to the historian Stocking, Kroeber was the only one among the social scientists who realised that the concept of Lamarckian inheritance (i.e. inheritance of acquired characteristics) hindered the autonomy of anthropology and other social sciences (Stocking 1968: 259).

Culture and/as Inheritance in Kroeber's Work

Kroeber's boundary work for anthropology found its first peak with a couple of papers between 1915 and 1917, ending with his famous article *The Superorganic* (1917a), which established cultural determinism as his major doctrine.

Kroeber had already laid down the basic outline of his approach to culture, heredity, and anthropology in 1910. His example was morality: according to him, morality is governed by an innate, instinctual moral sense. Yet variations in moral behaviour between "civilized people" and "uncivilized people" are due to varying cultural influences and not due to innate differences in the alleged moral sense. In other words, behavioural differences do not imply that there are essential inborn differences between groups of people. On the contrary, we should assume an anti-racist concept of a shared human nature.[12] "As an integral constituent of man," Kroeber wrote, the moral sense "is common to all races in identical or virtually identical form. Variations in moral ideas are reflections of changes in civilization." (Kroeber 1910: 446) Differences between groups of people in conduct, rules, and ideas should thus be explained by the influence of what Kroeber called interchangeably 'civilization', 'history', or 'culture'.[13] Yet, according to Kroeber, this does not exclude individual innate differences to do with the innate moral sense. Shared human nature is an "identity of average" as he makes most clear in Kroeber (1917a: 194–203).

From these assumptions, Kroeber went on to describe culture as "outside of race and independent of the human body" (Kroeber 1910: 446). He uses this claim to explicate his anti-racist conception of the moral sense. As culture

> affects only the body of knowledge possessed by a people and the actions connected with this knowledge, the principles of morality cannot be influenced by civilization, however the concrete expression of these principles may vary in their adaptation to particular forms of civilization. The apparent difference between the morality of savages and ourselves is therefore not really in the morality but in the civilization. (Ibid.: 446)

Culture has its own body, a "body of knowledge", and does not influence the biological body. Two aspects, whose connections will get clearer as we move through Kroeber's early theoretical work, are important for this study. Firstly, implicitly excluding Lamarckian inheritance of acquired characteristics, Kroeber argued that human nature is not only universal but also hard and permanent, "incapable of racial improvement" (ibid.). Secondly, he suggested that human culture is independent of race and the human body. Culture is a system or process *sui generis*. This is similar to Durkheim's (1893, 1895) idea of social facts.[14] In Kroeber's case, it means that culture determines – that is, influences – culture (via behaviour), but it does not influence the physical body, at least not the innate racial basis of the respective behaviour, and vice versa. When Kroeber (1916b, 1917a) suggests that culture is "superorganic", he means that culture influences and thus explains culture. Superorganic culture comes on top of organic factors and is based on "social inheritance or cultural transmission" instead of biological inheritance (Kroeber 1916c: 368).[15]

To understand Kroeber's position clearly, the following issues have to be addressed. Firstly, what is the epistemological status of this claim? In his 1915 paper *Eighteen Professions*, arguing for the autonomy of anthropology as a distinct discipline, Kroeber asserted that the notion of the unity of humankind based on inborn mental characteristics is not a proved or disproved fact, but a necessary assumption for the "historian", by which he means the anthropologist, since otherwise "his work becomes a vitiated mixture of history and biology" (Kroeber 1915: 285). The necessary assumption can also be interpreted as a definition of the subject matter, a definition Jackson (forthcoming) judges as "pragmatic". Even though the goal of this paper is not to make a philosophical justification of Kroeber's cultural determinism, it seems appropriate to make the following observation. Kroeber's cultural determinism (culture explains culture) could be taken as a tautological definition: everything which is cultural is cultural. If at all, then this tautological character of the definition holds for any analytical definition (e.g. for the definition of a 'bachelor' as an unmarried man). As a definition it is vacuous. But it is nonetheless fruitful, since it helped Kroeber to delineate the subject matter of his discipline. Furthermore, Kroeber's definition does not exclude the interaction of history and biology. On the contrary, it includes it and does so without contradicting the definition. Kroeber acknowledges that history and biology are intertwined and claims that the degree of their contribution to the development of individuals cannot be tested (Kroeber 1915: 285). The claim that the behaviour of individuals and their development is caused by multiple factors, culture being merely one of them, is however compatible with the argument that culture is a process in its own right. It is only if we look (in the epistemic sense) at culture itself, that we see that culture is independent of nature, a phenomenon that can only be explained by reference to

pre-existing culture. It is in this inter-individual, almost phylogenetic sense that culture always derives from previous culture, as a cell always derives from previous cells.

The second issue that might cause misunderstanding is the issue of holism. Kroeber's paper on culture as superorganic is often seen as defending a strong holistic conception of culture and has been criticised for this reason (Bidney 1944, Herskovits 1948). Even though I do not aim to make a judgement on this issue here, the following two points should be taken into account. Firstly, although Kroeber believed that "[c]ivilization is not mental action itself" but "a body or stream of products of mental exercise" (Kroeber 1917a: 189, 192), he also believed that culture (i.e. civilization) is maintained via individual mental states or individual actions. Furthermore, to claim that culture is a "body or stream of products of mental action" is not to point to an ontologically dubious whole; it points to a causal inter-individual lineage of the effects of mental acts. In addition, although Kroeber sometimes talks in his 1917 paper as if individuals are mere passive bearers of culture – implying that their properties do not determine culture and that culture does not determine the properties of individuals – and as if culture is a special ontological substance, the light that falls on his 1917 paper changes, if we look at his overall career. In 1952, Kroeber recanted from a 'holistic' anti-individualistic stance. He admitted that culture as a whole is not an emergent entity or substance and that individuals are more important than he had maintained in 1917. His goal in 1917, as he himself said in 1952, had been to establish the recognition of culture as an autonomous system, independent of "biological explanation" (Kroeber 1952: 4, 22–23, Kroeber/Kluckhohn 1952: 49). My claim is not that he had not been holistic in 1917, or that he cannot be interpreted as holistic; my claim is merely that if the context of an opposition to hereditarianism is ignored, Kroeber's assertion of the superorganic nature of culture (and thus the genesis of his 'holistic' tone) cannot properly be understood.[16] I thus depart from the conclusions drawn by anthropologists such as Bidney (1965), who deduce that the concept of the superorganic (and the cultural determinism built upon it) make no sense due to the lack of a total independence of culture from individuals. It did make sense, but only in a very specific sense: in the sense of a separate system of change and inheritance. Here I use the term 'system' or 'process' to follow Kroeber with his late assertion that he does not regard culture as a "substance" (Kroeber 1952: 4, 22). With this I do not seek to determine whether the ontological status of culture has to be interpreted in a realistic or nominalistic manner: whether culture (or beauty, truth etc.) can exist in itself, or whether such 'things' exist solely in actual culture-bearing individuals (culture in mind, beauty in beautiful things, and truth in true statements etc.). Either way it can be asserted that culture exists as an inter-individual process or system, a system of change and heredity. In a similar sense, we can say that evolution is

a process or system of change that exists, even though individual organisms vanish, without regarding evolution as a special substance, an extra entity existing in addition to, and in the same sense as evolving entities. Kroeber's 'holistic' overtones rested on the idea that culture is an autonomous system of change and heredity, at least in the papers under review here, and this kernel of his cultural determinism was in turn related to his opposition to hereditarianism. Finally, it was this opposition that correlates with the denial of the Lamarckian principle of the inheritance of acquired characteristics, to which I will turn next and which Kroeber considered as vitally important in fighting racism and eugenics.

In 1916, in a paper called *Inheritance by Magic*, Kroeber moved the denial of inheritance of acquired characteristics to the centre of his work. In order to do so, he referred to three important aspects of August Weismann's (1834–1914) ideas on inheritance: firstly, that experiments failed to produce positive evidence for the inheritance of acquired characteristics; secondly, that all cases of evolution are explainable without reference to the inheritance of acquired characteristics; thirdly, that inheritance is 'hard,' a term neither Weismann nor Kroeber themselves used, but which was introduced by Cyril Darlington (1959: 14, 54–56) and is still used today. That heredity is 'hard' meant for Weismann (1885, 1892) that the hereditary material is not produced anew by the organism but present from the start, existing continuously, and protected against changes that occur in the somatic tissue. Acquired changes, that is changes to the somatic tissue of the organisms, are not heritable on this basis. In Kroeber's words, Weismann's "basic idea" was "that the hereditary substance is totally distinct from the organic body, and that therefore the fate of the individual cannot affect the race" (Kroeber 1916a: 26). In addition, Weismann's concept of heredity was that the 'germ plasm' existed over time independently of individuals. The 'germ plasm' is thus sub-individual and inter-individual at the same time – almost as superorganic and independent of individuals as Kroeber assumed culture to be. This is the central point that has to be taken into account in understanding Kroeber's concept of culture.

Kroeber also referred to Mendelism, the "new branch of biological science", as providing a corroboration of this concept of hard inheritance. Thus he wrote that although Mendelians perceive themselves as opposed to Darwinism, "one of their fundamental achievements has been the involuntary confirmation by real knowledge of an idea first clearly grasped by a Darwinian theorist" (Kroeber 1916a: 27). Kroeber also acknowledged that the dismissal of inheritance of acquired characteristics did not rest on empirical proof. In some circles, Kroeber noted, it had even become a "taboo" (ibid.: 28).

In other circles, however, the principle of the inheritance of acquired characteristics was still quite popular, despite Weismannism and despite

Mendelism. Because of this, Kroeber called his paper *Inheritance by Magic*, asserting that "if found in the minds of uncivilized people", the belief in the inheritance of acquired characteristics "would be described as belief in sympathetic magic" (ibid.: 38). This is anthropology of science: Kroeber used the conceptual toolbox of anthropology (magic, taboo, etc.) to ask why people still believed (or did not believe) in Lamarckian inheritance.

In this context, Kroeber cited two motivations for belief in the inheritance of acquired characters. Firstly, Lamarckian palaeontologists (as well as Mendelians) maintained that Darwinism could not explain the origin of variation. Thus, in order to account for the origin of variation, some scientists called the inheritance of acquired characteristics to the rescue. Yet Kroeber believed this was not a viable route for Mendelians, since if they moved back to Lamarckian inheritance, they would run into acute tension with their own views about heredity (ibid.: 30). Secondly, the general public and social scientists stuck to inheritance of acquired characteristics for another reason: they still did not distinguish between culture and race (synchronic perspective) and between cultural change and biological evolution (diachronic perspective) in a "consistent" manner. They confused culture with nature (Kroeber 1916a: 31; cf. Kroeber 1916b: 295, 1916c: 370, 1917a: 163).

According to Kroeber, this confusion was caused by the assumption that cultural change is evidence for and is causally linked to biological evolution. In Kroeber's words, it arose from the assumption that "the acquisition of greater wealth or learning or skill by one group is evidence of a superior faculty for such acquisition inborn in that group through organic heredity" (Kroeber 1916a: 33). This is what Kroeber called the "fallacy that the social is organic" (ibid.: 36). Those who "nominally" employ culture but regard it nonetheless as "ultimately, and in general directly, resolvable into organic factors", are susceptible to this fallacy (ibid.: 37). The influence of Boas is evident here, since it was Boas (1911), who stressed that culture, language, and race (i.e. the genetic endowment of people) do not co-vary and that we cannot simply infer racial differences in natural endowment from differences in behaviour, belief, art, and custom, or identify the former with the latter. Yet Boas did not relate his insights about the non-correlation of culture, language, and race to the issue of Lamarckian inheritance. It was Kroeber who claimed that what makes this fallacy possible is the belief in Lamarckian inheritance.

And indeed, take for instance Herbert Spencer (1820–1903), at Kroeber's time still the most influential Lamarckian in the area of mental traits. Spencer assumed that civilization was correlated with biological evolution and can only be explained by reference to Lamarckian inheritance, where 'nurture' becomes 'nature' in each generation, leading to innate differences between races. Thus, Spencer (1898) wrote that:

> Certain powers which mankind has gained in the course of civilization cannot, I think, be accounted for without admitting the inheritance of acquired modifications. The musical faculty is one of these. To say that 'natural selection' has developed it by preserving the most musically endowed, seems an inadequate explanation. (Spencer 1898: 311)

Neither a "musical career" in nineteenth century England, nor the possession of the "rudimentary faculty in a somewhat greater degree" in earlier stages, "through which the faculty must have passed", (ibid.: 311) meant any advantage in fitness on which natural selection could have acted. Spencer concluded:

> There is no explanation but that the habitual association of certain cadences of speech with certain emotions, has slowly established in the race an organized and inherited connection between such cadences and such emotions; that the combination of such cadences, more or less idealized, which constitutes melody, has all along had a meaning in the average mind, only because of the meaning which cadences had acquired in the average mind; and that by the continual hearing and practice of melody there has been gained and transmitted an increasing musical sensibility. (Spencer 1898: 311–312)

Spencer's account of the evolution of mental traits was broadly as follows: new behavioural patterns or associations between sense experiences become habits, which become instincts (via the inheritance of acquired characteristics); these instincts play a role in the genesis of new behavioural patterns or sense experiences, which become habits, which then in turn become instincts, and so on.[17] As the quotation indicates, the explanation of the evolution of such mental abilities as intelligence, moral, or musical sense is one of the reasons why Spencer opposed Weismann in the well-known debate about the all-sufficiency of selection (Spencer 1893a, 1893b, 1894; Weismann 1893, 1895), a debate which arose because Weismann totally excluded inheritance of acquired characteristics.

In 1889 and 1892, in a paper on the musical sense of animals and humans, Weismann had already stated that a point of view such as Spencer's ignores the fact that tradition, or culture in Kroeber's sense, makes Lamarckian explanations superfluous.[18] Even though natural selection might not be enough as an explanation, we still do not need Lamarckian inheritance to explain the evolution of man's capacities and achievements, as long as we admit that there is something like tradition and culture. According to Weismann, Spencer confuses achievements (culture or cultural change) with innate abilities (nature or biological evolution). He thus ignores the fact that the former can change without the latter. Spencer's assertion of the impossibility of explaining certain changes in innate abilities in terms of natural selection is irrelevant, since these changes in innate abilities exist only in the mind of the observer. In other words, Weismann believed that the alleged unexplainable increase in musical ability did simply not exist and that there are no justified reasons to believe that such an increase has taken place (Weismann 1889 [1892]: 600–603). Weismann illustrated his point with the following thought

experiment. Is it possible that there was a Mozart in Samoa, a person with a musical sense or innate ability equal to Mozart's? According to Weismann, it would indeed be possible. But since the hypothetical "Samoaner Mozart" (ibid.: 601) could not build on already accumulated musical traditions, and the corresponding culturally transmitted abilities, it would have been impossible for him to express his profound musical sensibility the way the real Mozart had. Kroeber acknowledged Weismann's essay and relied on it, but regarded it as "a brilliant miss", since in the end Weismann "hastened to the inconsequent conclusion that faculties are probably different after all" (Kroeber 1916a: 37).

Be it as it may, it follows from Weismann's and Kroeber's accounts that cultural evolution can proceed independently from biological evolution. Kroeber expressed this claim most clearly in the following diagram:

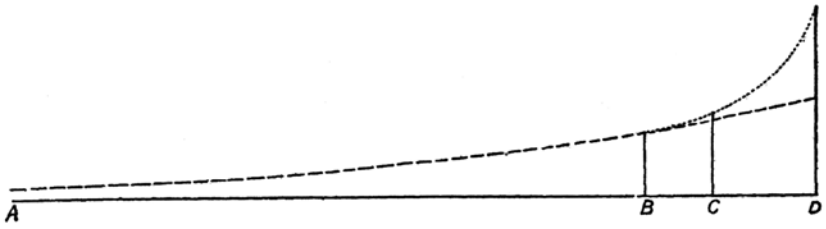

Figure 1: The relationship between inorganic, organic and superorganic change, from Kroeber (1917a: 211).

Kroeber presented the diagram in order to stress that the lines, representing the three different systems of change (inorganic, organic, and superorganic), develop independently from each other. This image served as a foundation for his cultural determinism, in which culture or superorganic change (dotted line) is a form of heredity, changing in an analogous but autonomous manner – autonomous from biological heredity or organic change (dashed line), and autonomous from inorganic physical persistence (continuous line). The historically important point for Kroeber is B, which he described as the moment at which the first human was able to learn socially from others. C stands for 'primitive' man, and D for the present moment. Kroeber defined "[h]eight above the base" as "degree of advancement, whether that be complexity, heterogeneity, degree of co-ordination, or anything else" (Kroeber 1917a: 210–211). A page later, he refers to the increase in the number of cultural items and the complexity of social organisation as the factors that distinguish us from the Neandertal people – taken as an example of the primitive man. The terms 'advancement' and 'progress' occur sporadically in the 1917 and other papers. Despite this progressivist wording, Kroeber tried to distance himself from progressivism by stressing: "Nothing is more erroneous than the wide-spread idea and oft-repeated statement that the savage is only a child" (Kroeber 1910: 445), a statement that directly leads to

a critique of Darwin and like-minded thinkers who claimed that the "savage is in a stage intermediate between the higher animals and ourselves" (ibid.). Kroeber also stressed that "[a]ll men are totally civilized" (Kroeber 1915: 286) and that he did not use the term civilization for "high" civilization, since for him it made perfectly sense to talk about "Apache civilization" (Kroeber 1918: 355), which includes their language, kinship systems, habits, religion, diet, and the like. In part, this explains why Kroeber could use the terms 'culture' and 'civilization' synonymously, as indicated above. Yet, it still gives a mixed picture on whether Kroeber was still progressivist, as Spencer clearly was, and thus less radical than his teacher Boas, whose cultural relativism was meant as revolt against the progressivism of classical evolutionism in anthropology. A precise answer is, however, not central to the issues raised here. What is central is that Kroeber opposed what I would like to call racist hereditarianism.

Let me add a note on eugenics, which Kroeber also opposed (e.g. Kroeber 1916a: 34–37, 1916c: 370, 1917a: 188–189). If eugenics is understood, as Kroeber did, in a narrow sense that assumes that progress cannot be achieved by social reform or education, then let us call it hereditarian 'hard' eugenics. Since it denies the possibility of long-term human betterment via cultural inheritance, it has to rely on the social selection of individuals, that is through increasing or decreasing the rate of reproduction of certain individuals. If eugenics is, however, understood to include a Lamarckian point of view, then it reduces culture to environmental influences that are projected into the next generation via biological inheritance. Cooke (1998) suggests that eugenics was Lamarckian before 1915, a kind of 'soft' eugenics, and predominantly hereditarian in the narrow sense and thus 'hard' afterwards. That hard eugenics could not be hurt by Kroeber's conceptual developments should be evident, since it also relied on the concept of hard inheritance. I will come back to eugenics in the last part of this study, when I address the consequences of Kroeber's case for the historical impact of the concept of hard inheritance.

Racist hereditarianism up to Kroeber's time, exemplified here by Herbert Spencer, regarded the synchronic and diachronic behavioural differences between groups of people as being correlated with and largely caused by innate differences in abilities to produce these cultural differences. Thus, greater wealth and power of one group of people can be correlated with and regarded as being due to higher innate intelligence. In a diachronic perspective, every cultural change (civilization) is accompanied by a change in innate endowment. This is what Kroeber denies. Yet by assuming an inborn faculty of humans for civilization and by assuming innate individual differences, Kroeber also subscribed to a hereditarian basis for human existence; he merely rejected its racist version.[19] Kroeber therefore refers to Galton as being right in claiming that

> between individuals mental faculties are inherited in the same ratio and degree, and therefore presumably in the same manner, as physical traits, which is reasonable as well as convincing. But it is an entirely uncompelling inference when he then proceeds to explain the diversity between the attainments of social groups such as ancient Athenians, modern Englishmen, Africans, and Australian natives, as due to differences between the average inherited faculties of the bodies of men carrying the civilizations of these social groups. (Kroeber 1916a: 36)

In 1917, Kroeber added:

> That heredity operates in the domain of mind as well as that of the body, is one thing; that therefore heredity is the mainspring of civilization, is an entirely different proposition, without any necessary connection, and certainly without any established connection, with the former conclusion. (Kroeber 1917a: 192)

In addition, when looking at culture in the manner Kroeber does, cultural inheritance – symbolised by the dotted line in the diagram above – emerges as the very process that makes culture 'superorganic'. If culture and biological evolution are as decoupled as Kroeber assumes, then culture becomes clearly visible as a separate, second system of inheritance and change. In the end, culture is conceived as being independent of biological heredity (culture as superorganic) and, at the same time, it is conceived as heredity of another sort. A close epistemic coupling, via contrast and analogy, leads to a conceptual and causal decoupling of heredity and culture.

Finally, the conceptual separation should, according to Kroeber, be linked to a disciplinary one: biologists should limit their studies to biological heredity and the respective organic mental faculties and leave the explanation of the superorganic culture to the anthropologists. Given that both had a distinct subject matter to study, Kroeber assumed that "[b]iology and history can join hands in alliance across the gulf that separates them" (Kroeber 1916a: 39). Everybody got his or her share of the cake. To return to where we started: if there is something superorganic, anthropologists do not have to turn into biologists. Instead, biologists were invited to "join them in a co-operative effort to establish the exact nature and the precise limits of the organic and the superorganic" (Kroeber 1916b: 295). In the end Kroeber's plea for a coalition was fulfilled when, for instance, Thomas H. Morgan, Columbia's famous geneticist, joined in. In 1924, in a paper called *Human Inheritance*, and again in his *The Scientific Basis of Evolution*, Morgan had already presented social evolution and its peculiar process of "social and economic inheritance" (Morgan 1924: 406) as an *Ersatz* for the Lamarckian inheritance of acquired characteristics, for which he sees no experimental evidence (Morgan 1932: 187–217). Social inheritance can be seen as such an *Ersatz* precisely because it leads to the same effects, that is because it is functionally equivalent: efforts to change or to learn during one's lifetime are heritable and thus not pointless from an inter-generational, evolutionary point of view. Consequently, Morgan

advocates the same interdisciplinary division of labour between geneticists and anthropologists that Kroeber asked for.

The Various Theoretical Lives of Culture

The concept of culture has many dimensions. What was the general development of the concept of culture before and after Kroeber? How does culture influence the methods of anthropologists? How can we conceptualise cultural change and diffusion, or how does cultural learning – what Kroeber called 'inheritance' – work? Does anthropology need a concept of culture at all? These are just a couple of questions that deserve careful analysis in and of themselves, and are still the subject of controversial debates.[20] I focus on an aspect that is important for this study and around which there seems to be a consensus in anthropology: that culture is a system of change maintained via a distinctive inter-individual, trans-generational process of cultural inheritance. In this sense even today culture is conceived as something *sui generis*, as autonomous. Above, I described how this aspect of the contemporary anthropological concept of culture emerged in the work of Kroeber and how he was influenced by the biological concept of heredity prevalent at the time.

I will now illustrate the importance of the emergence of this aspect in a more systematic way, by distinguishing between three theoretical roles the concept of culture played with respect to the contrast between nature and culture up to the time of Kroeber's early work. For this I will use the distinction between *explanandum* and *explanans*, common in the philosophy of science and introduced by Hempel and Oppenheim (1948) in order to describe the structure of a deductive-nomological explanation. This kind of explanation was thought to contain the conclusion, a sentence describing the phenomenon to be explained (*explanandum*), and the premises, sentences used to account for the phenomenon (*explanans*). I apply the two terms in a slightly more liberal manner to refer to any kind of conceptual tools used to designate what is to be explained (*explanandum*), and to refer to the elements referred to in an explanation of a specific phenomenon (*explanans*).

Within the areas of anthropology up to the 1920s that dealt with explanations of behavioural or mental differences between groups of people, three major theoretical roles of the concept of culture can be distinguished:

(C 1) Culture has been understood as behavioural and symbolic patterns distinctive of a society. It has thus to be understood as an *explanandum*, something that is to be explained, by innate endowment, physical environment, social structure, history, habits, or all of them together. I regard Edward B. Tylor's classic anthropological definition of culture as an exemplar of this category:

> Culture or Civilization, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and other capabilities and habits acquired by man as a member of a society. (Tylor 1871: 1)

This definition does not imply that culture is explained by cultural inheritance in the sense Kroeber means it. The phrase "acquired […] as a member of society" is ambiguous; it can mean 'acquired via social learning' but it does not have to. The term 'acquired' in Tylor's definition seems to play no systematic role in his account and the phrase "acquired by man as a member of society" can also be understood to refer simply to the fact that culture relates to a society of which the individual is a member, regardless of how the respective cultural traits are acquired.

(C 2) As Stocking (1968: 195–233) stressed, Franz Boas radicalised Tylor's classical definition by destroying the progressivism underpinning Tylor's evolutionist account of primitive culture, thereby establishing a truly relativist concept of culture and initiating a consequential decoupling of nature from culture. In addition to his relativist concept of culture, Franz Boas is well known for his critique of racism, irrespective of whether it was applied to physical or other characteristics of peoples. He regarded culture as an important factor in the generation of physical, behavioural, as well as mental traits of individuals. In his masterpiece *The Mind of Primitive Man* (1911), he developed many arguments why we have to take culture into account if we want to explain body, mind, or civilization. Yet Boas mainly talked about culture as a special kind of environment, a social environment that influences individual development, and he does so not only in the chapter that summarises the influence of environment on bodily form, but also in the chapter "The Mental Traits of Primitive Man and of Civilized Man", in which he discusses whether we have scientific evidence that observable differences in civilization are due to differences in biological endowment. His conclusions are negative: "I do not believe that we are able at the present time to form a just valuation of the hereditary mental powers of the different races." (Boas 1911: 122) The terms he applies to frame his arguments in this chapter are: "social surroundings" (ibid.: 100), "social conditions of races" (ibid.: 101), "environmental causes" as opposed to "hereditary causes" (ibid.: 103), and "social causes" (ibid.: 116). In formal terms, he mainly uses culture as an *explanans*: it has to be distinguished clearly from other factors, such as hereditary factors, and, together with other factors, it helps to explain body, mind, and civilization, the historical change in culture. For Boas, culture in Tylor's sense does not co-vary with physical and linguistic characteristics, and to make this argument he had to conceive cultures as somehow coherent systems of belief and conduct. Yet culture as a new kind of heredity, as a superorganic system of change and inheritance that defines the boundaries between animals and humans and provides a new and special subject matter for cultural anthropology, is not, as in Kroeber's work, a central concept in

Boas' masterpiece. On the contrary, when, for instance, Boas discusses the animal-human boundary, he refers to reason, to fewer instincts in humans compared to animals, and to individual learning rather than cultural inheritance (Boas 1911: 96–97).

(C 3) It was Kroeber who took a further theoretical step. He explicitly regarded culture as a system of change and inheritance in its own right, one that relies on social heritage. Culture thus became again an *explanandum*, but a new one. Although the early Kroeber thought that culture is also the only *explanans* for culture as *explanandum* (only culture explains culture), the late Kroeber admitted that many factors are involved in bringing about the inter-individual system of change and inheritance he called culture. That Kroeber wanted to distinguish his concept of culture from that of Boas is also evident from Kroeber/Kluckhohn (1952), a review of various definitions and concepts of culture for which the two authors later became famous. They place Boas together with Tylor into the category of "descriptive" definitions that use enumerations, and Kroeber into this one and into a second category of "historical" definitions: definitions with "emphasis on social heritage". My assertion is that the classification offered in 1952, is not revisionary with respect to Tylor's, Boas's, and Kroeber's concepts of culture; it matches the original intentions of the early papers under discussion here.

To prevent misunderstanding of the distinctiveness of the three theoretical roles the concept of culture plays in Tylor, Boas, and Kroeber, I have to add some clarifications. Certainly, all three authors knew that humans do not only transmit genes but learn from each other, and they all used culture in all three senses discussed above. Yet the question is not whether or not there are places where one of these authors refers to social learning, or whether they use the term 'culture' as an *explanans* or *explanandum* in the first Tylorian sense; the question is, which meaning and role was central to their approach. At issue is whether social learning was systematically important to show, for instance, that there are, or are not, racial differences in mental capacities, be they moral, musical, or any other kind of difference.

For Tylor, cultural inheritance could not be systematically important in the same sense it was for Kroeber, because Tylor was too deeply embedded in the Lamarckian era of heredity. For Boas it simply was not systematically important; and why should it be? He had other, quite effective weapons at hand to fight racism, namely the methodological weapons of physical anthropology itself. Just as Kroeber used the biologists' concept of heredity, Boas used their methods to separate heredity and culture. I do not claim that one of these developments was historically more important. I only claim that Kroeber, by focussing on the concepts of culture and heredity, took a decisive step further with respect to the historical development of the concept of culture.

It is this step that is not taken seriously enough, neither by Stocking, who is well known for his work on the history of anthropology (especially on Boas,

Kroeber, Lamarckism in social science, and the concept of culture), nor by Cravens and Degler, who have written on the history of hereditarian thought. Although Stocking, for instance, acknowledges that Boas still had an "ambiguous position on the inheritance of acquired characteristics" (Stocking 1968: 265) and realises that Kroeber radicalised Boas's approach on culture, he still looks at the concept of culture through a Boasian lens. He writes that Boas's and Kroeber's concept of culture provided "a functionally equivalent substitute for the older idea of 'race temperament'. It explained all the same phenomena, but it did so in strictly non-biological terms, and indeed its full efficacy as an explanatory concept depended on the rejection of the inheritance of acquired characters" (ibid.: 265). This is misleading. Boas and Kroeber, first of all, did not have the same concept of culture, since in Kroeber's hands culture became a superorganic system of change and inheritance in its own right, while Boas was rather sceptical about the concept of culture as superorganic, defending a more individualistic standpoint.[21] Secondly, Kroeber's concept did not simply explain the same phenomena, since the concept of culture changed its theoretical role from *explanans* to *explanandum*. It is because Stocking does not distinguish between (C3) and (C2) that he tends to identify "cultural determinism" with "cultural determination of behavior" (Stocking 1968: 212–220). This confuses the more radical concept, 'culture explains culture' (cultural determinism) with 'culture explains behaviour'.[22] Cravens (1978) and Degler (1991) also use the term 'culture' to denote an environmental factor in the development of individuals. Degler comes close to my point of view, when he writes that Kroeber demanded "more than a mere change in assumptions as Boas had done; he was insisting upon a new mode of explanation for human behavior" (Degler 1991: 94). Freeman (1983) probably is closest to my point of view, but he does not distinguish between different theoretical roles of the culture concept.

If we turn away from history and look at the conceptual contrast between nature and culture in contemporary scientific domains, we can easily discern the remains of the difference between Boas and Kroeber. The role that dominated Boas's account is what today enters nature/nurture debates in psychology and behavioural genetics. And the theoretical role Kroeber predominantly assigned to culture is the one used in debates about humanity's place in nature and in those about the interaction between biological evolution and cultural change. In other words, the first is used in developmental contexts, the second in evolutionary contexts. Both contexts involve different questions of interaction between culture and nature. The historical importance of Kroeber's innovation for these areas can be seen in the contemporary prevalence of multiple-inheritance theorists.[23] For them culture is not only a distinctive factor in the explanation of behaviour, an *explanans*; it is also (and for them most importantly so) a special *explanandum*, namely a separate second system of inheritance of ideational units that can and needs

to be studied in its own right. This is exactly what Kroeber wanted to say, with the help of Weismann's concept of hard inheritance.

(C 4) If we look at contemporary multiple inheritance models, we detect a further theoretical role of the concept of culture that has to be mentioned to complete the picture. Kroeber almost entirely ignored the fact that culture can interact with the biological system of inheritance at a phylogenetic level, thus influencing natural selection and the distribution of genes in subsequent generations in a totally non-Lamarckian manner, without any inheritance of acquired characteristics. Contemporary multiple inheritance models that treat niche construction seriously take this further step – dialectically with and against Kroeber. They can be taken as representatives of a fourth theoretical role of the concept of culture. For multiple inheritance models, culture is a factor, an *explanans*, not only in the ontogenetic development of individuals but a factor in the phylogenetic process of (culture and nature interacting in) the biological evolution of organisms (that have a body, a mind, and a culture). Niche construction and niche inheritance use culture exactly in that fourth sense. Unanalysed here but important nonetheless is that, at the beginning of the twentieth century, the concept of counter-selection, used by some eugenicists, and the concept of the Baldwin effect, defended by James M. Baldwin and others, exemplify a similar non-Lamarckian use of culture as a phylogenetic factor in the evolution of organisms.[24]

To summarise, my first general conclusion is: the concept of culture can have four theoretical roles or 'lives' in explaining human existence. Kroeber initiated one of them, namely that culture is an *explanandum* that has to be distinguished clearly from heredity, the latter being an important *explanandum* in biology in general, and the paradigmatic *explanandum* of genetics, which also had to stabilise itself as a scientific discipline during Kroeber's time, and whose representatives Kroeber hoped would participate in a fruitful division of academic labour, so that they each had a room of their own in the newly-renovated house of twentieth-century science.

The Historical Impact of the Concept of Hard Inheritance

By way of conclusion I discuss the second general topic of this essay. What was the historical impact of Weismann's concept of hard inheritance on how the relationship between nature and culture was conceived? I want to defend the following three theses, and I claim originality only for the last one.

(H 1) Inheritance of acquired characteristics (or soft inheritance) allowed for what I call 'soft hereditarianism'. According to soft inheritance, one could be a hereditarian and still give culture a significant role in the evolutionary process, since the hereditary material itself was considered as being soft, that is, malleable by cultural or environmental influences. If we take Cooke's

(1998) claim into account, that there was a Lamarckian 'soft' eugenics before 1915 and a 'hard' one afterwards, then it becomes evident that the concept of hard inheritance had no impact on eugenics as an ideology with a specific social goal in mind. It only had an impact on what means were perceived as effective to reach that goal. I take the received view on the history of eugenics as confirming this point. Again, soft heredity allowed for soft eugenics, incorporating the idea that education and social reforms can influence the innate endowments of the 'human stock' directly, thus achieving eugenics' goal, at least in the long run, without preventing certain individuals from propagation (via sterilisation, or, in the extreme, via eliminating them). Under Lamarckism, you do not select for or against individuals, you change them. Most important here: in Lamarckism, culture, and that includes education and social reform, could play a role in evolutionary as well as developmental explanations without the need to refer to social or cultural inheritance.

(H 2) Given Weismann's concept of hard inheritance, this possibility was gone. As long as cultural inheritance is ignored, hard inheritance leads to hard hereditarianism (and hard eugenics), a picture where cultural and environmental influences cannot exert any immediate influence on the evolutionary process by directly changing the hereditary material. The ways that are still open for culture to influence the evolutionary process are indirect ones: you need to change the distribution of types of individuals, either by selecting individuals (as in eugenic or racist programmes), or by giving nature time to 'follow up' (as hypothesized in the Baldwin effect), or by changing the environment (as conceptualised in niche construction theories). The indirect ways of influence that are left for cultural and environmental factors, given the concept of hard inheritance, are in principle not necessarily less far-reaching than the potential Lamarckian direct strata. Yet, the role of culture is considerably diminished if Lamarckian soft inheritance is impossible, since a whole and potentially powerful type of influence is lost, namely the role of directly changing the material of biological heredity.

Most important for this study is, however, that developmental as well as evolutionary explanations of organismic traits (be they physical or behavioural) could only be reduced to biological inheritance and selection by combining the continuity of the germ plasm with the view that the germ plasm is the sole hereditary material transferred down the generations of individuals. It is the latter notion that we cannot attribute to Weismann, as I have shown above.

Both H1 and H2 are more or less part of the received view on the impact of soft and hard inheritance on hereditarianism. Yet this consensus also takes it for granted that the concept of hard inheritance was partly responsible for the vogue of 'hard hereditarianism' – a view where nurture (natural environment and culture) does not play any direct explanatory role in evolutionary and developmental contexts. This view is closely connected with the 'hard

eugenics' mentioned earlier, a eugenics that happily took hard inheritance on board, especially for the concept of degeneration: to stress that education and social reform are not only useless, but negative in that it prevents the upward march of natural selection.[25]

And indeed, at least until the end of World War I, geneticists as well as the general public predominantly believed in the explanatory power of biological inheritance to explain behavioural differences (within and between groups). At least they usually did not say anything to the contrary. Wilhelm Johannsen is often cited as an early exception to the rule that 'geneticists were hereditarians', and Thomas H. Morgan and Herbert S. Jennings are seen as exceptions in the 1920s (see Paul 1995: 115–117). The concept of hard inheritance surely was not the only reason for the dominance of hereditarianism in the first two decades in the US, but it is usually taken as one of the reasons, next to the agricultural and experimental success of genetics, sociopolitical biases, institutional and power relations, immigration, and the concept of degeneration.[26] This is why Bowler (2003: 24), for instance, writes that the "social consequences of biological determinism" are not a product of social Darwinism or Darwinism as such, but a product of the rise of genetics, which "represents the collapse of a pre-Darwinian 'developmental' view of nature with consequences that were at least as profound as those associated with the initial conversion to evolutionism." The concept of hard inheritance was a first instantiation of this breakdown and has thus been held in part responsible for it and for biological determinism.

(H 3) I depart from this received view by the following claim: since nothing in the concept of hard inheritance prevented the acknowledgement of cultural inheritance, the connection between the concept of hard inheritance and biological determinism (or hard hereditarianism) is neither necessary nor historically universal, as the examples of Weismann and Kroeber show.

The concept of hard inheritance was not exclusively linked to hereditarianism. Or, in other words, the concept of hard inheritance did not have an unambiguous unidirectional historical influence. On the contrary, it had an important historical impact on the rise of culture as a superorganic, separate system of change and inheritance. This concept of culture not only helped break the hereditarian consensus of the early twentieth century US, but also secured the boundaries of cultural anthropology. It did so by dialectically crossing the boundaries of biology. In the end, a new *explanandum*, a new epistemic object was established: culture, defined in sharp contrast to nature.

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Endnotes

1 By the term 'epistemic object' I mean any object that can be subject of epistemic (not necessarily scientific) description. The concept is wider than the concept of 'epistemic things', established by Rheinberger (1997). The term 'epistemic object' is, like the term 'object' itself, more epistemological than ontological, at least compared to the term 'thing'. An epistemic object does not necessarily have to be part of experimental systems, and a specific concrete materiality is not required, yet it can travel or be traded between different systems of reference, e.g. different disciplines or fields of study, and acquire a new constitutive function within these.

2 He is briefly mentioned by Kevles 1985: 332.

3 See Darnell 1971, 1998, Hinsley 1981, Patterson 2001 for detailed accounts of the history of anthropology before it became a scientific discipline and how it developed since then.

4 Much more could certainly be said about the tension between cultural and physical anthropology and its further development, but this has to wait for another occasion. See Stocking 1988 and Segal/Yanagisako 2005 for an overview of the contested history of the four-field approach.

5 For more on Boas's famous study, its context and historical importance consult Stocking 1968: 161–194, Allen 1989, and Kaufmann 2003.

6 See Jacknis 2002 on some of the tensions.

7 See Jackson forthcoming for more on his dissertation in the context of the subject matter of this study.

8 See Bidney 1965: 269 and Buckley 1989.

9 See Bidney 1965 for a short but very informative overview.

10 Much more could be said on his life and oeuvre, which contains more than 500 items. See Bidney 1965 for a short review of his work, Steward 1973 for a book-length one, containing a summary of the biography written by Kroeber's wife Theodora Kroeber (1970); see also Thoresen 1975 on the establishment, financing, and development of academic anthropology in California; see Buckley 1996 on Kroeber's Californian Ethnology.

11 For more on the "scientific reaction against cultural anthropology", the context of the episode and the further history of the Committee on Anthropology, see in particular: Stocking 1968: 270–308, Cravens 1978: 89–120, Patterson 2001: 55–60.

12 For the history of universalistic concepts of human nature within the history of ethnological theory, often used in the version of a 'psychic unity of mankind', see Lowie 1937.

13 Although he used the terms interchangeable, Kroeber preferred the term 'civilization' between 1916–1918, in contrast to later papers. As historian Stocking (1968: 267) put it, "Kroeber's sensitivity to its Germanic associations in time of war prevented him from using the term 'culture'".

14 Gissis (2002) provides an analysis, complementary to this one on Kroeber, on how Durkheim built his ideas on Lamarckian principles.

15 The term 'superorganic' stems from Spencer's *Principles of Sociology* (1876).

16 A point I originally took from Kuklick 2004. Kaplan (1965) shows that the actual issue is methodological and epistemological and not ontological: it is an issue about the distinctive subject matter of anthropology, which also goes in the direction of this argument.
17 See Richards 1987 and Gissis 2005 for more on Spencer.
18 In the 1892 edition of his paper used here, Weismann pointed to an earlier German edition of Spencer's *Principles of Biology* (1876), above quoted in the English revised edition of 1898.
19 For further clarification regarding the innatism in Kroeber's general account of human existence see Shapiro 2008.
20 See Ingold 1994, Kuper 1999, 2002, or Fox/King 2002, for some of the historical and current issues about the culture concept.
21 See for instance Boas 1932: 245–46. Already in 1904 he criticized social psychology (or folk-psychology) for their anti-individualistic leaning (Boas 1904: 520).
22 Kronfeldner 2008 and Jackson forthcoming show that the distinction not only helps to sort out these historical differences, but also some of the confusions and problems surrounding the claims of contemporary evolutionary psychology, including their claims about the history of the social sciences and their denial of the autonomy of social sciences.
23 Such as Cavalli-Sforza/Feldman 1981, Boyd/Richerson 1985, Durham 1991, Richerson/Boyd 2005, or Jablonka/Lamb 2005 and the niche construction theory of Odling-Smee/Laland/Feldman 2003.
24 Consult Weingart/Kroll/Bayertz 1988 on counter-selection, and Simpson 1953, Weber/Depew 2003 on the Baldwin effect.
25 See Weingart/Kroll/Bayertz 1988: 84–87.
26 See Ludmerer 1972, Kevles 1985, Barker 1989, Paul 1995: 40–49..

Literature

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