

qualify as a name of a holomorph, **either not only must its type specimen, or its epitype specimen under Art. 59.7, must be teleomorphic; but also and the protologue must include a description or diagnosis of this morph (or be so phrased that the possibility of reference to the teleomorph cannot be excluded); or, if with an anamorphic type, it must be teleotypified** (see also Art. 59.7).”

The following proposals are suggested changes to increase clarity and improve understanding of the function of Art. 59.

**(302) Add the following new Note ahead of Art. 59.1:**

“Note 1. Previous editions of the *Code* allowed for the separate naming of anamorphs from teleomorphs in “ascomycetous and basidiomycetous fungi (including *Ustilaginales*)” and referred to such names typified by anamorphs as either ‘form taxa’ or ‘morphotaxa’. These provisions facilitated the description of fungi discovered as one morph or another in space or time in the absence of available methodologies and technology to reliably link the varying morphs. The *Code* no longer allows this for newly named fungi and all fungal names are now regarded as names of biological taxa.”

The following is a reworking of Art. 59.1 intended to introduce new terminology, to use standard phylum names, and to eliminate the recognition of parthenogenic ‘carpophores’ as anamorphs.

**(303) Replace 59.1 with:**

“59.1. In non lichen-forming *Ascomycota* and *Basidiomycota* with one or more mitotic asexual morphs (anamorphs) as well as a meiotic sexual morph (teleomorph), named prior to 1 January 2013, the correct name covering the holomorph (i.e. the species in all its morphs) is the earliest legitimate name typified, or teleotypified under Art. 59.7 (as restricted by Art. 59.4), by an element representing the

teleomorph, i.e. a morph characterized by the production of asci/ascospores, basidia/basidiospores, including anatomically recognizable parthenogenic asci or basidia, teliospores, other basidium-bearing organs, or specialized cells differentiated from the vegetative thallus and in which meiosis would normally occur (see Art. 59.8 when anatomical interpretation is ambiguous).”

The following proposal is made for the sake of applying the *Code* with regard to Art. 59 to empower a Committee with the ability to make a decision when ambiguity occurs. It would help eliminate endless arguments and counter arguments based upon differing opinions.

**(304) Add the following new paragraph in Art. 59:**

“59.8. In the case of doubt as to the interpretation of a type as a teleomorph or an anamorph, a formal proposal may be made to declare the type to be conserved as one or the other for nomenclatural purposes.”

**(305) Add the following new paragraph in Art. 14:**

“14.9bis. The type of a name covered by Art. 59.1, may be conserved as either anamorphic or teleomorphic for nomenclatural purposes. Once conserved as such, errors in biological interpretation noted later would not affect the nomenclatural application.”

The following proposal is made because it has been argued that anamorphic fungi not known to have pleomorphic life cycles are not covered by Art. 59.

**(306) Replace the title of Chapter VI with the following (new text in bold):**

“**NAMES OF ANAMORPHIC FUNGI OR FUNGI WITH A PLEOMORPHIC LIFE CYCLE**”.

## (307–313) Proposals to modify Article 59 in order to harmonize it with present practice

Walter Gams,<sup>1</sup> Walter Jaklitsch<sup>2</sup> & Roland Kirschner<sup>3</sup>

<sup>1</sup> Formerly Centraalbureau voor Schimmelcultures, Utrecht, Netherlands

<sup>2</sup> Faculty Centre of Biodiversity, University of Vienna, Rennweg 14, 1030 Vienna, Austria

<sup>3</sup> Department of Life Sciences, National Central University, No. 300, Jhongda Rd., Jhongli City, Taoyuan County 32001, Taiwan (R.O.C.)

Author for correspondence: *Walter Gams, walter.gams@online.nl*

Article 59 is now said to deal with pleomorphic fungi, but it equally affects the nomenclature of all anamorphic fungi (see Prop. 306 by Redhead in *Taxon* 59: 1929. 2010b – this issue). Mycologists generally agree that the article conflicts with Principle IV of the *Code*, but the dual nomenclature recognized for anamorph-typified or teleomorph-typified taxa has advantages, at least to morphologically working mycologists, which have prevented any attempt to abolish the Article so far. We persist in not accepting names introduced for teleomorphic taxa and those for associated anamorphs (morphonyms) as each other’s synonyms. Redhead (l.c. 2010b) presents several proposals which may clarify the situation. In one of his scenarios (Redhead in *Taxon* 59: 1863–1866. 2010a and Prop. 297. 2010b – this issue), alternative names for different morphs of a fungus are declared synonyms, one of which will be illegitimate when introduced after

a certain date, or both of them when published simultaneously. We object to this synonymy and wish to keep the application of generic names as far as possible in line with their teleomorphic or anamorphic type.

Rather than suppressing one of the two names applied to morphs of a fungus, we try to avoid usage of validly published though redundant dual names by attributing more weight to anamorph names so that they can be used in preference to teleomorph names when desired, without excluding the teleomorph element of the fungus from that name.

In view of the great progress in the taxonomy of anamorphic fungi it is no longer justified to regard their names as something preliminary and apostrophize them as form-taxa. The postulated precedence of teleomorph-typified names over anamorph-typified

ones still serves the academic demonstration of the systematic position of a fungus, but such teleomorph names need not be used universally, while the corresponding anamorph names are quite generally known and accepted. We propose here some modifications of the Article to raise the status of anamorph names and to clarify the situation of teleomorph-typified and anamorph-typified genera. Nevertheless, the usage of teleomorph-typified genera should, as far as possible, be reserved to teleomorph-typified species and vice versa for anamorphs.

A provision for teleotypification that avoids introducing new names for newly discovered teleomorphs of anamorphic fungi was added as Art. 59.7 in the Vienna Code and the term teleotypification has now come into use and its formal recognition in the Code is proposed by Redhead (Proposal 294, l.c. 2010b). The mechanism of teleotypification was not unanimously accepted by many mycologists and complications inherent to teleotypification were shown by Gams & al. (in Taxon 59: 1197–1200. 2010). Proposal 172 by Gams & al. (in Taxon 59: 1297. 2010) would even revert to the pre-Vienna situation but found little support at IMC9 in Edinburgh in August 2010.

**(307) In Art. 59.3 delete “that of a form taxon and is”.**

**(308) In Art. 59.4 insert “normally (exceptions in Art. 59.5)” before “take precedence”.**

**(309) In Art. 59.5 add the words in bold and remove those struck-out:**

“59.5. The provisions of this article shall not be construed as preventing the publication and use of binary names for **anamorph form-taxa** when it is thought necessary or desirable to refer to anamorphs alone. **The provisions of Art. 59.4 also do not preclude the preferential use of well-established anamorph names for holomorphs if desired.**”

**(310) Add two new examples following Art. 59.5:**

“*Ex. 5bis. Cryptococcus neoformans*, the conserved type of the generic name *Cryptococcus*, is much more firmly established in the medical world than the teleomorph in *Filobasidiella*, and the yeast form is the only expression of this fungus that is normally seen.”

“*Ex. 5ter. The Neosartorya teleomorph of Aspergillus fumigatus* was only obtained after mating compatible isolates under special

conditions. Therefore the well-established anamorph name can be used for the entire fungus; the *Neosartorya* name, though validly introduced, has only academic interest.”

**(311) Add at the end of Art. 59.7 two sentences and two examples:**

“This provision does not support the transfer of anamorph-typified species names to teleomorph genera in the absence of teleomorphic material, merely for the sake of phylogenetic affinities. A newly discovered anamorph species may be accommodated in a related teleomorph genus only if no suitable anamorph genus is available for it.”

“*Ex. 8bis. The combination Calonectria citri* (H.S. Fawc. & Klotz) L. Lombard & al. (2010) from *Cylindrocladium* into a teleomorph-typified genus, being based on anamorphic material, conflicts with the current Art. 59 and also precludes the legitimate introduction of the same binomial once the appropriate teleomorph is discovered (other than by teleotypification).”

“*Ex. 9. Damm & al. (2008) placed a new phialophora-like anamorph in the phylogenetically related holomorph genus Jattaea* (as *J. mookgooponga*), although there was no trace of a teleomorph on the available material; this is acceptable because no genus had hitherto been described for this little-differentiated anamorph nor was there one linked to *Jattaea*.”

**(312) At the end of Recommendation 59A.1 add:**

“Whenever possible, species with teleomorphic typification should be accommodated in teleomorph-typified genera, those with only anamorphic typification in anamorph-typified genera. An anamorph should only be named separately from the associated teleomorph in cases where finding the anamorph and its identification is much more likely than that of the teleomorph.”

**(313) Add a new Recommendation 59A.4:**

“59A.4. When describing a newly found teleomorph of a previously named anamorph taxon, preference should be given to its classification in the appropriate teleomorph genus if this is available.”

#### **Acknowledgement**

John McNeill and Scott Redhead have substantially contributed to improving these proposals.

## **(314–337) Twenty-four proposals to amend the *International Code of Botanical Nomenclature***

**Kanchi N. Gandhi<sup>1</sup> & James L. Reveal<sup>2</sup>**

<sup>1</sup> Harvard University Herbaria, 22 Divinity Ave, Harvard University, Cambridge, MA 02138.

<sup>2</sup> L.H. Bailey Hortorium, Department of Plant Biology, 412 Mann Library Building, Cornell University, Ithaca, NY 14853–4301.  
U.S.A. jlr326@cornell.edu

Author for correspondence: Kanchi N. Gandhi, gandhi@oeb.harvard.edu

**(314) Add an item to Preamble:**

“7bis. Names that have been conserved or rejected, oppressed publications, and a glossary of terms used and defined in the Code are given in Appendices I–VII.”

**(315) Add a new example following Art. 7.4:**

“*Ex. 3bis. Coulter* (Dec 1892) published *Sullivantia hapemanii*, noting that he was correcting the generic assignment of *Heuchera hapemanii* J. M. Coult. & Fisher (Nov 1892). As *S. hapemanii* was