

# Unravelling Complexity: Typification's Blueprint for Simplified Classification

**Shailendra Kumar Mishra<sup>1\*</sup>, Mukesh Kumar Mishra<sup>2</sup>,  
Brajrajsharan Tiwari<sup>3</sup>, Ankit Kumar Mishra<sup>4</sup> and Aditya Kumar Sharma<sup>5</sup>**

<sup>1, 2, 3, 4</sup>Department of Entomology, Banda University of Agriculture & Technology, Banda (U.P.)

<sup>5</sup>Department of Entomology, Acharya Narendra Dev University of Agriculture & Technology, Ayodhya (U.P.)

## Corresponding Author

Shailendra Kumar Mishra

Email: mishrashailendra652@gmail.com



**OPEN ACCESS**

## Keywords

Classification, Systematic, Categorization, Typification

## How to cite this article:

Mishra, S. K., Mishra, M. K., Tiwari, B., Mishra, A. K. and Sharma, A. K. 2024. Unravelling Complexity: Typification's Blueprint for Simplified Classification. *Vigyan Varta* 5(4): 284-287.

## ABSTRACT

The principle of typification is a systematic approach in classification, wherein representative examples, or types, are designated to embody a particular category. This method establishes a standard reference for identification and comparison, enhancing clarity and consistency in scientific, linguistic, or cultural contexts. Typification facilitates effective communication by providing a tangible benchmark, ensuring a shared understanding of diverse entities within a given classification system. This abstract encapsulates the essence of typification as a foundational principle fostering precision and uniformity in categorization.

## INTRODUCTION

In biological nomenclature, the Principle of Typification is one of the guiding principles. The International Code of Zoological Nomenclature provides that any named taxon in the family group, genus group, or species group have a name-bearing type which allows the name of a taxon to be objectively applied.

The designation of a nomenclatural type is called "typification". It is the means by which names are allocated to taxa. The type method is the only way to determine objectively and unequivocally the correct application of names to various taxa.

Typification is a process of creating standard (typical) social construction based on standard

assumption. Each nominal taxon in the family, genus or species groups has actually or potentially a name bearing type of a nominal taxon provides the objective standard of reference for the application of the name it bears (Art. 61).

A 'type' is a zoological object on which the original published description of a name is based. It is the objective basis to which a given zoological name is permanently linked. In other words, it is the nucleus of a taxon and foundation of its name. Once designated the type cannot be changed, not even by the original author except by exercise of the plenary powers of the Commission (Article 78) through the designation of a Neotype (Article 75).

The type method is a legal device to provide the correct name for a taxon. A type specimen is a specimen (Rarely drawing or photograph) which was used by author to its authentic description. According to Article 9 of ICBN, the type of a genus is a species and the type of a family is a genus (Aster is a type genus of the family – Asteraceae). Whenever a new taxon (from sub – species to super family) is described, the as the author of the new taxon is supposed to designate it as type.

The type serves as the reference in the event of any question that might arise on the taxonomic status of the described taxon and the type species holds the name. A type specimen is a vernacular term (not a formally defined term) typically used for an individual or fossil that is any of the various name-bearing types for a species.

For example, the type specimen for the species *Homo neanderthalensis* was the specimen "Neanderthal-1" discovered by Johann Karl Fuhlrott at Feldhofer in the Neander Valley in Germany, consisting of a skullcap, thigh bones, part of a pelvis, some ribs, and some arm and shoulder bones (**Tattersall,**

**1996**). There may be more than one type specimen, but there is (at least in modern times) only one holotype. A type species is the nominal species that is the name-bearing type of a nominal genus or subgenus. A type genus is the nominal genus that is the name-bearing type of a nominal family-group taxon. The type series are all those specimens included by the author in a taxon's formal description, unless the author explicitly or implicitly excludes them as part of the series. A type description must include a diagnosis (typically, a discussion of similarities to and differences from closely related species), and an indication of where the type specimen or specimens are deposited for examination. The geographical location where a type specimen was originally found is known as its type locality.

**Blackwelder (1972)** grouped such names of the types into the following categories:

- a) Primary types (i.e., the single nomenclatural type e.g., Holotype, Lectotype, Neotype).
- b) Secondary types (i.e., the specimens from which the primary type must be selected, e.g., Syntypes, Paralectotypes).
- c) Tertiary types (i.e., other specimens originally set aside as of special taxonomic interest to supplement the primary type; e.g., Paratype, Allotype).
- d) Specimens identified as of special origin, e.g., Topotypes
- e) Specimens identified as to time or person of identification, e.g. Metatype, Homotypes or Homoeotypes, etc.
- f) Specimens identified as special treatment or use, e.g., Plesiotypes, Hypotypes, etc.

g) Replicas of type specimens, e.g., Plastotypes.

Several kinds of types have been recommended by the ICBN to make the nomenclature more scientific, accessible and holistic. They are as follows:

### **Holotype (Article 73)**

When a single specimen is clearly designated in the original description, this specimen is known as the holotype of that species. The holotype is typically placed in a major museum, or similar well-known public collection, so that it is freely available for later examination by other biologists.

### **Paratype**

When the original description designated a holotype, there may still be additional specimens listed in the type series and those are termed paratypes. These are not name-bearing types.

### **Plesiotype**

Plesiotype is a specimen upon which a subsequent or additional description or figure is based; any specimen identified with a described or named species by a person other than describer.

### **Allotype**

An allotype is a specimen of the opposite sex to the holotype, designated from among paratypes. It was also formerly used for a specimen that shows features not seen in the holotype of a fossil. Allotype term is not regulated by the ICZN.

### **Neotype (Article 75)**

A neotype is a specimen later selected to serve as the single type specimen when an original holotype has been lost or destroyed or

where the original author never cited a specimen.

### **Syntype**

A syntype is any one of two or more specimens that is listed in a species description where no holotype was designated; historically, syntypes were often explicitly designated as such, and under the present ICZN this is a requirement, but modern attempts to publish species description based on syntypes are generally frowned upon by practicing taxonomists, and most are gradually being replaced by lectotypes. Those that still exist are still considered name-bearing types.

### **Lectotype (Article 74)**

A lectotype is a specimen later selected to serve as the single type specimen for species originally described from a set of syntypes. In Zoology, a lectotype is a kind of name-bearing type. When a species was originally described on the basis of a name bearing type consisting of multiple specimens, one of those may be designated as the lectotype. Having a single name-bearing type reduces the potential for confusion, especially considering that it is not uncommon for a series of syntypes to contain specimens of more than one species. A notable example is that Carl Linnaeus is the lectotype for the species *Homo sapiens*.

### **Cotype**

Here descriptions are drawn jointly on a series of specimens or multiple specimens if it is not possible with a single specimen.

### **Nomenclatural type**

It is the element with which the name of a taxon is permanently associated.

### **Paralectotype**

A paralectotype is any additional specimen from among a set of syntypes, after a lectotype



has been designated from among them. These are not name-bearing types.

### Homeotype

A biological specimen that can be carefully compared with and identified with an original or primary type.

### Hapantotype

A special case in Protistans where the type consists of two or more specimens of "directly related individuals representing distinct stages in the life cycle"; these are collectively treated as a single entity, and lectotypes cannot be designated from among them.

### Ergatotype

An ergatotype is a specimen selected to represent a worker member in hymenopterans which have polymorphic castes. Alternatives to preserved specimens Type illustrations have also been used by Zoologists, as in the case of the Réunion parakeet, which is known only from historical illustrations and descriptions. The validity of a species name often rests upon the availability of original type specimens; or, if the type cannot be found, or one has never existed, upon the clarity of the description. The ICZN has existed only since 1961, when the first edition of the Code was published.

The ICZN does not always demand a type specimen for the historical validity of a species, and many "type-less" species do exist. The current edition of the Code, Article 75.3, prohibits the designation of a neotype unless there is "an exceptional need" for "clarifying the taxonomic status" of a species (Article 75.2). There are many other permutations and variations on terms using the suffix "-type" but these are not formally regulated by the Code,

and a great many are obsolete and/or idiosyncratic.

### CONCLUSION:

In conclusion, the principle of typification serves as an essential tool for organizing and communicating knowledge across various disciplines. By designating representative types, this systematic approach promotes clarity, consistency, and a shared understanding within classification systems. The reliance on standardized benchmarks enhances precision, facilitating effective communication and fostering a more cohesive comprehension of diverse entities. As an enduring principle, typification continues to play a vital role in advancing our collective understanding of the intricacies inherent in classifying the world around us.

### REFERENCES

- Blackwelder, R.E. (1972). *Guide to the Taxonomic Literature of Vertebrates*. Ames: Iowa State University Press.
- Kapoor, VC. (2008). *Theory and Practice of Animal Taxonomy and Biodiversity*. Oxford and IBH Publishing, pp-272.
- Pruthi, H.S. (1969). *Textbook on Agricultural Entomology*. Indian Council of Agricultural Research, New Delhi.
- Tattersall, Ian (1996). *The Last Neanderthal: The Rise, Success, and Mysterious Extinction of Our Closest Human Relatives*. Macmillan Publishing Company. p. 74. ISBN 0-02-860813-5.

[WWW.ICZN.ORG.IN](http://WWW.ICZN.ORG.IN)

[WWW.ICBN.ORG.IN](http://WWW.ICBN.ORG.IN)