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The order of things and the classification of melanoma

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Editorial

Melanoma is a fascinating disease. It appears in a myriad of forms. No two melanomas look alike; every melanoma is unique morphologically. Like other biologic phenomena it is highly complex and diverse in its forms of appearance. Scientists attempt to bring order to the diversity of biologic phenomena by defining groups on the basis of shared characteristics and by giving names to these groups. What we call knowledge or, if one prefers a more elevated word, "truth," is synonymous with being able to classify, name, and order phenomena correctly. In the 18th century the biologist Carl Linné established a universally accepted convention for the naming of organisms. According to Linné, a tiger is a species (Panthera tigris) that belongs to the genus "panther," which is included in the family of Felidae, which are part of the order Carnivora, which belong to the class Mammalia, which is included in the phylum Chordata, which finally belongs to the kingdom Animalia. It was not by accident that Linné's classification was hierarchic and based on morphologic (visible) criteria. In his influential book The Order of Things*, the great French historian and philosopher Michel Foucault advanced the hypothesis that all periods of history have possessed specific conditions of "truth" that constituted what was acceptable. Scientific "truth" is nothing more than a mirror of mainstream thinking of an era and its power relations. The specific conditions of the 18th century presupposed a hierarchic classification and the sense of vision was so important for life sciences in those days that a biologist could be everything, but not blind (which is still true today for dermatologists and dermatopathologists).

Classifying diseases is not fundamentally different from classifying organisms. The classification of neoplasms as set forth by Virchow in the 19th century is also hierarchic and based on morphologic (in this case histogenetic) characteristics. According to the WHO classification there are four major subtypes of melanoma: superficial spreading melanoma, nodular melanoma, lentigo maligna melanoma, and acral lentiginous melanoma. Many arguments have been brought up against this classification. It was criticized for being inconsistent, illogical and practically useless. All these arguments fail to take into account that the validity and the spread of a given scientific point of view does not so much depend on constituency, logic, and practical value as on the prevailing ("mainstream") thinking at a given time and on the power relations of individuals who support it in textbooks, journals, and scientific meetings. However, if we accept this classification, we can say that in analogy to the classification of organisms the subtype "superficial spreading melanoma" is included in the family of "melanoma," which belongs to the class of "melanocytic neoplasms," which are part of the kingdom of "neuroectodermal neoplasms," which belong to the universe of "neoplasms."

As science progresses, the era of morphology is fading. The consequence is that organisms and diseases are being reclassified based on molecular findings. With regard to melanoma new mutations are discovered every other week and a new, molecular-based classification is emerging. In the near future we will be able to sequence entire genomes of tumor cells. It is very likely that we will discover that every melanoma is unique on a molecular level, in the same sense as every human being is unique. The consequence of such a scenario is that we will be facing innumerable subtypes because every melanoma is its own subtype. Classifying phenomena into subgroups means highlighting the differences and disregarding the common; but if everything is different, isn't it all the same? If, finally, everything turns out to be unique, then there is no hidden natural order; every order is imposed on

the plethora of phenomena by human minds. In other words, there are innumerable ways to classify melanoma, or nevi, or every other phenomenon. Every classification is convention, embedded in the scientific thinking of its time and dependent on power relations.

Not only did science make progress but power relations changed from the time Linné introduced his system in the 18th century and when Virchow introduced a pathologic classification of diseases in the 19th century. Today power is not only played out in academic institutions, books and scientific journals but also in advisory boards, in national or international agencies that evaluate drugs or technical medical equipment, and in consensus conferences. It is not by chance that current suggestions for a new classification of melanoma are centered on gene products (for example B-RAF) that are related to therapy. The growing influence of the pharmaceutical industry on scientific "truth" cannot be denied.

There is another interesting consequence of the thinking that all melanomas are unique. Note that we have said that the class of "melanocytic neoplasm" consists of two families: (1) benign melanocytic neoplasms ("nevi") and (2) malignant melanocytic neoplasms. Since all differences in the group of "malignant melanocytic neoplasms" finally will lead to innumerable groups, we may disregard all differences and look for the things in common. Like all human beings are human, all melanomas are malignant! In other words there is only one type of malignant melanocytic neoplasm, which is melanoma. In this context the statement that, "there is only one type of melanoma," sounds perfectly right from a logical point of view; at least, it cannot be refuted by enumerating differences, no matter if they are morphologic or molecular by nature.

*Foucault M. The Order of Things: An Archeology of the Human Sciences. New York: Pantheon Books, 1970.