Editorial. Walking on the bridge

Milen Marinov

Open Access

Abstract. For quite some time, the members of the Flemish Entomological Society have asked for more precise information about the nomenclature in entomology. For many members, nomenclature is associated with Latin, studied in school or something in parentheses behind the species' names. The editor-in-chief invited an active Linz committee member and subject editor of *Zootaxa* on Odonata, as well as my colleague on biosecurity issues in Australia and New Zealand, Milen Marinov, to write his views and vision about some terms we use very often in entomology and nomenclature without thinking about their semantic meaning.

Samenvatting. Al geruime tijd vroegen de leden van de Vlaamse Entomologische Vereniging om meer precieze informatie over de nomenclatuur in de entomologie. Voor veel leden was nomenclatuur iets dat verband hield met Latijn, dat ze op de middelbare school hadden geleerd of dat tussen haakjes achter de soortnamen stond. De hoofdredacteur nodigde een actief lid van het Linz-comité en vakredacteur van Zootaxa over Odonata, evenals mijn collega op het gebied van bioveiligheid in Australië en Nieuw-Zeeland, Milen Marinov, uit om zijn mening en visie te geven over enkele termen die we in de entomologie en nomenclatuur vaak gebruiken zonder na te denken over hun semantische betekenis.

Résumé. Depuis un certain temps, les membres de la Société flamande d'entomologie demandaient des informations plus précises sur la nomenclature en entomologie. Pour beaucoup d'entre eux, la nomenclature était associée au latin, étudié à l'école secondaire, ou aux parenthèses derrière les noms d'espèces. Le rédacteur en chef a invité Milen Marinov, membre actif du Comité de Linz, rédacteur en chef adjoint de Zootaxa sur les odonates et mon collègue sur les questions de biosécurité en Australie et en Nouvelle-Zélande, à rédiger son point de vue et sa vision sur certains termes que nous utilisons très souvent en entomologie et en nomenclature sans réfléchir à leur signification sémantique.

Key words: Editorial — Taxa descriptions — Terminology — Scientific hypotheses.

Marinov M.: National Museum of Natural History, Bulgarian Academy of Sciences, Sofia, Bulgaria. mg_marinov@yahoo.com

DOI: https://doi.org/10.6084/m9.figshare.31149079

Intellectual shift

I recall a time when, as a boy, I missed a class in mathematics due to illness (some flu, I suppose), during which the teacher introduced conventions like "*x*" and "*y*". My father (an accountant) showed me how to write and use them. I looked at him with disbelief – in my kid's mind, he was not the *authority* to teach me mathematics. My teacher was!

Incredible what an "intellectual" shift a 57-year-old man can witness. Just 20–30 years ago, we believed in human brains, sought the truth through discussions, digested published information, came up with some sort of reasoning, and respected people dedicating their time to our education. Now we often replace the authority of the teacher with the data flow in a digital world analysed by an algorithm, similar to a patient put on an infusion system where the drips are coming in at a fast rate: drop_*Instagram,* drop_*Facebook*, drop_*TikTok*, drop-drop-drop …

As a section editor (order Odonata, *dragonflies* and *damselflies*) for *Zootaxa* I receive close to 40 submissions per year. I see this as a great opportunity to engage in communication with live people and see the arguments over terminology usage, hypothesis conceptualisation, discussions regarding interpretations of the rules of the *International Code of Zoological Nomenclature*, *etc*. Opportunities are there, but how many submitters use them? To my disappointment, I often receive *"this term is in wide use, and I prefer it"*, *"no need to explain more, because it is common sense"*, *"this is what I have been doing for so many years!"* Are these valid arguments? What is an *argument,* and when is it *valid* anyway?

According to philosophers, an *argument* is the *basic unit of reasoning* or, as Fosl & Baggini (2020) call it, "an atom of reasoning". Hence, no argument – no reasoning – no thinking. In a valid argument, the conclusion follows from the premises by necessity. The validity is determined by the structure, not by the content. Wrong information in the premises can still lead to a *valid argument*, but to an incorrect conclusion. A combination of a *valid argument* plus true premises is termed as a *sound argument*. Think how often we may nod with a serious expression on our faces and exclaim *"this is a very good question"* or *"what a valid point"*, but in fact we conceal our confusion and reluctance to say *"I do not know"*.

Scientific hypotheses

Moving away from logic and going to science, so think of how we define *validity* in taxonomy. How many times have we read about *"valid/good species"*, *"valid/good taxon"*, *"named species"* and many other phrases that are meaningless? What is the alternative of *"good"* and

"valid"? Certainly *"bad"* and *"invalid"*. How can a *species* be a *"bad"* one, and who *"validates"* them? Are there any sets of standards for natural science, some kind of "*valid ways"* of doing science? Do we have a regulatory body assessing the scientific hypotheses and voting in favour of some?

Hypotheses indeed. Consider that when we speak of taxa, including species, we are referring to explanatory hypotheses (Fitzhugh 2025). Our hypotheses in taxonomy offer at least an initial *causal* understanding of the properties of organisms. "*Why do we observe character A among these organisms instead of B*?" Answering such why-questions leads to inferring hypotheses from past causal events. We do not know for certain what happened since past causal events no longer exist. All we have available to us are remnants of the past. The hypotheses we infer in systematics and evolutionary biology are *causal relationships*. Species, as well as other taxa, are not concrete things or individuals that exist 'out there'; they cannot be 'delimited.'

Delimitation vs definition of taxa

Delimitation would require defining boundaries and limits, like a property line marking instances when we may apply specific terms. However, definitions are formulae that denote intensions (characteristics or properties) which will determine the extension (actual members) of the class to which they apply (Keller *et al*. 2003). By the time we attempt what is often called *"species delimitation"* and finish whatever we come up with, the definition will have already become redundant. Every newborn organism adds to the diversity of life forms and will change the set of characteristics that we proposed in the ill-defined (or not defined) notion of *"delimitation"*.

Hypotheses are explanatory accounts; they are not concrete entities characterised by a specific set of characters. Think of the abstractions that we accept without giving them much thought: *one* (abstraction of quantity in mathematics), *city* and *nation* (abstractions in sociology), etc. Are these objects that one can discover, describe, and illustrate? No, they are not. Neither are species nor other taxa.

How can someone *"validate"* the abstraction anyway? Obviously, this is not possible in science where we do not have a governing body. Such a system is created in nomenclature where the power is in the hands of the *Commission of Zoological Nomenclature*. These people, selected by votes from around the world, do not work with abstractions. They administrate a set of rules for creating and assigning a formal scientific name to a hypothesis via ostension using name-bearers termed *onomatophores* (Simpson 1940). The rules guide the arguments of the *Commission* to vote on various disputes, including on the validity of scientific names (strings of letters written down, published in papers, used for communication in our science) according to established nomenclatural rules (Dubois 2011).

Working in the field of science is a very special walk that I see as crossing an obstacle on a bridge with two eyebars. One (nomenclature) is more or less fixed (by the rules of the *Code*) on both ends, while the other (science) is loose (no rules other than logic, didactic, philosophy) and can trip you over at any moment. The move is slow, the steps short with a pause in between the strides. To adjust the wobbly bar, I often have to bring it closer to the steadier one and may need to step with my two feet on both at the same time. However, the walk is by carefully deciding whether, with the terminology usage, I step on nomenclature or rely on science. To cross over the bridge to the other side may stop my movement or get me to the bottom of the obstacle that I am trying to overcome – departing from subjectivism by erecting hypotheses based on argumentation that is *valid* and/or *sound* to the greatest extent possible in this science.

References

Dubois A. 2011. The International Code of Zoological Nomenclature must be drastically improved before it is too late. — *Bionomina* **2:** 1–104.

Fitzhugh K. 2025. Systematics: Inferences of the biological past. — *In*: Tucker A. & Černín D. *The Bloomsbury Handbook of the philosophy of the historical sciences and big history*. — Bloomsbury Publishing, pp. 409–432.

Fosl P. & Baggini J. 2020. *The philosopher's toolkit: a compendium of philosophical concepts and methods*. — Blackwell Publishing Ltd, 352 pp.

Keller R., Boyd R. & Wheeler Q. 2003. The illogical basis of phylogenetic nomenclature. — *The Botanical Review* **69**(1), 93–110.

Simpson G. 1940. Types in modern taxonomy. — *American Journal of Science* **238**: 413–431.

Received: 07 October 2025
Accepted: 21 November 2025
Advanced online publication: 27 January 2026