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DEGENERATIVE DISEASES: ALEXICOGRAPHIC STUDY

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SUMMARY

*Since the middle of the 20th century, the expression neurodegenerative disease has expanded. If the composed term is itself relatively recent, the word degeneration has a long and a dark history and may suggest negative connotations. The successive uses of this word from its Latin origin show that besides a quasi-botanical neutral definition, it could also imply a kind of moral degradation. Such a negative meaning was reactivated in the various theories of degeneration which were flourishing during the 19th century, particularly in medical lexicology, which denotes a dramatic change in the middle of the century. Confronted to this evolution and confusion, the French doctor, lexicographer and philologist Emile Littré tried to dissociate the notion of degeneration in the botanical and histological meaning, and the new notion of 'dégénérescence' developed in anthropology and psychiatry. His attempt, although unsuccessful, may attract our attention on the negative connotations which may continue until today.*

Since the middle of the 20th century, the expression “neurodegenerative disease” has expanded to include a number of affections considered as having in common a process of departing from the original neurological state, an irreversible degradation and finally the destruction or death of neurons. This nosological category corresponds more and more to a double concern. First, because of in-

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creasing longevity, many of us are threatened by neurodegenerative diseases, such as Alzheimer disease and related forms of dementia. Second, the impact of such a diagnosis is often nefarious on patients, families, careers, due not only to the reality of the diseases, but also to the specific representations they carry in the common language. A simple look at the synonyms of the adjective “degenerate” in the majority of European languages show a vast array of negative meanings, going from stupid and deficient to miserable, perverse, cruel and even murderous. On the other hand, if the reference to a process of degeneration attracts more attention, it is because since the middle of the 19th century it has been the milestone, in the history of science and anthropology, of a very powerful theory – or rather ideology – beginning in the middle of the 19th century and culminating in the Nazi period and exactions. So that the word degeneration has a long and, so to say, a heavy and dark story. This is why one can ask whether these negative connotations nowadays still affect, in a more or less obscure degree, the perception of the otherwise objective definition of the neurodegenerative diseases.

For this reason it is interesting to look at the transformation of the original meaning of this term, and then follow its semantic history. In the course of this paper, we will focus on the history of its presence in the medical lexicology during the 19th century, through the interesting reaction of the French doctor and lexicographer Emile Littré.

#### *Early meaning of degeneration*

From the etymological point of view, the word degeneration comes from the Latin verb *degenerare*. Its first part, the preverb *de*, means “to depart from”, a meaning that will stay along the whole history of the word. Another meaning is the movement of going “down”, locally and metaphorically, in worse. The radical *gen-* refers to the notion of inanimate or animate original nature, and its natural characteristics. This radical is widespread in the whole indoeuropean area: in

greek *genos*, in latin *gens*, *genus*, in modern languages gene, gender, genetics etc... The radical refers to the original social and family group, nation, more generally to species, kind, category etc... So that the original meaning of the latin verb *degenerare* is “to depart from its original *genus*” (family, genre ...) and may imply secondarily a kind of deterioration.

It seems that this notion was first applied in agriculture, to qualify plants which had departed from their original characters. Although there are few examples of this use in the ancient latin literature, one can perceive a clear reminiscence in Vergilius’ expression: “fruits degenerate (*degenerant*), forgetting their previous flavors”<sup>1</sup>.

By analogy “degenerated” already designated individuals who had departed from their family’s traditional morality and behavior. For example, if the offspring are supposed to continue their ancestor’s quality, according to Cicero, as in Tiberius Gracchus’ family, a descendant of M. Brutus, whom he praises, was a counter example: “So that you would have seen that a kind of natural good of the stump had degenerated (*degeneravisse*) under the defect of a depraved will”<sup>2</sup>.

If most examples pertain to the individual, it is possible to see an interesting possibility of attributing the character of degeneration to ethnic groups as we can read by the historian Titus Livius (1st c.BC.-1st c. AD.), who pictures a general encouraging his soldiers facing fierce enemies. In order to help them to control their fear, he uses as an argument the fact that these enemies, Galats, a Celtic population that had migrated to the central Asia, are physically and morally “degenerated” because they were transplanted: like plants, they had lost the vigor and values of their ancestors<sup>3</sup>. Transplantation, that is changing environment, is the main cause of the physical and moral degradation (an argument from Hippocratic origin), that will be taken up in the 19th and 20th centuries.

Now the question is, how did this double signification of departing from and degradation come to Emile Littré's time, that is the second half of the 19th century.

Before this period, the notion of degeneration was not developed at all, as seen in the Dictionary of the French Language of the Académie Française, even if the great naturalist Buffon, in his natural history, had had recourse to it, or Condorcet episodically at the times of Enlightenment<sup>4</sup>. On the contrary, the notion developed rapidly in the scientific and medical language. As evidence of this, it is possible to look at its use in the French medical dictionaries of the XIXth century, an exceptional material for following the use of a notion like degeneration (French double heading "dégénération" and "dégénérescence")<sup>5</sup>.

*Evolution of the vocabulary of degeneration in the medical dictionaries of the XIXth century*

The notion of a medical dictionary, taking its origin in England (James 1743-45) became more and more developed during the 19th century in France to help doctors and medical students, who lacked handbooks, to have access to the expanding bulk of knowledge. Hence a huge series of volumes, with articles extending from a few lines to dozens of pages and more<sup>6</sup>.

"Dégénération" begins a new career with the effort of the Clinical School of Paris to use it in a specific anatomo-clinical meaning. Fifty years before Littré, the famous physician Théophile Laënnec, who is, like him, an high quality expert in ancient languages (he taught Hippocratic texts and translated a part of Aretaeus of Cappadocia), writes in a long article on "dégénération" (1814) in a medical dictionary edited at the beginning of the XIXth century<sup>7</sup>.

According to Laënnec, "dégénération" is used in medicine and in the common language to refer to a "changing of nature", generally to a lower state: "Ce mot...désigne le changement de nature d'un objet

quelconque, et emporte en même temps l'idée du passage de l'état primitif à un état inférieur ou pire. Les médecins l'ont aussi employé souvent dans ce sens: l'inflammation dégénère en gangrène, le cancer est un squirrhe dégénéré". But for Laënnec "the significance of this word should be less vague in anatomo-pathology" - a new science. According to him, one should distinguish between the formation of an accidental production, a bone tumor, a cancerous tumor etc, which creates something new in a tissue even to its detriment, and a tissue in which an altered texture is produced, a tissue which transforms itself, e.g. the change of a ligament in cartilage or bone, of a tissue in a tuberculous or cerebriiform matter. However, a mass which develops in a tissue cannot be considered as a degeneration. To sum up, "dégénération" can only designate a transformation process of a tissue and not in a tissue. He tries to distinguish between the transformation of (e.g. a gangrene) and the appearance process in a tissue or organ, which can indeed be modified or even destroyed by this new formation. But the anatomo-clinical analysis (with naked eye and with the scalpel) allows to establish whether the accidental tissue is separable from the primitive tissue of the organ by dissection, or whether it is united to it by a continuity of substance<sup>8</sup>.

Lexically speaking, he prefers to keep an already existing term and to give it a precise meaning, rather than to create a new one. As to the word "dégénérescence", he devotes to it only four lines, saying that this word is employed "by some writers nowadays" as "dégénération", but that this synonymous is by the least useless.

Following this scientific and semantic elaboration, one can say that, from now on, medical dictionaries will keep for a long time this quasi-botanical and, what is more important, value-free concept of degeneration<sup>9</sup>.

Through the following dictionaries, "dégénération" in this meaning keeps an important place among medical notions, whereas "dégénérescence" is just mentioned as a synonym, used by some doctors

for example Bégin 1823, Nysten 1833 etc... An evolution of this conception seems however to appear when this last dictionary was re-edited twenty years later (1855). This edition, which had been revised and completed by Littré and Robin, contains an article three times longer for “dégénération” than the previous one, and still one line for “dégénérescence”. The first part of the article gives a general definition, the second is a revision and correction of the anatomopathological conception of Laennec. But there is a new development upon degeneration under the heading “veterinarian”: “On donne le nom de dégradation, de dégénérescence, d’abâtardissement au résultat d’influences modificatrices qui font descendre soit les individus, soit les races, ou bien d’un état naturel (sauvage), ou bien d’un état artificiel (e.g. domesticated), à une condition inférieure”. The notion is now applied to living beings, not human beings but only animals and their “races”.

So one could expect an expansion of this field, perhaps including human beings. But this did not happen. Surprisingly, nine years later, the word “dégénération” has almost entirely disappeared from the medical dictionaries. Thus, when a doctor from Strasbourg writes in a new Dictionary (Jaccoud 1864), he now devotes a very long article of twelve pages on “dégénérescence”. Under this term, the author speaks about several forms of degeneration in tissues and organs, and about the chronic diseases and their causes. But the longest part of the article is under the heading: “dégénérescence de l’individu et de l’espèce”. Among the causes of such a phenomenon, after age and chronic diseases, he turns to alcoholism and immediately introduces the question of heredity. The effect of alcoholism, an extremely serious problem during the period of rapid industrialization, poverty, social insecurity, is reinforced by the notion of transmission, concerning not only the individual and the successors, but more and more largely the human species. The other causes of degeneration of species are consanguinity, “mélange des races”, and mental dis-

eases. The author refers to a paper given at the very recent Société d'anthropologie de Paris, where all these questions were addressed. Within ten years, three changes have thus occurred: a massive replacement of “dégénération” by “dégénérescence”, the enlarging of the field from anatomo-pathology to human species and individuals, including physical, mental, social and moral degeneration, and finally the introduction of the question of transmission and heredity<sup>10</sup>. The reason why all these changes occurred so rapidly appears clearly in the following event. In 1857 a book by Bénédict A. Morel was published under the title: *Traité des dégénérescences (physiques, intellectuelles et morales) de l'espèce humaine et des causes qui produisent ces variétés malades*, (2 vol., Paris, Baillière). Morel was a well-known psychiatrist, a humanist and religious man, superintendent of the Rouen asylum for almost twenty years, where he painstakingly recorded family histories of all the patients he received. Thus Morel discerned a hereditary line of defective patients affected by alcohol or drugs; a second generation was prone to epilepsy, neurasthenia and hysteria; a third generation to insanity; and a final generation of this same branch was affected by congenital idiocy and sterility. Besides these steps of hereditary transmission, starting from the observation of various mental diseases (including epileptics, idiots, demented persons, etc...) he considered as advantageous to use a unique term (dégénérescence, dégénéré) to cover all these varieties of mental affections. In using this unique category, he thought that all these patients (“ces malheureux”), who inspire him pity, could be accepted in hospitals in order to be treated. Why to treat? Because for him their actual state is not their fault but the result of a pathological process which has its causes outside the individual under circumstances that are social, improper nutrition, housing, poverty, etc. Beyond this frame was elaborated a more general theory of *hereditary degeneracy*, which was further to be developed by Valentin Magnan (1835–1916).

For many of the contemporaries, the question became this one: beyond the individuals and families, could this process affect the human species, was it dangerous for mankind? Is there an irrepressible degradation of the upper society towards a lower status? At this time, this kind of problematics tends to develop enormously. The influence of this book is considerable, as one can see in the next example.

*Littré's lexical attempt and failure*

Ten years after Jaccoud's dictionary, a new medical dictionary appears, this time under the name of Littré and Robin (1873)<sup>11</sup>. The changing of vocabulary is complete. Confronted to this evolution and confusion, Emile Littré, (1801-1881) tries to dissociate the original notion of "dégénérescence," in the botanical and histological meaning, and the newly notion developed in anthropology and psychiatry by Morel.

He was himself a brilliant philologist (we owe him a famous edition and translation of the Hippocratic Corpus), an indefatigable lexicographer, author of the huge and continuously reedited Dictionary of French Language, translator, historian and also politician<sup>12</sup>. His rationalism had attracted him towards the ideas of Auguste Comte. His fight for a rigorous clarity and rationality led him in particular, to try to find a solution in the area of the new conception of "dégénérescence".

If he accepts the word in his *Dictionnaire de médecine*, he is however reluctant to use it for men, but cannot avoid mentioning Morel's work. Littré is not satisfied with this lexicological evolution because he does not want to use the same word for two different ideas. To "dégénérescence" meaning the hereditary degeneration he prefers "dégradation". Under this heading, he does not hesitate to include the species, but immediately comes back to the individuals affected by mental impairments visible on their appearances (with portraits of semi-crétin, crétin confirmé, simple d'esprit etc...). But for him



“le mot dégradation convient mieux car il n’y a pas de changement de genre mais changement de degré ou dégradation de l’état habituel des appareils et des fonctions”. The difference with the “normal” is a question of degree, not of nature. In spite of their alterations, these persons are still human beings. This precision was important in this period for someone who was cultivating the exactitude of language, also intellectually and morally demanding.

Keeping the word “dégradation” had another advantage for Littré, who despised the awkward and sometimes deleterious creation of new words. His quasi medical idea on neologisms are expressed in a nice humoristic booklet intitled *Pathologie verbale ou lésion de certains mots dans le cours de l’usage*, Paris, Didier, 1880. Under the many examples of humorous remarks: “N’est ce pas en effet une brutalité impardonnable que de tuer aveuglément d’excellents mots pour leur donner de très médiocres remplaçants?” About “néologismes et pathologies verbales” he explains: “Sous ce titre je comprends les malformations... les confusions, les abrogations de signification, les pertes de rang, enfin les mutations de signification”. Giving many examples of fine words ejected by improper ones, he praises nonetheless those who can create good neologisms: “Honneur à ceux qui savent faire de bons néologismes”. But sometimes, it is necessary to abandon the battlefield: “L’usage est un despote qui fait ce qu’il veut, sans autre règle que son caprice...”, until the final submission: But he is criticized by his contemporaries. Few adopt this new terminology with its content, and this repartition under two headings continued during the many editions of Littré’s – or Littré Robin-Medical Dictionary. And this was the case: his attempt to use dégradation besides dégénérescence failed.

Such an extremely negative meaning was reactivated in the different theories of degeneration flourishing during the 19th century. And became related to heredity, genetics, hygienic theories and finally eugenics. So that if Littré’s attempt is unsuccessful, his preoccupa-

tion may inspire us to be semantically cautious and at the same time creative, in order to avoid involuntary connotations which can be felt as deleterious by those who suffer from these diseases. Therefore, unless we accept that “... le mal est fait, il n’y a plus qu’à se soumettre et à juger...”, there would be no obstacle nor medically nor linguistically, to avoid the word degenerative for a more neutral and no less exact expression. Who will follow Littré’s footsteps, in order to invent new expressions, and get rid of any kind of “dégénération”?

#### BIBLIOGRAPHIE ET NOTES

1. Vergilius, *Georgics* II, 59: ...*pomaque degenerant sucos oblita priores*....See also Columella, *De re rustica* 9, 8, 1,1.
2. Cicero, *Brutus* 130: *Ut facile cernebas naturale quoddam stirpis bonum degeneravisse vitio depravatae voluntatis*. Also *vitium* and *depravatus* refer to a defect, an irregularity, which can be physical as well as moral.
3. Livius 38, 17: *insitum alienae terrae in id, quo alitur, natura uertente se, degenerat*. (“transplanted in a foreign land, it degenerates, its nature changing in the product by which it is nourished.”)
4. CONDORCET N., *Fragment sur l’Atlantide*. In: CONDORCET A. and ARAGO M. F., *Œuvres de Condorcet*. Paris, Didot, 1847, t.VI, p. 643: “D’autres essais répandraient quelques lumières sur les lois de la dégénérescence ou du perfectionnement des plantes ou des races d’animaux, sur la possibilité ou le résultat du mélange des espèces de l’un et l’autre règne et feraient connaître les effets des croisements des races, répétées suivant diverses combinaisons ou des greffes indéfiniment multipliées”
5. The medical dictionaries are digitalised on the website of the Bibliothèque interuniversitaire de santé (BIUS).
6. On these dictionaries, see SOURNIA J.-C., *Littré, lexicographe médical*. Communication présentée à la séance du 17 octobre 1981 de la Société française d’histoire de la médecine.
7. *Dictionnaire des sciences médicales Panckoucke* 1812-1822 (58 vol.), vol. 8, p. 201 sq.
8. For example, August Waller (1856-1922) discovered a phenomenon called since then “wallerian degeneration” (in French: *dégénérescence wallérienne*),

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a process that results when a nerve fiber is cut or crushed, in which the part separated from the neuron's cell body degenerates distal to the injury.

9. Among many other valuable studies on this story, see PICK D., *Faces of Degeneration. A European Disorder (1848-1918)*. Cambridge, Cambridge University Press, 1993.
10. At almost the same time, Arthur de Gobineau (in *Essai sur l'inégalité des races humaines* (1853-55), writes "The word *degenerate*, when applied to a people, means that the people no longer has the same intrinsic value as it had before, because it has no longer the same blood in its veins, continual adulterations having gradually affected the quality of that blood....in fact, the man of a decadent time, the *degenerate man* properly so-called, is a different being from the racial point of view, from the heroes of the great ages....I think I am right in concluding that the human race in all its branches has a secret repulsion from the crossing of blood..."
11. For the different editions of this dictionary and the ideological and family problems related to them, especially due to Littré's agnosticism, see: SOURNIA, ref. 6.
12. On Littré's personality and career, for example HAMBURGER J., *Monsieur Littré*. Paris, Flammarion, 1988.

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