

Can the Decline of the Latin Name be Halted?

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ABSTRACT

When the Linnean system of nomenclature was proposed as a means for achieving consistency in naming plants and animals at the international level, it was adopted with enthusiasm by contemporary naturalists, since they shared a common background in the Classics. The names used initially were often taken directly from the original Latin or Latinized Greek vocabulary. As knowledge of animal and plant species (living and fossil) increased, this resource was soon exhausted; however, the new names formulated by those early naturalists reflected their sensitivity to those languages.

With time and the further expansion of knowledge, it became increasingly difficult for naturalists to formulate generic and specific names on a purely descriptive basis. New names were often based upon personal and place names, handled with varying sensitivity. Words from other languages were increasingly incorporated. In the zoological and botanical Codes, the rules controlling nomenclature have been slackened to the point that almost anything is permissible nowadays. Because of the abandonment of the old standards, some present names, though technically valid, are conceptual and aesthetic disasters and approach total unpronounceability, rendering discussion at meetings and even recollection unnecessarily difficult. It is urged that this situation be controlled by elevating "Recommendations" in the present Codes to the status of rules, enabling future international regulating bodies to eliminate such undesirable appellations.

Keywords: Paleontology – general; science; taxonomic nomenclature – Latin names.

Introduction

Though a few percipient persons had made earlier observations, it was not until the seventeenth century that any significant number of humans ceased to regard animals, plants, and minerals merely from a practical viewpoint and began to view them as objects of interest in and of themselves. When this happened, communication became a problem. Not only were different names used for the same organism in different countries, but different names were even used within the same country.

The very sensible proposals of the Swedish botanist Carl von Linné brought order to this nomenclatural chaos. The naturalists of his time – the late eighteenth century – had the benefit of a common linguistic training; virtually all of them knew Latin, and many

had also had some familiarity with classical Greek. Those two languages and the cultural awareness that was imbued during their learning were an almost universal component of secondary education throughout the western civilized world of the time. Not only were the majority of published scientific treatises written in Latin, but Latin was also being regularly used in international scientific correspondence. As a consequence, many of the names already in use for animals and plants were either based on Latin or Latinized Greek. When Linné – or Linnaeus, as he is remembered – set forth his proposal that such names should become standard in biology, its accord with an already existing vocabulary facilitated its acceptance.

At the outset, then, existing names in those languages were employed. This nomenclatural resource was soon exhausted since the ancient Greeks and Romans had a less precise knowledge of the present and past inhabitants of the natural world than did these seventeenth-century naturalists and their successors. However, during the eighteenth century and even well into the nineteenth, the commonality of education and cultural background meant that the new generic and trivial names proposed by naturalists were almost always soundly constructed, in both grammatical and aesthetic terms. As extinct creatures also came to be named, the product included such masterpieces of nomenclatural evocation as Cuvier's *Pterodactylus*, "wing-finger" (1809), König's *Ichthyosaurus*, "fish-lizard" (1818), and Osborn's *Tyrannosaurus rex*, "king tyrant lizard" (1905).

The Principle of Priority and Its Limitation.

However, even in the post-Linnaean era, there was considerable instability in nomenclature. Naturalists felt free to change names that they considered inappropriate – Mayr and others (1953, p. 203) give examples of this – and the delimitation of taxa was far from being consistent. Only with the promulgation, in the late nineteenth century, of the two principal international codes of nomenclature – for zoology the International Code of Zoological Nomenclature or ICZN (Ride and others, 1985; see also Melville, 1995) and for botany the International Code of Botanical Nomenclature or ICBN (Greuter and others, 1994) – did true stabilization of biological names begin to be achieved. As for the circumscription of taxa, this will always be subjective. Whatever new criteria are developed, it can only remain a subject for the opinion of particular scientists.

The enforcement of the principle of priority, crucial to this standardization of names, was in general

beneficial. However, it resulted in some unfortunate substitutions of forgotten names for familiar names – for example, *Branchiostoma* (Costa, 1834) for the cephalochorate well known as *Amphioxus* (Yarrell, 1836). In the palaeontological realm, the bland *Apatosaurus* (Marsh, 1877), “deceptive lizard,” pre-empted that same palaeontologist’s memorably evocative *Brontosaurus*, (1879), “thunder lizard” for what was long believed to be the biggest dinosaur. Even worse was the enforced substitution of the wholly inappropriate name *Basilosaurus* (Harlan, 1834), “kingly lizard,” for the early whale that had been called *Zeuglodon*, “yoke tooth” by Owen (1839). Yes, naturalists have fought back by using “*amphioxus*” as a popular name and speaking of *brontosaurus* and *zeuglodons*, but, at the formal level, the battle is lost.

There was indeed some attempt to preserve names in widespread use against forgotten names. Article 14 of the ICBN permits the conservation of such names (though only by way of a complex formal process) while the *nomen oblitum* clause, Art. 23b of the ICZN, allowed for the abandonment of names that had never come into widespread use. However, as I learned when striving to conserve the dinoflagellate name *Hystriochosphaera* (O. Wetzel, 1933) against the forgotten name *Spiniferites* (Mantell 1850; see Sarjeant, 1970), proposals for *nomina conservanda* have rarely proved successful. Unfortunately the *nomen oblitum* clause is no longer operable; it was withdrawn by the International Zoological Congress in 1973.

Attitudes concerning the conservation of names, under the ICBN at least, may be changing nowadays. The relevant committees of the International Association for Plant Taxonomy are showing signs of adopting a more liberal viewpoint by no longer insisting that conservation be restricted to “species of major economic importance,” as the old ICBN Art. 14.2 had specified. Instead, names at any rank can be proposed for conservation (Fensome and Skog, 1994). The viewpoint of contemporary zoologists is less clear, but it may also be changing for the better.

The Formulation of New Names

By the end of the nineteenth century, unexpected problems were developing. First of all, it was being perceived that there is a greater diversity of living organisms, and a vastly greater diversity of fossil organisms, than Linnaeus and his contemporaries could have anticipated. There was realization also that many of the earlier genera had been much too broadly, or much too imprecisely, defined: the single fossil cephalopod genus *Ammonites*, as an extreme example, was destined to be split into a variety of families and several hundred genera. In addition, while the giving of trivial names to honour particular naturalists had begun early – *Iguanodon mantelli* (Meyer, 1832) is an example – personal names began also to be used as a basis for generic names, with or without some suffix identifying the natural group to which the taxon belonged. In consequence, not only was an ammonite named *Quenstedtoceras* by Hyatt (1877) after one eminent German palaeontologist, but a second was named *Reineckeia* by Bayle (1878) after another.

Such divergences from a purely descriptive nomenclature were perhaps inevitable since the classical Latin and Greek vocabulary was, after all, limited. When so many organisms of large or small size were spiny, how many variants on the two relevant Greek (*akaina*, *akantha*) and three relevant Latin adjectives (*echinatus*, *hystricosus*, *spinosus*) could one develop? Even after extending one’s armoury of words by utilizing the modifications of the Greek and Latin names for spiny bushes or plants, the available range of alternatives remained limited.

The procedure of modifying into Latin form the vernacular names of animals, for use as generic names, had been begun early; the fennec fox became *Fennecus*, the okapi *Okapia*. A consequence of the restricted availability of appropriate adjectival descriptors was that some authors proceeded to utilize, as trivial names, adjectives and nouns from languages other than Latin and Greek. These might be employed directly or in somewhat modified form.

This approach is exemplified by Below (1981). In naming new fossil dinoflagellate species from Morocco, he utilized many Arabic words (variably modified); thus, *Protoellipsodinium touilis*, based on Arabic *touil*, “long,” and *Pterodinium bab*, based on Arabic *bab*, “door.” The former name was corrected to *touile* (Lentin and Williams, 1993, p. 542) but, when Head and others (1989) proposed modification of the latter to *babatum*, citing ICBN Principle V and Art. 73-10 as justification, Lentin and Williams (1993, p. 550) rejected that change, citing Art. 73.1 as their authority. The latter authors were probably right, since Art. 73-10 only enforces the correction of incorrect terminations; *bab* has no termination to be corrected since it is a noun, not an adjective. ICZN Art. 11b(iii) is equally permissive, admitting all names of whatever origin, provided they be written in Latin letters. This means that someone might name a species as “*Pterodinium door*” just as legitimately.

Whatever the intent of the Codes, the doors are indeed open to the usage of Latinized English. Four new species of cryptogamic spores were named by Mathur and Chopra (1982) as *Cyathidites offshorensis*, *C. harbourensis*, *Acanthotriletes offshorensis*, and *Verrucofoveosporites offshorensis*. On this basis, we can surely expect species named *mountainensis*, *coastalplainensis*, and *openoceanensis*!

There has been also an increasing use of place-names in formulating generic and specific names. When based upon western European place names, these could be euphonious: the ammonites *Lewesiceras* (Spath, 1939), *Ringsteadia* (Salfeld, 1913), and *Muensterites* (Mojsisovics, 1893) exemplify this. (They are named respectively after Lewes, Sussex, England; Ringstead Bay, Dorset, England; and Münster, south Germany.) Even names based upon localities far from Europe may be easy to pronounce – for example, the ammonite names *Spiticeras* (Uhlig, 1903), *Himalayites* (Uhlig in Böhm, 1904), and *Durangites* (Burckhardt, 1912), the first two named after regions of the Indian subcontinent and the third after a Mexican province.

However, as countries more and more distant from Europe came to be explored, the Latinization of locality names began to produce curious hybrids, incorporating sounds alien alike to Latin or Greek. Sometimes the problems remained slight; another ammonite was named *Kachpurites* by Spath (1924) and a dinosaur *Lufengosaurus* by Young (1941), respectively after towns in India and China. With widening geological exploration and increasing aural insensitivity, however, we now have such names as *Komewuia* (Cookson and Eisenack, 1960) (an Australian dinoflagellate) and such Chinese-based tongue-twisters as *Tschungkuoceras* (Gerth, 1950) (an ammonite), *Zizhongosaurus fuxienensis* (Dong, Zhu, and Zhang, 1983) and *Xuanhanosaurus qilixiaensis* (Dong, 1984) (both dinosaurs). Without any disrespect to the quality of Chinese palaeontological researches, I find such names too far removed from the basic concepts of Linnean nomenclature to be palatable. Yes, of course, the Chinese civilization predates the European, but the concepts of taxonomic nomenclature were formulated in Europe, and it is appropriate that the structure of names should remain European, especially when English is the international language.

The burgeoning use of personal names as the basis for generic names has also produced unattractive results, especially when first names came to be included. Florentino Ameghino (1901) was one of the first palaeontologists to adopt this procedure. In some cases, he Latinized the first names, as when he named a fossil marsupial after his field-geologist brother Carlos, as *Carloameghinia* and a pyrothere after the German palaeontologist Karl Zittel, as *Carlozittelia*. Such names are reasonably euphonious. However, when Ameghino and his successors in taxonomy incorporated the first name without modification, the products were not only aesthetically unattractive but, when spoken in lectures or discussions, potentially downright confusing to the listener. Was a person or an organism referred to? Examples range from Ameghino's *Thomashuxleya* (1801), a toxodont, to Lentin and Vozzhennikova's (1989) *Charlesdowniea*, a dinoflagellate – organisms vastly different in size but equally grotesque in name.

The formulation of names that included initials or that represented contractions of the whole name constituted a further downward step in this unappealing progression. Once again, this was begun by Florentino Ameghino (1901), who coined such names as *Asmithwoodwardia* for a primitive South American ungulate (honouring the English anatomist Sir Arthur Smith Woodward) and *Amilnedwardsia* for a macrauchenid litoptern (after the French zoologist Alphonse Milne-Edwards). A fresh dimension was added when Errol White (1946) named the primitive fish *Jamoytius* after the ichthyologist J.A. Moy-Thomas. This was inoffensive and amusing, perhaps; certainly it was a name easily pronounced. I find it less easy to forgive White for dedicating a new species of placoderm (1961) to his colleague at the British Museum (Natural History), William Ball, by calling it *Overtonaspis billballi*! To inflict such crudely humorous names on a formerly living organism is as offensive, to this writer at least, as drawing a moustache on the Mona Lisa.

There have been some nomenclatural oddities. An example is the dinoflagellate name *Alterbia* (Lentin and Williams, 1976). This was a modification of the intended name *Albertia* (after Gerhard Alberti) when the latter name was discovered to be preoccupied – a striving to keep close to the original intent but in practice meaning that no one was honoured. Oddly, when the type species of *Alterbia* was shown to be referable to an earlier genus and a new name was needed for the residue of species, the renewed opportunity to honour Alberti was not seized. Instead, the absurdity was perpetuated, the new name being *Alterbidinium* (Lentin and Williams, 1985).

Humour has crept in at times, for better or worse. When Buckman (1902) named an ammonite *Zigzagiceras zigzag*, either the intent or the effect was gently humorous. More recently, the humour has become overt. The fossil remains of a constrictor, present in the remarkable Tertiary rain-forest fauna discovered at Riversleigh, Queensland, was named *Montypythonoides* by Smith and Plane (1985) – in reference to a British Broadcasting Corporation comedy troupe, not to any scientist. A taxon named after a fictional character is the dinosaur *Irritator challengeri* of Martill and others (1996), whose trivial name recalls Sir Arthur Conan Doyle's creation, Professor George Edward Challenger of *The Lost World* and other fantasies. Well, perhaps that's not too bad, but, much though I enjoy Doyle's writing, I find it hard to stomach the naming of a pterodactyl by Frey and Martill (1994) as *Arthurdactylus conandoylei* – especially when the generic name is only a partial tribute, referring to the author's finger!

The Malign Effect of Prefixes

A regrettable tendency of taxonomists has been to tack prefixes onto existing generic names in a fashion suggesting either unawareness of, or complete indifference to, the origins of those names. The ammonite genus *Saynella* was named by Kilian (1910) after his fellow French invertebrate palaeontologist Gustave Sayn. Was it a less able or a miniature version of Gustave, a sub-Sayn, after whom Spath (1923) named the genus *Subsaynella*? Another ammonite was named *Gaudryceras* by Grossouvre (1894) after his fellow French geologist Albert Gaudry. Did Gaudry perhaps have a *Doppelgänger*, for whom Shimuzu (1934) named *Paragaudryceras*? A fifth ammonite was named *Thurmannia* by Alpheus Hyatt in 1900, after the French palaeontologist Jules Thurmann. Was it Thurmann himself or was it the ammonite that was being imitated by Spath's (1923) *Pseudothurmannia*?

Such names may be intrinsically absurd, but they are at least pronounceable. That cannot be claimed of certain other names. When Helenes and Lucas-Clark (1997), desiring to again honour the eminent palynologist William R. Evitt (after whom the acritarch genus *Evittia* and the dinoflagellate genera *Evittodinium* and *Evittosphaerula* had already been named), came up with the appellation *Wrevittia*, I was greatly dismayed, much though I admire Evitt's work – or, perhaps, because I do. How is that word to be

pronounced? As "Revittia," with a silent "W," as if it were named after someone called "Revitt"? As "Urevittia," as if it were dedicated to a more ancient Evitt, an ur-Evitt? As "Were-Evittia," a sinister past tense suggesting parallels with werewolves? We are given no clue.

The worst nomenclatural horror yet committed is perhaps in the trivial name of a recently proposed dinosaur genus. The Chinese vertebrate palaeontologist Dong Zhiming has named a newly discovered primitive ankylosaur collectively after the stars of the film Jurassic Park, as *Jurassosaurus nedegoapeferkimorum* (Anon., 1993). Yes, that name may well be valid, but it is a tongue-twister and a monstrosity. (It is also incorrect; the "orum" ending implies a whole set of movie stars with the same surname, not a group of persons with different names, as was the author's intention in formulating this nomenclatural horror!)

However, there may be problems yet to come, of comparable or greater character. *Khowaja-atequzaman* is a reputable Indian palynologist. It is perfectly possible that a new genus may be named after him, as "*Khowaja-atequzamanodinium*," and we might even face the combination "*Khowaja-atequzamanodinium khowaja-atequzamanii*." Similarly, the name of the Canadian planktologist F.J.R. "Max" Taylor might lead someone to propose a genus called "*Fjrmaxytoria*." Even worse, there is a Welsh village with the name *Lanfairpwllgwyngyllgogerychwyrndrobwllantysiliogoch*, near to which Early Palaeozoic fossils could be found. Might we anticipate having a species with the trivial name "*llanfairpwllgwyngyllgogerychwyrndrobwllantysiliogochensis*"?

The Floodgates are Open

What can be done to eliminate such monstrosities? As matters stand now, the answer has to be "Nothing." The ICZN takes great care to ensure that bona fide Latin and Greek names are handled correctly (Arts. 25, 31b and 31c; Appendix B, C, and D IV) but then opens the nomenclatural flood-gates in Arts. 11b(iii), 30c and 30d. These allow the admissibility of generic names from any language, names representing "natural sounds," or even names consisting of arbitrary combinations of letters. Furthermore, Art. 32 requires that original spellings, whatever their character, be preserved unaltered, unless ambiguities or errors in the original text can be demonstrated beyond question.

An example of what we may increasingly expect is the primate genus *Ekgmowechashala* (Macdonald 1963). This was based on the Teton Lakota (Sioux) word for a monkey; its author quotes, as justification, the fact that "the rules of nomenclature say you can use barbaric tongues."

Several of the accompanying "Recommendations" address certain of the problems I have raised above, for example:

A zoologist should not propose a name that, when spoken, suggests a bizarre, comical, or otherwise objectionable meaning, (Appendix D I.9).

The prefix pseudo- should be used in combination only with a Greek noun or adjective. It should not be used with a name based on a personal name (Appendix D II.13).

The use of personal names in the formation of compound genus-group names is objectionable, for example, *Eugrimmia* and *Euagassicerias* (Appendix DIII.15).

These "Recommendations," if followed, would have eliminated many of the more absurd existing names. Unfortunately, "Recommendations" have no force; so long as the name is validly proposed, the "Recommendations" can be observed or ignored, according to the sensibilities of the individual systematist.

Under the ICBN, matters are no better. Again, great care is taken to ensure the proper handling of Latin and Greek names (Arts. 60, 62). Apart from that, though, anything goes. Art. 20.1 states that:

The name of a genus...may be taken from any source whatever, and may even be composed in an absolutely arbitrary manner.

The only limitation (Art. 20.2) is that it "may not coincide with a technical term currently used in morphology."

Names of species are equally wide open (Art. 23.2). The trivial name may consist of not just one but several conjoined words (Art. 23.1), while Art. 51.1 states explicitly that "a legitimate name must not be rejected merely because it...is inappropriate or disagreeable."

Once again, the "Recommendations" are, in varying degree, admirable; 20A.1(a-d), for example, advises that authors:

...forming generic names should comply with the following suggestions:

- a) To use Latin terminations insofar as possible.
- b) To avoid names not readily adaptable to the Latin language.
- c) Not to make names which are very long or difficult to pronounce in Latin.
- d) Not to make names by combining words from different languages.

These urgings are echoed in Arts. 23A.3(a-c) and 24A. Unfortunately, once again, such wise directives can be ignored with impunity.

A Plea for Common Sense

At a time when the combining of the five existing codes – not just the ICZN and ICBN but also the International Code for the Nomenclature of Bacteria, the International Code of Virus Classification, and the International Code for the Nomenclature of Cultivated Plants – into a single Biocode is being contemplated, three paths are open to taxonomists. One is to continue to adopt a *laissez faire* policy and freely permit the coining of generic and specific names that are unpronounceable, unrememberable, multipolysyllabic, even outright offensive or obscene.

Such an approach will no doubt appeal to those persons who not only lack a classical education – as, for that matter, do I – but who view Latin names with resentment, as an outdated and rather silly convention. This is the path that, I fear, is likeliest to be followed; yet it will inevitably lead systematists into a wilderness of linguistic confusion, strewn with names that only computers can handle.

The second is to accept the developing predominance of the machine and substitute for the old Linnean hierarchy a wholly impersonal system utilizing combinations of letters and numbers, instead of the old names of taxa. Such a system could handle any name, however unpronounceable, and would be capable of almost instant reorganization, according to how the winds of cladistics and genetics were blowing. If such a system ignored history and inhibited vocal communication between scientists – well, would that matter? Are we not approaching a time when scientists will essentially work in isolation, requiring no face-to-face contacts and instead employing their computer keyboards to reach out to a world they have no need to visit?

The third path is to introduce fresh Articles that would, to some extent at least, govern the development of future biological nomenclature. This could be done in many different fashions. The simplest method, however, would be to elevate those existing, and very wise, “Recommendations,” in the two Codes or the proposed combined Code, to the status of Articles, and to modify such clauses as Art. 11 and 30 of the ICZN and Art. 20.1 of the ICBN by adding the words “subject to [the new Articles].”

This is the approach that I personally advocate, perhaps with the addition of a “backward limit in time” clause that would ensure the stability of the existing nomenclature. I fear, though, that I am merely a voice crying vainly in what threatens to be an ever-widening taxonomic wilderness – a wilderness wherein the Latin voice will also soon be lost.

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Food for Thought

Overshadowing all attempts at curricular reform is the lack of knowledge of science and mathematics of most American teachers. Almost all – including the best middle-school science teachers – are very weak in physical science. Mathematics is seldom used in either elementary- or middle-school science, let alone history or social science, even when the same teacher is teaching both subjects to the same students.

Imagine if reading were taught forty minutes a day in reading class, but students and teachers never read anywhere else. How many students would learn to read? But this is exactly how mathematics is taught. Science, history, and social studies don't use mathematics on a regular basis, so students have no idea how it can be used to make sense of their lives. What percentage of your diet is fat? If Americans buy 300 million compact discs a year, how many pounds of trash can be saved by not packaging them in long wrappers? If the budget deficit of the United States is \$400 billion, what is the deficit per capita? The average nonscience college student can't do problems like these.

This is a self-perpetuating problem, since it is the nonscience and nonmathematics students who go on to become teachers.

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