

ANATOMY AND MORPHOLOGY

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In the vocabulary of zoologists, particularly of entomologists, the words "anatomy" and "morphology" seem to have become synonymous, or nearly so, as applied to animal structure, except that "morphology" appears to be preferred probably as having a more impressive sound. In ordinary English, words mean what the speaker intends them to mean and the hearer understands; many, probably most, of our everyday words now mean something quite different from what they originally did, just because we have come to use them as we do. Humpty Dumpty said to Alice, "When I use a word it means just what I choose it to mean," and he had linguistic sanction on his side. "Anatomy" and "morphology," however, are not ordinary English words, and the question is: can usage establish the meaning of scientific terms? Technical words must have a definite meaning, they must be capable of specific definition, and they can be given a precise meaning only on a basis of their Latin and Greek origins.

The term anatomy is formed of two Greek words that together mean "cutting up." In its original sense "anatomy" is thus the same as the Latin "dissection." As with many other words, however, "anatomy" has expanded until its origin has been forgotten, so that with us it now stands for the facts we learn by cutting up the animal, or also it designates the structure or even the tissue of the animal itself, whether dissected or not. "Anatomy" in its evolved sense is comparable to "venison." VENATOR is the hunter, VENATIO is first the hunting of game, then the game animal itself, and finally, the flesh of the game becomes VENISON. "Game" has a similar transference from the sport of hunting to the animal hunted. So we may concede that "anatomy" has acquired its present meaning by perfectly legitimate processes of word evolution. "Dissection," on the other hand, is a conservative word that still means just what it did

when first coined, the cutting-apart of an animal for the study of its structure. Two words for the same thing being unnecessary, "anatomy" has been promoted to fill a vacancy.

The term MORPHOLOGY, according to its derivation, cannot possibly be made synonymous with "anatomy." MORPHÉ is Greek for form, and as applied to an animal it refers to its structure, or anatomy, but the LOGY part of the word gives the term an abstract philosophical meaning. LÓGOS is Greek for "word," or a discourse in words, but words are expressions of ideas, and ideas may be right or they may be wrong. In either case, zoological morphology is simply what we think about the facts of anatomy; it is our philosophy about the form of animals. By contrast, anatomy is the concrete facts of structure.

The difference between anatomy and morphology will be clearly perceived by listening to two anatomists or two morphologists discuss their respective subjects. The anatomists may disagree, but they have only to get a specimen and look at it until they both see it alike. Anatomy, in other words, is capable of demonstration. The morphologists, however, can argue interminably over theories and never, or hardly ever, come to the same conclusion. Of course, there is some chance that some morphological ideas may conform with something true in the present or past of nature, but since most of them involve evolution concepts, there is no way of putting them to a practical test. The very fact that our morphology can and does change with each generation of morphologists, while the anatomy of animals has not perceptibly changed during the memory of man is sufficient to show that the term "morphology" cannot be substituted for "anatomy."

We may now look at some of the literary results of confusing morphology with anatomy. We often see entomological papers entitled "The External Morphology," or "The Internal Morphology" of some insect. Even if such papers contain some morphological ideas, how can there be either an "external philosophy" or an "internal philosophy" of form? The philosophy is in the mind of the author, not in the insect under discussion. Such papers might correctly be entitled, "Morphology of the External Structure," or "Morphology of the Internal

Structure" of the insect, if they are truly morphological, but their contents often reveal that the subject matter is purely anatomical.

In conclusion, for definitions the writer would submit to entomologists the following:

DISSECTION (L. DIS, apart; SECTUM, cut).—The cutting-apart of the animal to determine the facts of its structure.

ANATOMY (Gr. ANÁ, up; TÓMOS, cut).—The demonstrable facts of animal structure, or also, by transference to the object, the structure or even the tissue of the animal itself.

MORPHOLOGY (Gr. MORPHÉ, form; LÓGOS, word or discourse).—Our philosophy or science of animal form, a mental concept derived from evidence based on anatomy and embryogeny, usually incapable of proof, attempting to discover structural homologies and to explain how animal organization has come to be as it is.

No suggestion is here offered as to what can be done about "physiology," which should mean the science of functional facts, but has to do duty also for the facts themselves. "Embryology" is more fortunate, since there is "embryogeny" or "embryogenesis" to express the concrete facts of development; but again, microanatomy is commonly called the "histology" of the animal or its organs. However, because some words, for the lack of a complementary term, have to serve in two capacities is no excuse for confusing "morphology" with "anatomy."



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