

History of the Proposals to the “Linz Zoocode Committee” (LZC): Sessions 7 to 14

During the months of June 2016 to April 2017, the LZC held 8 Sessions of work, all proposals devoted to discussion and vote. The final statement of each proposal and the voting results are published in volume 7 of the journal *Dumerilia* 7. For the history, a new series, “History of the Proposals to the ‘Linz Zoocode Committee’ (LZC)” edited by the LZC Board (Aescht & Dubois) is opened on the website of the Biology Centre of the Upper Austrian Museum (http://www.zobodat.at/publikation_series.php?id=7361), making available online a PDF/A (without printed version) paralleling the Sessions published in the issue of *Dumerilia*. The history of the proposals to the LZC of the first 6 Sessions are included as Appendices in *Dumerilia* 6:38-70.

Each history of a Proposal submitted to the LZC presents all the exchanges and comments of all members of the LZC before the final decision. It does not consist in an exhaustive copy of these discussions, which in part went beyond the question being discussed, but a summary of the opinions expressed during the process. Wordings cited “*between quotation marks*” are preceded or followed by the initials of the LZC member (see below) and the contribution date. This ensures that each member was able to check if her/his intention was correctly represented before publication. Three dots indicate omitted text. Inserts of the LZC Secretary [EA] or grammar corrections are given in square brackets.

From 27 February 2016 to 6 April 2017, the composition of the LZC was as follows: AB, Aaron Bauer; AD, Alain Dubois; AL, Antoine Louchart; AO, Annemarie Ohler; EA, Erna Aescht; ED, Edward C. Dickinson; FD, François Dusoulter; IL, Ivan Löbl; LC, Luis M. P. Ceriaco; OL, Olivier Lorgele; PC, Pierre-André Crochet; RB, Roger Bour; TF, Thierry Frétey.

Session 7. AVA-02

Documents proposed for the *Observatory on Availability in Zoological Nomenclature*

Original proposal

The texts of the four documents adopted in the Session AVA-02 are not included here, as these are mere internal working documents.

Discussion

A first case for the *Observatory* was presented in an informal way by IL 09.06.16. AD 22.07.16 noted that “*Scott Thomson ...applied for working in the Observatory (which was accepted)...*”.

The discussions mainly concentrated on differences in informations required for printed and/or electronic publications, viz. (1) ISSN/ISBN, (2) date, (3) suprafamilial taxa and (4) authorship. AD 22.07.16 sent a new version “AVA-02b: Documents for the Observatory” including some of the suggestions of ED (also formal corrections) and EA and new ones, as well as some comments.

(1) Concerning ... Reference of publication... and ... e-publication(s), EA 28.06.16 noted that ISSN or ISBN “*can be deleted, because for p-publication it does not matter and it must not appear in the e-p itself*”. ED 13.06.16 and EA 28.06.16 agreed “*that the entries in Zoobank are obscure ..., since there are 5 types of users, we should confine to that visible to a Guest user*”. ED 25.06.16 suggested to “*insert a Note to clarify that the Code does not require an ISBN for a printed work*”. AD 22.07.16 stated “*even if this information is not required by the Code for p-publications, it is not very space-consuming and may become useful later if ISSN/ISBN is later required for such publications. [He] propose[d] to maintain this for all publications.*” He continued for e-publication “*one more time we are in front of an unprecise wording of the Amendment, as the term ‘entry’ is not clearly defined in Article 8.5.3.1: is this the entry for the paper or for the periodical? To me these are two different ‘entries’, not a single one.*”

Concerning registration AD commented: “*This can be seen in the publication itself, and does not require to consult Zoobank. For example, the journal PeerJ always states the LSID of the new nomina they publish, but not always the LSID of the publication itself, but this is tolerated by Article 8.5.3.3 as an ‘error’ that ‘does not make a work unavailable’.* But this applies only to nomina, not to nomenclatural acts, as currently there is no way to register nomenclatural acts in Zoobank (!!!!!).”

(2) As regards... Date of publication, EA 28.06.16 suggested to include “*... concerning advanced distribution of separates and preprints see Art. 21.8...*”.

(3) As regards name-bearing types (onomatophores, [O4]) + a required “*statement of all the included genera (and optionally of other included taxa at other ranks)*”. EA 28.06.16 addressed that “*Suppose only class series nomina are treated, they are at present unregulated by the Code, so we cannot declare this paper as unavailable. Therefore O4 should be better omitted in the first phase.*” AD 22.07.16 opposed that “*It is not true that class-series nomina are completely unregulated by the Code. Some Articles (1, 8, 11.1–5, 11.7–9, 14–16, 19, 24, 32–33, 50, 78–79, 81) apply to all nomina and therefore to class-series nomina as well, but most of them concern only the availability of these nomina, not their allocation and validity (see e.g. Dubois, 2015, Dumerilia 5: 23–25).*”

(4) Document 3 on “Proposed format for a corrective paper...” included a plural (“*We recently published*”), according to EA 28.06.16 “*this implies, rightly, that all the original authors of the paper must author the corrective paper. We ought to mention this in document 2. This also brings to mind the likely need to affirm the authorship of the*

name in any case where the author or authors of the name (or act) were not all of the authors of the paper.” AD 22.07.16 was of the opinion that “there are various possibilities here, so [he] think[s] it is enough to leave freedom to the author(s) of the corrective paper to provide details if needed.”

Session 8. GEN-03

The Principles of the Zoocode

[1] The Principle of Zoological Independence

Original proposal

The original Proposal was similar to the final one (see *Dumerilia* 7), from which it differed by a less structured Draft (see below).

Discussion

A single comment proposing a new writing for this Proposal, by EA 09.08.16 (considered “important” by IL 21.08.16 without further specification) was responded by AD 18.09.16. The discussion centered on four topics:

- (1) The replacement of the term ‘independence’ by the term ‘autonomy’.
- (2) The definition of taxonomy.
- (3) A ‘cooperation scenario’ with other nomenclatural systems dealing with other organisms.
- (4) Conclusion: a new proposal for our text.

EA 09.08.16 justified the rewording as follows: “[she had] *again reflected on the Proposal GEN-03, particularly what independence means, and came to the conclusion that for [her] being independent means being free to make choices, irrespective of any one elses. Nomenclature and taxonomy are conceptually distinct, but they are not separable ... So, in [her] opinion interdependence, meant as not to deny but to acknowledge relations of dependence, prevails. Improving the Code needs exchange-based reciprocity by all persons fascinated by organisms, both from nomenclatural and taxonomic perspectives, and this stance may be expressed by the word autonomy, therefore [she] would prefer to rename the Principle and change the Draft accordingly.*

Concerning the section ‘Current situation’, we should include Article 1.4 referring to the topic Independence.

As the four-lines long first sentence of the Draft seems too difficult to understand for supposedly most people, I tried a separation and reformulation.” PC 24.08.16 argued in a comparable way to this issue.

For clarity the original text of the Proposal and her non-italised suggestions are given:

“Pr-Gen-1. The Principle of Nomenclatural Autonomy.

Justification of this Principle. • *Some confusions are quite frequent in zootaxonomic publications, such as the equation of between taxonomy (the (re)identification and classification of animals in taxa) and nomenclature (the regulated naming of the taxa recognised by taxonomists), or the intermingling of zoological nomenclature and other biological nomenclatures (e.g., the misleading assumption that the Rules of homonymy apply between nomina of zoological and botanical, fungal or prokaryotic taxa, or the idea that nomina can be made nomenclaturally available through intensional definitions of the taxa, as is the case in the Phylocode). The recognition of Nomenclatural Autonomy as grammar and vocabulary of taxonomy as one of the founding Principles of the Zoocode is meant at avoiding or reducing such confusions. Principles of Taxonomy, either phenetic, evolutionary and/or phylogenetic ones, have their own autonomous status. However, despite the fact that there are some exclusive disjunctions [i.e., either/or] between nomenclature and taxonomy, exemplified by objective or subjective synonyms, we better refer to “inclusive disjunctions”, because a demonstrably unavailable nomen may be treated as “valid” by many taxonomists, while an available work may contain unavailable /invalid and available/valid nomina simultaneously and a subjective synonym remains available, if so established.*

Draft proposed for this Principle. • *The Zoocode formation of nomina of zoological taxa and the nomenclatural acts affecting these nomina based on nomenclaturally available publications. The autonomous nomenclatural processes include (a) nomenclatural availability (including nominal-series assignment), (b) taxonomic allocation to taxa recognised by taxonomists, (c) validity (including correctness) [and if subsequently adopted in the Zoocode] (4) registration, which may be specified in mandatory and optional. The nomenclatural process is insofar independent from taxonomy, i.e., it does not interfere with taxonomic thought and actions, and therefore does not prescribe the choice of a taxonomic paradigm or of criteria for the recognition, discrimination or definition of taxa. Concerning all other autonomous codes of nomenclature in force for further organisms (e.g., plants, algae, fungi or prokaryotes) a cooperation scenario is preferable against a competition scenario in the light of contributing to the reconstruction of evolution. As regard to alternative nomenclatural systems, not internationally in force, they rely on incompatible basic premises (e.g., the allocation of nomina to taxa through intensional definitions of the latter).”*

(1) The replacement of the term “independence” by the term “autonomy”

AD 18.09.16 did “not see the need of this terminological change. Both terms are largely equivalent (at least etymologically), and the former one has been traditionally used in zoological nomenclature and is more appropriate in this respect.

The New Oxford Dictionary of English (Pearsall 1998) defines independence as ‘the fact or state of being independent’, and independent as (a) ‘free from outside control; not depending on another’s authority’ (e.g., for a country, ‘self-governing’); (b) ‘not depending on another for livelihood or subsistence’; and (c) ‘not connected with another or with each other; separate’ (e.g., ‘not depending on something else for strength or effectiveness; free-standing’). This term derives from the French term *indépendant* which means etymologically ‘which does not depend on’.

The same book defines autonomy as ‘(of a country or region) the right or condition of self-government, especially in a particular sphere: Tatarstan demanded greater autonomy within the Russian federation’, ‘a self-governing country or region’ or ‘freedom from external control or influence’. It defines autonomous as ‘(of a country or region) having self-government, at least to a significant degree: the federation included sixteen autonomous republics’ or ‘acting independently or having the freedom to do so’. This term derives from the Greek term *autonomous* which means ‘having its own laws’.

It is quite clear that these two terms are very close in meaning, at least in their original meanings. However, in politics, their meanings have slightly deviated because of the existence of hierarchical relationships between some political units, e.g. in the case of federations: the term independent is now more often used to designate complete independence (self-governing) from all other countries, whereas autonomy carries the idea of ‘partial independence (self-governing)’: the provinces of India or China, or the states of the United States have their own laws for some questions but they depend on federal laws for others.

Thus replacing the well-known term independence to qualify zoological nomenclature by the term autonomy would carry a message, that of stating that, in some way, zoological nomenclature is dependent, subordinate or subservient to something else which is not clear: taxonomy? general rules of nomenclature? general concepts?

For this reason, I think the term independence should be maintained, at least to designate the independence from other nomenclatural systems pointed to in Article 1.4 of the current Code. This means that this nomenclatural system is not enfeoffed to any other nomenclatural system and does not interfere with them in any respect (e.g., for homonymy or synonymy).

But EA is right in stating that the kind of ‘independence’ that zoological nomenclature has relatively to zoological taxonomy is different. It is not pointed to in Article 1.4 but in the Code’s Preamble, in the sentence which says that none of the ‘provisions and recommendations’ of the Code ‘restricts the freedom of taxonomic thought or actions’. This is another kind of independence, less complete. However, it cannot be described as interdependence, as suggested by EA, because interdependence is a two way process: using this term would mean that nomenclatural decisions depend on taxonomic decisions (which is true) but also the reverse (which is not true). Nomenclature is not and should not be involved in taxonomic analyses and decisions. It should intervene only after the taxonomic work has been achieved, in order to allocate the correct nomina to the taxa recognised by the taxonomic analysis. It would be catastrophic for taxonomic analysis to depend on nomenclature (e.g., to be obliged to recognise a taxon because a nomen has been proposed for it). The relationship between taxonomy and nomenclature is not symmetrical: nomenclature depends on taxonomy but taxonomy does not depend on nomenclature.

[At least this should be so. In fact there are in the Code some provisions that ‘restrict the freedom of taxonomic thought or actions’, for instance in limiting the number of ranks that taxonomists can use in their classifications, forbidding for example ranks like ‘superfamily’ or ‘hyperfamily’. This matter will be discussed later in the LZC ...]

These thoughts lead me to propose a new modified text for the justification of this Principle, different both from the original one and from EA’s. The final sentences of EA’s text do not refer to dependence of taxonomy on nomenclature but to incorrect use of nomenclature by some taxonomists and do not in my opinion have to be mentioned in this short text dealing with ‘philosophical’ principles.”

PC 24.08.16 commented that “[w]hile the Zoocode does not interfere with taxonomic thoughts and action, the nomenclatural process in itself is NOT independent from taxonomy, as validity (as I understand it) depends upon taxonomy. Whether a given nomen is a subjective junior synonym or a valid nomen depends on taxonomy as much as on nomenclatural rules of the Code (such as priority etc.). Shouldn’t we modify the wording to acknowledge that?”

EA 29.09.16 clarified: “By the term ‘autonomy’ I had neither in mind countries or regions nor the autonomy of an ego, but more Ernst Mayr’s establishing the autonomy of biology as a science on par with the authority of chemistry and physics. Further, that the autonomy of women has to be highlighted instead of forgotten, as it is or too often has been. Linguists speak about the autonomy of syntax, i. e. that the syntactic rules and principles of a language are formulated without reference to meaning, discourse, or language use. Moreover, in 2000 AD introduced the term onymology as the study of concepts and theory of biological nomenclature. Perhaps, some day bioonymology will be autonomous as regards the linguistic theories of reference and/or meaning or better there will be an ‘interdependence’, a two way process. Concerning nomina suppressed or ‘protected’ by the Commission, taxonomists depend on nomenclature, not in their taxonomic decisions, but on the correct use. I am aware that ‘independence’ is traditionally used and that we should not replace too much terms, so we should come back to the modified text for the justification of this Principle.”

(2) The definition of taxonomy

AD 18.09.16 explained: “The original text defined taxonomy as ‘the classification of animals in taxa’, which admittedly is quite short and incomplete. EA proposed to replace it by ‘the (re)identification ...’. The term ‘identification’ is usually employed for the identification of specimens, i.e. their allocation to taxa recognised by taxonomic research. Although many ‘modern biologists’ who have only contempt for taxonomy indeed consider that the

function of taxonomists is to identify specimens (and this is why they sometimes deign to keep some taxonomists in their laboratories, to avoid gross misidentifications of 'material' used in their magnificent researches, as was quite often the case in the recent decades), I do not think identification of specimens is part of taxonomic research. It is an outcome of taxonomic research. If the taxonomists working on a group have provided good keys and descriptions, these can be used by non-taxonomists to identify specimens, but this is not taxonomic research. This is just like someone who uses a sequencer to obtain a nucleic acid sequence: this person is not doing molecular biology but using a tool provided by someone else for a special purpose.

There are indeed two largely different and independent aspects in taxonomic research: the distinction, characterisation and formal recognition of taxa, mostly species and subspecies, which does not require in the least the placement of these taxa within the complete classificatory scheme (a discipline which I called eidonomy, 'the distinction of kinds') and the inclusion of these taxa in a comprehensive classificatory scheme (taxonomy sensu stricto). Although nowadays both processes can be carried out simultaneously through molecular phylogenetic analysis, this has not been the case in most of the history of taxonomy, and is still not indispensable. ...

The short text we are discussing does not allow to enter these details, but I propose the following extra-brief definition of taxonomy: 'the distinction/recognition/characterisation and classification of animal taxa'. Your opinion on the best term to use in this definition will be welcome."

EA 29.09.16 clarified: "The Code heavily relies mostly on misidentification (nearly 30 times), but also on identification (5 times). While Article 70. refers to 'Identification of the type species', Article 65 deals with 'Identification of the type genus', so not only specimens as an outcome of taxonomic research are concerned. But 'identity' is a further big 'philosophical' word and I found a 'Principle of Identification' in an older bacteriological work. Concerning AD's modified 'extra-brief definition of taxonomy': 'the distinction/recognition/characterisation and classification of animal taxa', I prefer characterisation, because it focuses on the organism or nominal taxon with its defining features/concepts (in German: Kennzeichnung = Gegenstände & Unterscheidungsmerkmale), whereas recognition & distinction are biased with mostly mind related issues. However, all three terms can be found in the literature & are seemingly largely equivalent."

(3) A "cooperation scenario" with other nomenclatural systems dealing with other organisms

AD 18.09.16 is not of the opinion that "we should mention this in this text which is important for the Zoocode and will be considered as a central one by all people interested in our work. For the time being, this 'cooperation scenario' is completely imaginary and unlikely to be implemented in the short or medium term. The attempt by some to write a comprehensive Biocode has given appalling results, which were criticised in detail by EA and myself in 2011 in the volume 3 of Bionomina. I very strongly doubt that it would now be possible to unify all nomenclatural codes: it is too late for this, not only because of the resistances that each 'subcommunity' of taxonomists would not doubt show to preserve 'their' rules, but because this would require to rename millions of taxa, which would be a considerable waste of time and energy in the century of extinctions. ..."

EA 29.09.16 clarified that she: "prefer[s] cooperation over rivalry and seemingly represent a minority, but 'waste of time and energy' is not [her] vision."

(4) Conclusion: a new proposal for our text

AD 18.09.16 provided a rewording, which is included in *Dumerilia* 7.

EA 29.09.16 clarified: "...Since Article 1.4. reads as follows: 'Independence. Zoological nomenclature is independent of other systems of nomenclature in that the name of an animal taxon is not to be rejected merely because it is identical with the name of a taxon that is not animal' (C2) instead (C1) applies to it. The Preamble (page 2) tangles (C1) in my opinion..."

Session 9. GEN-04 The Principles of the Zoocode [2] The Principle of Nomenclatural Foundation

Original proposal

The original Proposal was identical to the final one to the final one (see *Dumerilia* 7).

Discussion

Almost no controversies concerned this proposal. Shortly before the closure of the discussion, PC 24.08.16 raised concern about possible misunderstandings: "...What do we mean as 'status'? for me the status of a nomen is something

that is too vague to be fully understood without a better definition : more complete explanations. ...

The example list cases of spelling, allocation and validity. While both spelling and allocation are fixed partly in the original publication (but sometimes need to be clarified: allocation of old name is often so vague that it usually needs to be further defined by the designation of lectotypes or neotypes), validity is not as it depends on other nomina available, on taxonomy etc. etc.

So I don't really agree that only a first reviser action can change the status of the nomen and that otherwise the status is fixed in the original publication once and for good."

AD 24.08.16 agreed "with PC's comment that the term 'status' alone, as it appears on several occasions in the 'Justification of this Principle', may be unclear. This is why, below, in the draft for this Principle itself, I had written 'nomenclatural status', a formula which is unambiguous and which should be used throughout this Proposal. To make this clear, we need indeed to propose definitions in our Glossary, and to precise that, in taxonomy, a nomen has a double status: a 'nomenclatural status' and a 'taxonomic status'. The nomenclatural status alone is discussed in the Principle of Nomenclatural Foundation. This status is fixed once and for all in the original publication, except in the case of ambiguity in the latter, which can be solved only through a First-Reviser action. This ambiguity may occur in all stages of the nomenclatural process except the first one—because a nomen is either available or unavailable in the original publication, and if it is unavailable it cannot be made available by a First-Reviser action (with one exception: the Commission alone has the power to render an unavailable nomen available): if made available later by the same or another author, it will be a different nomen, with its own author and date.

First-Reviser actions can concern the taxonomic allocation of nomina: e.g., subsequent lectotype or neotype designation, subsequent designation of type genus. These are purely nomenclatural acts which do not involve any taxonomic judgement. They can concern the validity when they fix the relative precedence between synchronous nomina or nomenclatural acts (so for more clarity, in the fifth line of the 'Justification of this Principle', the term 'priority' should be replaced by 'precedence'). And they can concern the correctness (i.e., the correct paronym, i.e., the correct original spelling, rank/or combination of the nomen; see TER-01 and GEN-02) when in the original publication different paronyms were used for a nomen without choice between them.

Now, to the question raised by PC concerning taxonomy, the fact that the status of a nomen may depend on the taxonomy adopted as valid by an author does not concern in the least the nomenclatural status of a nomen, but its taxonomic status. This problem is not concerned at all by the Principle of Nomenclatural Foundation which only concerns the nomenclatural status. "

On the same day PC 24.08.16 insisted that "'correctness' may need to be explained also in the glossary? And that it's still unclear to me what is precisely included in 'correctness'". The original publication only fixes the protonym of a nomen right? All other aponyms are determined by interaction between taxonomy and nomenclature rules. So First-Reviser actions only can change the protonym but many other actions determine the correct paronym? ..."

AD 24.08.16 explained the two different kinds of correctnesses and that "This will indeed have to be explained in the Glossary, but it does not affect the present Proposal."

Session 10. TER-02

Nominal-series

Original proposal

The original Proposal was identical to the final one (see *Dumerilia* 7).

Discussion

The topics of the term and the Principle of Nominal-series are closely interrelated, therefore statements are given in Session 11 (below).

Session 11. GEN-05

The Principles of the Zoocode

[3] The Principle of Nominal-series

Original proposal

The original Proposal was identical to the final one (see *Dumerilia* 7).

Discussion

Five LZC members (AB 10.08.16, OL 22.08.16, FD 23.08.16, IL 23.08.16, PC 23.08.16) offered comments on this Proposal during the first round of discussion. The 5 were in favour of this Proposal except for the mention of the variety-series in P2. In fact the mention of this nominal-series in this paragraph was not justified, as the question of whether the *Zoocode* should recognise a variety-series was not put to the discussion in this Proposal, as stated in its paragraph 4: “*Whether the latter nominal-series should be formally recognised in the Zoocode will be discussed at more length in subsequent LZC Sessions*”. It is therefore fully justified to remove the mention of the variety-series in P2, and the question of this nominal-series will be the matter of a separate Session.

PC 24.08.16 made some suggestion for editorial changes, e.g. “*a wider list of references...*” and commented “*Consistency is VERY important but it should be better defined. To me it means having similar yardstick, similar ‘criteria’ for allocating ranks to different parts of the tree in a given large group.*”

Concerning some doubts of correct understanding, AD 24.08.16 reminded that these topics “*have all been the matter of detailed treatments in several of my papers*” and suggested “*reading these papers will reply his questions more clearly than any ‘paraphrase’ or ‘abstract’ of these ideas.*” He further emphasised: “*... there exists no common yardstick allowing to allocate ranks to taxa all over zoology. This is shown at length in these papers and in other works cited there. The names of supraspecific ranks (class, order, family, genus) are and will remain arbitrary, but this does not impede them from being very useful to inform about the structure of a phylogenetic tree. This is a basic point to understand to discuss these questions.*”

To the question whether the formula “nominal-set” was indeed necessary, AD 18.09.16 replied: “*The need of this concept stems from the confusion of some colleagues between nominal-series and ‘sub’-nominal-series. This is particularly the case in the class-series, where some authors think there should be as many ‘name-groups’ as terms used to designate the key rank of these ‘subunits’: e.g., a ‘phylum-group’, a ‘class-group’, an ‘order-group’, and even more. However it would be fully inappropriate to separate all these ‘groups’ of nomina as they would then not be any more related by synonymy, homonymy and priority, and this would unnecessarily complicate considerably the nomenclature of higher taxa. I discussed this in several papers (e.g., Zoosystema, 2006, 28: 172–174; Zootaxa, 2006, 1337: 10–11). To be logical, the authors who supported the existence of several distinct nominal-series above superfamily, simply because they bear different key terms, should also distinguish a ‘family-group’ and a ‘tribe-group’, which would not be Code-compliant as both are part of the family-series. Furthermore, in the family- and class-series the number of ‘key terms’ is not limited by the Code. In the future, with the development of phylogenetic analyses, more and more taxonomies will use many more ranks than it has so far been the case and for these ranks unusual terms will have to be used (see e.g. Zoosystema, 2006, 28: 211–225). In order to distinguish these ‘groups of names’ that bear the same key term from genuine nominal-series, it will be more and more useful to have a distinct term, and this is the purpose of the term ‘nominal-set’.*”

Session 12. AVA-03

Availability of new species-series nomina: the need of at least one name-bearer specimen preserved in a public permanent curated collection and available for study

Original proposal

The text submitted to the vote of the LZC was that published on 25 March 2017 by AD in *Bionomina* (12: 4–48).

Discussion

The original Proposal required four rounds of discussion and covered a long period (15 September 2016 to 1st March 2017). In the meanwhile two new publications appeared (the Krell *et al.* paper in *Nature* and the Ceriáco *et al.* paper in *Zootaxa*). Discussing these two publications led AD 24.11.16 to include additional comments in a new version of the Proposal. The 5 arguments for basing nomina on virtual or missing specimens were already included in the original Proposal, while the 8 unfavourable arguments were enlarged by 3 further ones, viz. Nucleic acid sequences as evidence, The quality of taxonomic research and What do we want to study?

The main points addressed during the discussion are summarised below. They were centered on the topics (1) The place of deposition of specimens and accessibility of specimens to taxonomists; (2) The conservation issue and ethical considerations; and (3) virtual taxonomy, such as photographs as scientific evidence, and terminology.

(1) The place of deposition of specimens and accessibility of specimens to taxonomists

The conflict between optional vs. obligatory deposition of specimens in private vs. public collection and the problems of accessibility in general poses many difficulties, mirrored in the following comments:

FD 09.10.16 “*wanted to highlight the word ‘public’ chosen in the re-wording of the 16.4 title given by AD. I*

completely agree with this precision, as the Code only recommends the preservation and deposition in 'an institution that maintains a research collection, with proper facilities for preserving them and making them accessible for study'. Even if this description theoretically limits the problem of accessing and preserving onymophoronts, it is still only a recommendation in the Code. To reinforce the role and importance of onymophoronts, I think it is necessary to precise that only public institutions—such as museums or universities—can preserve and provide long-term access to such specimens for users/taxonomists. Therefore, I encourage the LZC to choose the word 'public' to be used in the Zoocode. As such, it would prevent problems of accessibility and curation of onymophoronts preserved in individual collections (which unfortunately exists in entomology despite the recommendation of the Code), or in private NGO's collection where the same problem exists."

On the contrary PC 25.11.16 warned to "be careful with the word 'public'. Many American museums or universities receive more funding from private foundations and donors than public money. How do you define public then?"

IL 10.10.16 remarked that "Unfortunately, repository in many public collections does not provide access to specimens. E.g., material from Indian, Chinese and Tunesian collections is not sent on loan upon request, and in some cases not made available for study on site." In his response, FD 11.10.16 further noted "Such situations are indeed very unfortunate and lacking in professionalism! However, I think that overall public institutions can provide better guarantee for preservation and access to specimens. Of course, not all specimens are able to be sent depending on their fragility but they should at least always be available for study on site."

AB 14.11.16 mentioned "... one special case... [Cretaceous fossils in amber]..., these fossils have a high monetary value ... As a consequence these are often obtained by wealthy collectors. If these people hoard them away, of course, we have no knowledge of them. However, there are many collectors who are willing to make their fossils available for description and study, but who are unwilling to donate them to institutions (or cannot find institutions to pay for them). In the cases I have been involved in, the owners have loaned the material indefinitely to an institution, although this is no guarantee that they will not request them back, or that they or others may not always make such arrangements. ... this is a category of specimens (perhaps like some dinosaur fossils) that poses challenges because of commercial value. This seems relevant to proposed article 16.4.3. Such amber fossils, although making up a tiny fraction of types designated, at least for vertebrates, often are disproportionately important in that they capture external features and even soft tissues in addition to skeletal features for organisms that may not preserve well, or at all, under normal conditions of fossilization. I do not know if the categories of exceptional cases 16.4.4 could be expanded to include such examples, or if others have other suggestions for dealing with vitally important material in private collections which, for reasons of their commercial value, cannot be obtained by public institutions."

On 24.11.16, AD concluded that AB "... raised a point that had not been properly considered in the original proposal..." and added "Other reasons may have the same effect (e.g., sentimental value attached to a specimen inherited from a beloved person). [AB] proposed to expand the categories of exceptional cases of our new proposed Article 16.4.4. This suggestion seems quite sensible to me, so I incorporated several sentences and two new Articles about this in the proposed text."

Regarding types in private collections, AB 28.12.16 agreed "that availability of the material should be paramount. Although private collections are never ideal, I am aware of at least one private herpetological collection that will loan material and which is pledged by its owner to go, in its entirety to a public institution upon his death, this is also a workable provisional solution. I think that some general solution is needed—I could see, for example, a case in which the owner may not accept the loan until death solution, because this could imply that actual ownership has been transferred to the public institution now—and they may be planning on a donation later for advantageous tax purposes. So, for types in private collections [and of course we need to clarify that this means individual or family ownership, not private in the sense of the AMNH, MCZ or other non-governmental institutions], descriptions should be accompanied by an explicit statement that access to the material will be made available to qualified researchers, either directly through the private institution/owner or through a stated partner public institution, in perpetuity. A related recommendation could be that private owners undertake a legally binding contract with a public institution to ensure that specimens are not lost to posterity upon their death or dissolution of the collection."

After "more than half a century experiences with curating entomological collections in museums or being associated to museums", IL 29.12.16 sees no simple solution and suggested further points to be considered:

"(a) many private collectors invest, in addition to their time, a lot of money into building collections, trips, optics, etc. At least some (my personal experience says: most) of them, or their families, would like to get back at east a comparatively minor recompense, usually symbolic;

(b) arrangements for this may be found but future developments (other curators or directors in museums) may bring collectors or their families to changed opinions (e.g., two major collections with many types published as intended to be deposited in the Geneva museum while I was active, will never come to the Geneva museum);

(c) how to force private collectors to loan material upon requests, with respect to the high postal charges? Can one 'force' museums to take such charges for many years over, even if an arrangements is signed?

(d) conditions realised in future remain me the expression 'intended' used in the ICZN; nobody can foresee if and when an 'intended' changes into a reality;

(e) some public museums do not assure accessibility of the type material;

(f) the idea that specimens collected on private trips, studied and published using private means, must become 'a loan' may not be easy to accept;

(g) even if an arrangement for the type repository exists, will the names of the respective taxa, possibly described also by other individuals than the owner of the collection and since many years used as available (and valid), become suddenly unavailable because of unforeseen changes in the fate of the collection?

As summary, I think we should strongly advice depository of primary types in public institutions but avoid any kind of 'forcing'."

This conclusion was strongly supported by ED 30.12.16: "...we cannot force all types into accessible collections unless we ask for governmental laws to be enacted uniformly worldwide that prohibit collections that are not by and for

institutional museums (and that will still only address the future not the past so another law would be needed to require types, or even all natural history specimens, held privately to be handed in to recognised institutions. I cannot see such laws being enacted even in the country with the most vociferous museum curators!”

AD 28.12.16 considered “a possible solution that would consist in modifying again the proposed rule in stating that, ‘exceptionally’, a holotype can be deposited PROVISIONALLY in a private collection, PROVIDED it is afforded a COLLECTION NUMBER in a public collection, and registered as being LOANED to the private collection, for a given duration (the maximum being ‘until the death’ of the original collector or descriptor)? This would mean that anyone asking for examination of the specimen could have access to it in the private collection (or back to the public collection for a short time), and, above all, that when the amateur who had collected and described the species dies, the loan ends and the specimen must be sent back to the public institution where it has been registered. This would avoid the possibility that the inheritors of the deceased amateur destroy the specimen or sell it without keeping trace of its fate, so that the whole international community would lose this trace.”

Concerning inadequate or lost specimens, neotypes may be designated. PC 25.11.16 noted that “... whether the type has never been collected or has been collected then left in a place that is not accessible makes absolutely no difference to us. And then again, if we need to clarify the allocation of a nomen when we realize that a given taxon is in fact composed of several taxa, then it can be easier to have a lost type than an inaccessible type because in one case you can solve the issue with a neotype when in the other case you’re stuck...”

ED 30.12.16 proposed “a clause in the Code which allows any museum to request permission (of the ICZN) to propose a neotype to stand in lieu of the retained and unavailable type specimen if it has not been placed in a museum within 10 years of the taxon being named. To be even halfway acceptable this would have to allow the original author(s) of the name to retain their status as authors’ of the name.

To facilitate this, one could include further steps that would make the selection (possibly even the collection) of a neotype easier. In to-day’s world this might mean requiring deposit of a duplicate specimen in a museum collection within the country of origin as a condition of registration in ZooBank if the type itself is withheld from deposit. In the more difficult case where the holotype has no paratypes the GPS location of the collecting locality could be required to be deposited with some kind of ombudsman for that 10 year period. I’m sure lots of you will have extra thoughts on this if creating duplicates that could become neotypes is an idea that can be made to work.” He further added: “... to consider its practical application i.e. from the view point of pragmatism. Most of us have been critical of the existing Code for the areas where it is unable to be fully implemented either because it is ambiguous or because there is no enforceable law behind it. We ought to be able to deal very substantially with the ambiguity but I do not see the Code having the force of law unless it finds words that allow the scientific community to act strongly where it seems likely that any challenge to its proposal that might be brought to court will not be upheld because the ‘common interest’ outweighs the interest of the individual.”

(2) The conservation issue and ethical considerations

Another tension in nomenclature is between under-collecting (99 % of the zoological biodiversity of the world) and over-collecting (1 %, mostly vertebrates), where the proponents of the latter dominate discussions on conservation and ethics. Since there exists a vast amount of literature, only few new aspects are included here:

ED 15.11.16 addressed that “we need both to renew collections (because specimens do not remain pristine—many birds quickly lose their soft part colours and a good many see the plumage colours change dramatically over just a few decades) and to have more collection points represented so that the boundaries of geographical ranges can be better drawn and in a few cases evidence can be found of intergradation rather than absence thereof. Another reason for renewed collection lies in the value of time series. So please do not see me as looking through the focussed eyes of a campaigning conservationist!...

At a minimum it should be acceptable to deposit just a part of an animal and that that part be acceptable as holotype (I do not consider a blood sample yielding molecular evidence to be acceptable as such a part; happily birds moult feathers and some that are seasonally completely flightless regrow them). So I recognise that defining what a ‘part’ as a minimum requirement should mean will be difficult to define.

However, I also feel that we should think about the reasonable concerns of conservationists about over-collecting; ideally the Code should require a population assessment before any new species is collected, followed by a limited quantity collection permit, and that until such an assessment is expanded beyond the original locality of collection the number of specimens collected should be restricted (otherwise many museums will feel that they must have a specimen). I recognise that birds are a special case because they are such high profile creatures thanks to television.”

IL 16.11.16 argued (not suggesting changes to the proposal) that “...would it be impossible to protect such a newly discovered species naming it (e.g.) *Zoothera* sp.20S [20 for the number of species recognized within the genus, S as initial of the future nomen of the species]? Possibly this would give an impression of a ‘higher science’ to both, conservationists and lovers. Another possibility to protect such species from detrimental collecting may be not publishing the exact locality data. In both cases remains unanswered the protection of the respective habitat.”

AD 24.11.16 emphasised that “...birds’ taxonomy ... should not be the metric by which all taxonomic and nomenclatural problems should be evaluated.”

Since “conservation-based concerns should not be under-estimated”, AL 24.11.16 suggested “some form of ‘precautionary principle’ should then prevail, if convincing arguments are provided. Such arguments could be qualitative, or could relate to hitherto ‘unsuccessful’ surveys of the region where the new taxon was eventually found. If the number and extent of such previous surveys (with or without an a priori expectation of finding something new) suggest that the limited population explains that it took time to find the new taxon, then it should be considered precautionarily threatened. Future surveys would then allow to confirm or not this statement, and even possibly allow for a specimen to be collected. In between, the naming of the new taxon would be indispensable for it to be taken into

account by wildlife protection organisms, governments etc. ...

By the way, the possibility always exists to collect a dead specimen (more or less freshly) not necessarily killed on purpose by collectors (bird killed on road, by window or windmill, etc.). Miniaturization of GPS devices might also be an option, tracking an individual (that could in between reproduce) until death (with the possibility that it is not just eaten by a predator, in some cases), allowing for rapid location and collection in the field. This would be of course for high levels of rarity or level of threat.

At least the idea of precautionary principle over the task of hard evidence of rarity should be mentioned and supported in a next version of the text.” ED 24.11.16 supporting this point argued “...for a deliberate pause before collecting and for an exceptional escape from collecting.”

On 16.02.17 AL further stated “...there is no hard evidence that it is harmless to kill even a single specimen if the species appears to be exceedingly rare at the time of discovery. Note that for instance the reason why some species is discovered nowadays in a group like birds, is likely to be (in some cases) that the number of its individuals is indeed exceedingly low. A precautionary principle in such cases is highly desirable ...”, but his comment “...is not intended to substitute responsibility of deforestation, pollution, habitat destruction, hunting, traffic etc. in current extinctions by the possible impact of collecting. Nevertheless, if collecting has in some cases a negative impact, even minimal, it must be taken into account. Globally it is probably negligible, but if it seems significant for one given species, case by case, it must be taken into account in terms of precaution for that species. In other words, there must be exceptional possibility to avoid collecting a complete specimen, but not as a rule. In such cases, (for a bird for instance) there could be: photographs, videos, sound recordings, DNA samples, tissue samples (including feathers, etc.); in addition a radio tagging can be installed on the live bird, allowing perhaps possibility to relocate it when dead.”

AD 28.12.16 reminded that “...the procedure suggested already contains a way to face the particular problems raised and the idea of a ‘principle of precaution’, as this suggested procedure allows to validate a description made without specimens whenever good, RATIONAL and DOCUMENTED reasons are given for it—these reasons furthermore not being limited to ‘conservation’ questions (e.g., some specimens of very small or very large size, or having some peculiarities, are very difficult to fix and conserve in collections).”

PC 25.11.16 worried about the consequences of a lack of type specimen in a collection and did not “see them as badly as most members of the group. Either the nomen allocation is made unequivocal by the information provided in the text (the link between the name-bearing type and the recognized taxa is unambiguous) and there is no need for returning to the specimen, or the name allocation needs refining, and we designate a neotype. Note that because the original type is lost by definition, designating a neotype is very easy! On the contrary, many existing types in collection are a pain because they do not allow unambiguous allocation of the name they carry (for lack of diagnostic character, lack of genetic data, imprecise locality...) but yet they are still extant, making designation of a neotype impossible without applying to the commission.

So, while having a type in a collection has many advantages, having a type which is lost when the nomen is published can have advantages.

Note also that in the vast majority of cases, the type deposited in collection is not ‘seen’ very often... in other words, having a type in collection or not has little consequence for the allocation or validity of the nomen ... in the sense that most authorities that use the nomen as valid for a valid taxon do not go back to the type.” He stressed that his “opinion is quite far for the opinion of the group (which is always quite an uncomfortable position) ... naming a new taxon is often the first step necessary to obtain funding and workforce to study the said new taxon. We have to accept that we will sometimes have to name without knowing much of the conservation status of the newly discovered taxa and that sometimes conservation is indeed a valid concern justifying not collecting even a single specimen...”. Consequently, he is “not really in favor of a change in the current rules of the Code regarding collection of type specimen.”

(3) Virtual taxonomy and terminology

IL 12.11.16 suggested that the proposal “... could also mention that Marshall & Evenhuis (2015) also considered the ‘rapidly increasing numbers of skilled digital collectors ...’ as justifying their description. It looks like this would rather be one of the main reasons to refuse such descriptions.” AD 24.11.16 agreed and “added this sentence to the text of this Proposal”.

While stating that nomina of taxa missing holotypes may have acceptable concepts or can be placed as nomina dubia, IL 16.11.16 saw “[t]he point ... elsewhere: problematic is to open a door to all kinds of people liking photos and wishing to get a name under them, in absence of adequate knowledge and combined with the impossibility to verify their work. It would be naïve to think that peer-reviewing may stop or reduce such activity. Private publishers are also to be considered: we know persons publishing in taxonomy being authors, reviewers, editors and publishers of one and the same paper.

It is noteworthy that the community of taxonomists has not reacted when recent descriptions of new species without vouchers were limited to large and obviously very rare animals (in fact, only a few, as [AD] saw problems years ago). What is now happening is a wide publicity for, and invitation to, produce virtual taxonomy. It’s not only a return to practise abandoned ages ago. We can already now predict that universities that at present only tolerate taxonomy will consider activity based on iconophilism for a game, unworthy consideration.” He further remarked that “[an]other matter is to suggest that images may replace specimens. Natural history museums are by now evaluated in function of numbers of visitors of exhibitions, and many of them reduce their scientific stuff. As keeping collections is expensive the idea of replacement has its sex appeal for decision holders.”

Detailed comments of ED 15.11.16 embraced that he “...would like all names to be based on specimens and that all such specimens would be deposited in publicly accessible collections. AB has aired one reason why this will be difficult to achieve and I do not see how it could be enforced. We are thus faced with only achieving a qualified success.

We need to remember that there are already many type specimens (including holotypes) that will not be available

for at least two reasons:

(a) *We have destroyed them ... for example in bombing during World War II (e.g. in Japan and in Germany); or the taxon was named, way back in time, when no specimen was taken or what was taken was not successfully preserved. Will our Code upset names that never had a type specimen? Will we go further and outlaw names that now have no type? Surely we must not do either of these things: we have the history we have and we should not impose change if only because it upsets stability too much.*

(b) *The names are based on images in published pictures (most in colour, but some in black and white) where no specimen is considered to have survived—or perhaps even to have existed—and so the present Code argues that the type is to be considered as the specimen depicted. Does what we are writing imply that all such paintings should now be brought into the collections of (natural history) museums. If so this is another unenforceable provision and will be unobtainable. Furthermore such paintings if exposed to too much light will lose relevance and so curators will seek to place them in better adapted storage meaning they will not be on the walls and the educational value of them will be restricted.*

So I think we need to be careful to avoid being too absolutist.”

AD 24.11.16 opposed to “... his points (a) and (b) [as] irrelevant regarding the latter, as they would imply that we are proposing retroactivity of the new Rules, which is not at all the case: the new Rules are proposed only for after a [date to be fixed later on], so nothing is changed in the Rules concerning the nomina published before that date. Furthermore, note that, in the cases mentioned by ED, the Code already provides a possible solution in Article 75 about neotypes ... [and] ... “ a careful reading of our original proposal does not support at all the statement that we would be ‘too absolutist’.”

PC 25.11.16 considered “photos, DNA and specimens to carry different characters”. He wrote his “...not totally comfortable with the idea that a dead specimen in a collection necessarily carries more useful information for nomina allocation than a series of photos or DNA samples.

In quite a few examples that come to my mind, the allocation of the nomen will be based on characters that are not visible on the type specimen (cryptic avian or amphibian species separated by acoustics, Agamid or Lacertid best identified by colour pattern, not to mention the many cases where the only reliable identification is via genetic methods). In these cases, one could even argue that a nomen should NOT be made available by the mere deposition of a type in collection. In other words, what should be necessary for a nomen to be available is not a type in a collection, it is the characters of the type that allow subsequent allocation of the nomen. If the characters are acoustics we need sonograms or sound recording of the type, if the characters or coloration we need photo of the type, if the characters are genetic we must have sequence or DNA samples of the type. Having the type in collection does not alone ensure correct allocation of the nomen... Of course the characters that allow allocation can change (and often change) as the taxonomy changes, but that does not modify this argument.”

Regarding terminology, PC 25.11.16 shared “the need to remove the term ‘extant’ and to replace it with ‘preserved’ but note that ‘available for study’ will generate endless arguments every time a specimen is preserved but is stored in a place where accessibility is difficult. Beside, ‘available for study’ can only be evaluated long after the nomen has been published. What will happen if, after a while, Art 16.4.3 is not fulfilled anymore? What if the ‘public permanent curated collection(s), where it/they are permanently available for study’ shuts down and the specimens become unavailable? One can argue that the institution chosen to deposit the name-bearer specimen(s) did not fulfill the conditions of Art 16.4.3.

However, I’m 100% in favor of removing the ‘intent or intention’ possibility. My favored wording for Art 16.4.3 would thus be ‘by its/their actual deposition in (a) collection(s), with a statement indicating the name(s) and location(s) of this/these collection(s).’” However he did “not support the change from ‘fixation’ to ‘election’, but [he] fully supports the new definitions for ‘Designation’ and ‘Election’ (provided election and elected remain as fixation and fixed)” and suggested “to remove from the articles the reference to ‘permanent’ and move these to recommendations.”

Generally PC 25.11.16 thinks “We should facilitate species description [since] ... we are facing a race against extinction. Species are disappearing faster than we are describing them. In this context, [he has] a feeling that adding rules that would complicate (instead of making it easier) to describe a new species can be counterproductive. So adding the need to go to an international official body to be allowed to describe a species without depositing a type in collection will only make species description more complicated when collecting a type is logistically (you’re describing a whale) or ethically (conservation issues) difficult. ... [he] also can see quite a few issues arising if the practice of describing without type collection and deposition spreads so [he] also believes both the code (through recommendations) and our practice should make it clear that a type should be deposited in a scientific institution that looks suitable for ensuring long term conservation and accessibility of the type. But [he is] not personally in favor of changing the code on that matter. [He], however, thinks a new version of the Code should use a less ambiguous wording in that matter.”

Session 13. Proposal AVA-04 Problems with the 2012 Amendment of the Code

Original proposal

The original Proposal was identical to the final one (see *Dumerilia* 7).

Discussion

After trying to clarify the different sorts of Portal Document Formats (PDFs) AD 25.11.16 concluded that “[w]e just should leave the vague formula of the amendment (‘fixed content and layout’), without mentioning any precise format, even PDF/A. These questions are apparently beyond our capacity of action. ... All these considerations once again throw strong doubts on the appropriateness of accepting e-publications for nomenclatural acts, whatever ‘binding Rules’ we can conceive for them. This question seems to have no solution other than coming back to paper publication first, and then spreading of e-copies of this work online. But it is not difficult to foresee that an overwhelming majority of the community will not follow us.”

FT 6.12.16 further stressed “2012 Amendment is ill-formed. To check availability, taxonomists have to control external resources... a time-consuming task, one more time !!!”

Session 14. Proposal AVA-05 Diagnoses in zoological nomenclature

Original proposal

The original Proposal was identical to the final one (see *Dumerilia* 7). The basis for this Proposal is an expanded text published on 25 March 2017 by A. Dubois in *Bionomina* (12: 64–68).

Discussion

EA 21.2.17 raised two concerns, whether ‘character state’ is a superfluous concept and if an expansion of its definition would be adequate. She wrote “the concept of ‘character states’ is increasingly used since Hennig as unit of an evolutionary perspective and usually refers to transformation stages in cladistics. It may therefore be misleading in a nomenclatural context, so I would be interested in your opinion on the following passage:

Mahner and Bunge (1997, Foundations of biophilosophy) state ‘...only things can be in certain states, not properties. Indeed, the concept of state of a thing is defined by means of the concept of property. That is, being in a certain state amounts to having certain individual property at a given moment. Thus, what can be in a certain state is the eye as a concrete subsystem of a given organism; and the state of this eye comprises of course a certain pigmentation and thus color. Therefore, the expression ‘character state’ is misleading.

Moreover, it is superfluous because it does not coincide with the distinction between generic and individual properties, although it is at first sight similar to it. ... Since systematists are interested only in generic properties, not individual ones—they are not concerned with what makes an individual an individual but with what makes an individual a member of a class of equivalent individuals, i.e., a taxon—there is no need for the notion of a character state. The systematist has use only for (organismal) characters simpliciter, which are represented as predicates referring to generic properties of organisms.’

If the majority argues for the inclusion of character state EA would prefer the definition on <https://www.oxforddictionaries.com/definition/.../character-state>:

The particular form or value that is manifested by a variable character in a specific individual or taxon.

IL 21.2.17 also “would rather drop the ‘character state’ in this context. I think in practice, the distinction between characters and their states may become a source of confusions.”

AD 22.2.17 explained his view in more detail: “I probably miss the appropriate philosophical background, but I have difficulties understanding the relevance of Mahner & Bunge’s citation to our problem. I think they do not distinguish between the material features of organisms and our analysis of these features under the ‘conventions’ of ‘characters’. Sure, an organism has organs, tissues, structures, or more generally ‘parts’, such as ‘eyes’. But the way we analyse them is an interpretation of these concrete parts, not a ‘fact’. Thus, in our ‘reading’ of an organism, we can decide that we see an ‘eye’ as a separate entity—but we might also only see the components of this ‘organ’, such as the iris, the pupilla, the cornea, etc., or in the reverse way we can refuse to see the eye as a particular structure and just consider it as belonging to the brain (which it is, functionally). This way of dividing or ‘slicing’ the organism is largely arbitrary, and depends on our needs as taxonomists. We need to read an organism as a set of discrete entities that can be compared one by one in order to perform a phenetic or cladistic analysis. These are the ‘characters’. Characters do not exist in the real world, they are mental constructions made by taxonomists to render possible comparisons between organisms and build trees and classifications. Then, in this (largely arbitrary) process of slicing, we recognise significant units, like the eye, and significant properties of these units, like colour of the iris or shape of the pupil. This to me is a character. And then this character can occur under different forms, ‘iris blue’ or ‘iris red’, or ‘pupil round’ or ‘pupil oval’. Maybe ‘character state’ is not the proper word to designate this, but we need a different term—just remind the analogy with ‘gene’ and ‘allele’. I do not think that using the same term ‘character’ for both concepts (like ‘gene’ for both ‘gene’/‘locus’ and ‘allele’) avoids confusions, I think it increases confusion. Stating that two animals differ by the colour of their eyes is uninformative from a practical point of view. Stating that one has a blue eye and the other one a red eye is informative. Now, I do not have enough philosophical background to use the proper philosophical terms for these concepts, but I think they should be distinguished. I think that the problem is that we do not have a couple of distinct terms like gene-allele, because Ashlock’s distinction character-signifer was not adopted, and to the best of my knowledge, no other such couple was proposed. But the two concepts are different. They also

correspond to lines and columns in a matrix of characters, and they cannot be merged under a single common term.”

EA 28.3.17 responded that she “*will abstain from voting given the confusion already in the literature (including the further codes) on ‘character states’, attributes and related terms. ...*”

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