

T. Dobzhansky: Mankind Evolving. New Haven & London,
Yale Univ. Press, 1962. p.xi.

Albert Schweitzer's angry remark: "Our age has discovered how to divorce knowledge from thought, with the result that we have, indeed, a science which is free, but hardly any science left which reflects."

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Yale Univ. Press, 1962. p.xi

Einstein said something that needed to be said and that has been said better by nobody else: "The most incomprehensible thing about the world is that it is comprehensible." He also said that "the most beautiful thing we can experience is the mysterious... It is the source of all art and science."

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Yale Univ. Press, 1962. p.3

It was Condorcet (1743-1794) who explicitly stated the idea that man's history was a directional development from lower to higher states. The development was to have ten stages, from primitive savagery, through increasing enlightenment, to ultimate perfection. The tenth and perfect stage Condorcet assumed to be just around the corner as he wrote his essay. So cheerful a view might seem in our day an intolerable smugness, but it was nothing of the sort for Condorcet, who wrote his essay while awaiting execution as an alleged enemy of the French Revolution, which he had helped bring about. Echoes of Condorcet's views are audible in Jefferson, and perhaps in all the liberal thinkers who followed him.



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FROMM-Online

... are mainly concerned with.

T. Dobzhansky: *Mankind Evolving*. New Haven & London, Yale Univ. Press, 1962, p.7.

The "founding fathers" of evolutionary cultural anthropology are listed by Murdock¹ and Kroeber² as follows: Bachofen (1861), Maine (1861) Eustel de Coulanges (1864), McLennan (1865), Tylor (1865, 1871), Lubbock (1870) Morgan (1871), and Spencer (1874, 1896). Excepting Lubbock, who was a biologist, they were sociologists and jurists. But they viewed human societies and institutions in the way zoologists and botanists viewed animals and plants - the existing forms have descended by gradual modifications from very different antecedents.

1. Murdock, G.P. 1959. *Evolution in social organization*, pp. 126-43. In Evolution and anthropology. A centennial appraisal, Washington, Anthropol. Society.
2. Kroeber, A.L. 1960. *Evolution, history, and culture*, pp. 1-16. In S. Tax, Evolution after Darwin

Vol. 2. Chicago, Univ. of Chicago Press.

Kultur

T. Dobzhansky: *Mankind Evolving*. New Haven & London, Yale Univ. Press, 1962. p.9

Nobody was more influential in bringing about a general repudiation of theories of cultural evolution than Franz Boas (1858-1942). Theories of cultural relativism came in vogue instead. No culture is really superior to any other; one should not talk about savagery or barbarism, or even about primitive and advanced cultures; euphemistic adjectives like "preliterate" and "literate" must be used instead. No one culture's way of life is better than another; people live differently, and that is all (see Benedict's Patterns of Culture, probably the most popular treatise on anthropology ever printed).

T. Dobzhansky: Mankind Evolving. New Haven & London, Yale Univ. Press, 1962, p.9/10

Cultural evolutionism has recently been espoused by White^{1,2}, Childe³, Steward^{4,5} and Sahlins and Service⁶. This is not the place to attempt an analysis of their views; they are by no means in agreement on all points. Thus Steward proposes a theory of multi-linear evolution: cultural developments occur differently in different "culture areas," of which the world has several. However, these different developments still pass through some broadly similar stages, which are stressed as significant. A modern form of unilineal evolutionism has been propounded by White, Sahlins, Service, and their collaborators, who argue that evolutionary changes of culture are of two kinds—general and specific. Their general unilineal evolution involves the passage of cultures from lower levels of development to higher levels; the levels are characterized best of all by the efficiency with which the energy resources of the environment are

~~exploited.~~ Specific evolution is adaptation of ~~cultures to~~ the diversity of local conditions; this is what historians are mainly concerned with.

1. White, L. 1949. The science of culture. New York, Grove Press.
2. --- 1959. The concept of culture. Am. Anthropol., 61: 227-51.
3. Childe, G.V. 1951. Social evolution. N.Yk, Schumar
4. Steward, J.N. 1953. Evolution and process, pp.313- In A.L. Kroeber, Anthropology today, Chicago. Univ. of Chicago Press.
5. --- 1960. Evolution and social typology, pp. 169-86. In S. Tax, Evolution after Darwin, Vol. 2. Chicago, Univ. of Chicago Press.
6. Sahlins, M.D., and E.R. Service. 1960. Evolution and culture. Ann Arbor, Univ. of Michigan Press.

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The biological theory of evolution is not so artlessly mechanistic as alleged by some followers of autogenesis. The relations in evolution between the environment and the organism are best epitomized by Toynbee's winged phrase - "challenge and response." It is a living species which may respond to the challenges of the environment by adaptive alterations. But on the other hand, it may not respond adequately and may die out or become less well adapted.



T. Dobzhansky: Mankind Evolving. New Haven & London
~~Yale Univ. Press, 1962. p.18~~

Ortega y Gasset has epitomized the point of view of many social scientists and humanists as "Man has no nature, what he has is history" (quoted in Kluckhohn 1949). The polar opposite is the view of Darlington; "The materials of heredity contained in the chromosomes are the solid stuff which ultimately determines the course of history," and "the structure of a society rests on the stuff in the chromosomes and on the changes it undergoes."

The thesis to be set forth in the present book is that man has both a nature and a "history." Human evolution has two components, the biological or organic, and the cultural or superorganic. These components are neither mutually exclusive nor independent, but interrelated and interdependent. Human evolution cannot be understood as a purely biological process, nor can it be adequately described as a

~~history of culture. It is the interaction of biology and culture. There exists a feedback between biological and cultural processes.~~

1. Darlington, C.D. 1953. The facts of life.
 London, Allen & Unwin.

T. Dobzhansky: Mankind Evolving. New Haven & London
 Yale Univ. Press, 1962. p.20

The interrelations between the biological and the cultural components of human evolution may be brought out perhaps most clearly if we consider that they serve the same basic function - adaptation to and control of man's environments. Most contemporary evolutionists are of the opinion that adaptation of a living species to its environment is the chief agency impelling and directing biological evolution. As stated above, the adaptation takes place through natural selection, which promotes the survival and reproduction of the carriers of some genetic endowments and inhibits others. The construction of man's body and the conformation of his intellect developed as they did because they made our species biologically highly successful (which is not saying that man's biological frame is the acme of perfection in all respects; see Chapter 12). The genetic basis of man's capacity to acquire, develop or modify, and

~~transmit culture emerged because of the adaptive advantages which this capacity conferred on its possessors (Chapter 8).~~

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Yale Univ. Press, 1962. p.20/1

Yet the superorganic has not annulled the organic. The hypothesis of the psychic unity of mankind is justified to the extent that all members of the species Homo sapiens free of overt pathology are capable of learning a symbolic language and a variety of cultural forms. This only means that the capacity has become established as a species characteristic, like the erect posture, ability to subsist on diverse diets, absence of a breeding season, a brain size exceeding that of other living primates, and much else besides (see Chapter 10). But it does not follow that the genetic variability affecting the capacity to learn has suddenly evaporated in human populations. This is unlikely on theoretical grounds, and is contradicted by much evidence (see Chapter 4).

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Yale Univ. Press, 1962. p.21

As will be shown in more detail in the following chapters, biological heredity, which is the basis of biological evolution, does not transmit cultural, or for that matter physical, traits ready-made; what it does is determine the response of the developing organism to the environment in which the development takes place.

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First, since it is easy to see that children usually partake of the characteristics of both parents, it seems that the hereditary "bloods" of the parents commingle and blend in the offspring; the heredity of a child should then be a mixture, a solution, or an amalgam of the parental bloods. Mendel has shown that this is not so. The parental heredities do not mix in the progeny; when the descendants mature and proceed to form their own sex cells, the components of the parental heredities segregate, mutually uninfluenced and uncontaminated by their generation-long sojourn in the same body.



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Third, although a child gets half his genes from his mother and the other half from his father, he receives only half the total genes (never all) each parent possesses.

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The hereditary materials in the sex cells are arrays of more or less discrete units. For these units Johannsen suggested in 1909 the short word "gene." Exact counts of the number of genes an organism carries in its cells are not now possible. A human sex cell is conjectured, on the basis of very indirect and insecure evidence, to contain more than ten thousand but probably fewer than one hundred thousand genes.

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Yale Univ. Press, 1962. p.28

As stated above, a human sex cell (gamete) carries some tens of thousands of kinds of genes, A, B, C, D.. Fertilization results in the formation of a new individual (zygote), who has each kind of gene in duplicate (AA, BB, CC, DD...), i.e., some tens of thousands of pairs of genes. Now, the two members of a pair (derived respectively from the mother and from the father) may be alike, A_1A_1 . The individual is then homozygous for the gene in question. Or else the members of a pair may be somewhat different; there may exist two or more variants, alleles, of a gene, $A_1, A_2, A_3...$, more or less different in their action. An individual carrying two different alleles of some genes, $A_1A_2B_1B_2...$, is heterozygous for these genes.

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T. Dobzhansky: 'Mankind Evolving. New Haven & London
Yale Univ. Press, 1962.-p.30/1

Now, since both parents are likely to be heterozygous for many genes, the potential number of genetic endowments among the progeny grows even faster than the potentially possible kinds of gametes. If both parents are heterozygous for the same n genes, there may be produced 3^n genetically different individuals among the progeny. If the mother is heterozygous for n genes and the father is heterozygous for n different gene pairs, 4^n genetically different individuals are potentially possible among their offspring.

These calculations are not a mathematical pastime. They have a profound meaning when applied to sexual, outbreeding species. If populations of such species contain many genes each represented by two or more alleles, then the potentially possible genetic endowments are inexhaustible and a vast majority of them can never be realized. Their number far exceeds

~~the number of individuals who are born in any one generation or in all generations combined. It is, therefore, in the highest degree unlikely that any two persons (other than identical twins), whether relatives or not known to be related, have ever had, or will ever have, the same constellation of genes.~~

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Yale Univ. Press, 1962. p.33

To suppose that a sex cell transports a particle called "intelligence" which will make its possessor smart and wise no matter what happens to him is, indeed, ridiculous. But it is evident that the people we meet are not all alike in intelligence, abilities, and attitudes, and it is not unreasonable to suppose that these differences are caused partly by the natures of these people and partly by their environments. As a matter of fact, this is substantiated by the evidence to be discussed below.



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T. Dobzhansky: Mankind Evolving, New Haven & London
Yale Univ. Press, 1962. p.38

The number of atomic particles in the whole universe is believed to be a mere 10^{76} . Let us then say simply that an infinite number of gene patterns is potentially possible and only an infinitesimal fraction of them can ever be realised.

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T. Dobzhansky: Mankind Evolving. New Haven & London
Yale Univ. Press, 1962. p.40/1

The biological inheritance of every person consists of genes received from his parents. The totality of the genes is the "genotype." The concept of the genotype framed by Johannsen^{1, 2} is now extended beyond its initial usage: the genotype subsumes all self-reproducing bodily constituents regardless of their localization - the genes in the chromosomes as well as the plasmogenes in the cell cytoplasm.

The function of the genotype, or at least one of its functions, is to make more of itself: genes induce synthesis of their own copies. Some of the shorthand language used by biologists is grossly misleading if its metaphorical character is not understood. For example, what is the meaning of the often made statement that the genotype of a person does not change in his lifetime? Since the amount of deoxyribonucleic acids in the cell nucleus is doubled between the end of one cell division and the beginning



of the next, I obviously no longer have the genes ~~which I had as an infant or as a fertilized egg cell~~; what I do have, instead, are true copies of these genes. It is even less accurate to say that I carry the genes of my remote ancestors, because I possess copies of only some of their genes. My genes do not change, but solely in the sense that they make new genes just like themselves.

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T. Dobzhansky: Mankind Evolving. New Haven & London
Yale Univ. Press, 1962. p.42/3

The phenotype changes throughout time. The changes in the phenotype of a person may be shown by, for example, a series of photographs taken at different ages, but it should be stressed that the phenotype includes more than the external appearance of a person: his physiology, metabolism, gross and microscopic anatomy, bodily chemical processes, even the appearance of the chromosomes in his cells - all are aspects of the phenotype, as are his behavior, thinking processes, and adjustment or maladjustment to society. In short, the phenotype is the total of everything that can be observed or inferred about an individual, excepting only his genes. The phenotype obviously cannot be inherited; it can only develop as life goes on. As stated above, only the genes are inherited or, more precisely still, only the genes in the sex cells, of which the genes that an individual possesses are true copies.