

Article

Gaspard Bauhin and His Contribution to the Standardization of Anatomical Nomenclature: A Linguistic Analysis of *Theatrum Anatomicum* (1605)

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Abstract

This article examines the terminological contributions of Gaspard Bauhin in his seminal work, “*Theatrum Anatomicum*” (1605). It is part of a series of articles exploring the development of anatomical terminology following Vesalius. Through linguistic analysis of the original Latin text, the study identifies four models of terminological transformation: (1) passive monosynonymy—the reduction of multiple synonyms to a single standard term (clavicula, scapula); (2) visual standardization—the transformation of descriptive phrases into binary terms through the labels of anatomical illustrations (musculus obliquus superior, musculus obliquus inferior); (3) conservative osteology—preservation of genitive constructions for cranial bones (os Frontis, ossa Syncipitis); (4) implicit consolidation—the establishment of terms with disputed priority (malleus, incus, stapes) by including them in an authoritative systematic text. Statistical analysis of the Index Rerum reveals a 70% binary form in the nomenclature of muscles compared to 38% in the nomenclature of bones, which confirms the selective nature of Bauhin’s standardization. The prescriptive language (vocamus, nominamus) indicates that Bauhin prescribes rather than describes. The study establishes that *os frontale*, *os parietale*, and *os occipitale* do not appear in Bauhin’s active nomenclature (Bauhin 1605, Lib. III, p. 531; Bauhin 1609, pp. 145–47)—a finding that qualifies the broad historiographical attribution of modern anatomical bone terminology to Bauhin (Pretterklieber 2024; Ghosh 2016) and confirms the selective character of his standardization programme. The parallel between *Theatrum Anatomicum* and *Pinax Theatri Botanici* (1671) reveals the universal applicability of the *genus et differentia* principle, anticipating Linnaeus’s binary system (1753).

Keywords: Gaspard Bauhin; *Theatrum Anatomicum*; anatomical nomenclature; terminological standardization; history of medicine; renaissance anatomy



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1. Introduction

1.1. Context of Post-Vesalian Anatomy (1543–1605)

In 1543, Andreas Vesalius published *De Humani Corporis Fabrica*, introducing a systematic description of the human body based on direct observation through dissection, thereby rejecting the scholastic repetition of Galenic texts without verification (O’Malley 1964; Siraisi 1990). His significant terminological contribution was the elimination of polysemy: he distinguished *nervus* (nerve), *tendo* (tendon), and *ligamentum* (ligament) as separate monosemic terms, thereby removing the old Galenic practice of using a single term (*nervus*) for multiple anatomical structures (Mirchev 2025). Monosemization is a form of semantic

standardization. It ensures that each term has a clear and unambiguous meaning. Thus, the *Fabrica* marked an epochal transformation in anatomical science—not only as an empirical method of investigation but also as a first step towards terminological standardization.

Despite this progress, Vesalian nomenclature did not achieve full formal unification. Vesalius described structures through long topographic–morphological phrases and metaphorical comparisons (*a similitudine*) that did not follow a unified principle of nomination, while the problem of synonymy (multiple names for a single structure) remained unresolved (Sawai 2019). In other words, while Vesalius standardized the meaning of terms (monosemization), he did not standardize the form of nomination (monosynonymy)—a task that remained for his successors.

Vesalius's successors undertook a twofold task: on the one hand, to correct his inaccuracies and fill the gaps in his descriptions; on the other hand, to transform his descriptive system into a stable terminology. Gabriele Falloppio (1523–1562), intellectual heir to the Vesalian tradition, introduced new terms for structures that Vesalius had not described correctly (*uteri tuba*), stabilized Vesalius's metaphorical descriptions as technical terms (*malleus, incus*), and corrected Vesalian inaccuracies (Mirchev 2026). Nevertheless, by the early seventeenth century, anatomical terminology remained unsystematized: the same structure was designated by multiple synonyms, different authors used different terms, and Vesalius's descriptive phrases continued to coexist with the newer technical terms of Falloppio and other authors.

Against this background, Gaspard Bauhin's *Theatrum Anatomicum* (1605) appears—a work that less introduces new terms than systematizes and unifies the existing anatomical nomenclature. Unlike Vesalius, who laid the empirical foundations of modern anatomy and eliminated polysemy, and unlike Falloppio, who corrected and supplemented Vesalius's descriptions, Bauhin emerged as the architect of terminological standardization—a figure who transformed the chaotic nomenclature of the late sixteenth century into a unified body of terms serving as one of the key methodological precursors of the modern *Terminologia Anatomica*.

1.2. Gaspard Bauhin (1560–1624): Biographical and Intellectual Context

Gaspard Bauhin (*Casparus Bauhinus*, 1560–1624) was born in Basel, Switzerland, into a family of French origin. His medical education began in his native city, but due to the outbreak of the plague in 1576, he was compelled to continue his studies abroad. In 1577, he arrived at the University of Padua, then the leading European centre of humanistic medicine and anatomical instruction (Bylebyl 1979; Stolberg 2018), where he studied under Hieronymus Fabricius ab Aquapendente (1537–1619), himself the successor to the chair of Gabriele Falloppio. Recent analysis of student notebooks from the period has shown that anatomical demonstrations at Padua combined systematic dissection with deliberate philological work on the inherited Greek and Latin terminology (Stolberg 2018)—a methodological combination that Bauhin would later carry into the systematic compilation of *Theatrum Anatomicum*. In this way, Bauhin was a direct intellectual descendant of the Vesalian tradition: Andreas Vesalius (1514–1564) → Gabriele Falloppio (1523–1562) → Hieronymus Fabricius ab Aquapendente (1537–1619) → Gaspard Bauhin (1560–1624).

After completing his studies in Padua, Montpellier, and Bologna, Bauhin returned to Basel, where, in 1581, he began conducting public anatomical dissections. In 1589, he was appointed Professor of Anatomy and Botany at the University of Basel, a position he held until his death in 1624 (Whitteridge 1970). His dual competence in anatomy and botany is of key significance: just as in *Theatrum Anatomicum* (1605), he systematized anatomical nomenclature, so in *Pinax Theatri Botanici* (1623), he laid the foundations of binary botanical nomenclature, which was later perfected by Carl Linnaeus (1753). This

parallelism reflects a unified methodological principle: the transformation of descriptive phrases into standardized binary terms (*genus + differentia*).

Theatrum Anatomicum appeared in 1605 in Frankfurt am Main, published by Matthaeus Becker and illustrated by Theodor de Bry with 131 copper engravings. The work rapidly established itself as the finest anatomical textbook of the period—not so much for its original anatomical discoveries as for its systematic organization, terminological precision, and methodological clarity (Choulant 1920). Unlike Vesalius's *Fabrica*, which is a monumental atlas of empirical anatomy, and unlike Falloppio's *Observationes Anatomicae*, which are critical commentaries on Vesalius, *Theatrum Anatomicum* is a didactic synthesis—a systematic exposition of the whole of anatomy with a focus on terminological unification and educational accessibility.

1.3. *Theatrum Anatomicum* (1605): Structure and Methodological Approach

In the preface to *Theatrum Anatomicum*, Bauhin explicitly formulates his methodology. Latin citation (Bauhin 1605, p. 27): “hic enim Corpus humanum cōsiderabimus, prout ab Anatomicis, dum dissectione partes omnes & singulas accurate inquirūt, fieri consuevit”. Translation: “for here we shall examine the human body, as is customary among anatomists when through dissection they accurately investigate all and each of its parts”.

This passage reveals the central methodological principle of Bauhin: systematic investigation of all parts through dissection (*partes omnes & singulas accurate inquirūt*). Bauhin does not propose a new anatomical philosophy—he follows the Vesalian empirical tradition of direct observation. His contribution lies not in the discovery of new structures but in the systematization and standardization of the terminology that describes those structures.

Unlike Vesalius's *Fabrica*, which organizes material according to anatomical systems (bones, muscles, vessels, nerves), *Theatrum Anatomicum* returns to the Galenic topographic tradition, organizing the body according to three cavities (*ventres*) and the limbs (*artus*): (1) *Liber I: De Ventre Inferiore*—49 chapters; (2) *Liber II: De Ventre, seu Thorace Medio*—32 chapters; (3) *Liber III: De Capite, seu Ventre Tertio et Supremo*—99 chapters; and (4) *Liber IV: De Artibus*—45 chapters.

Although methodologically Vesalian (empirical dissection), Bauhin's organization is Galenic in structure. This is not a regression to pre-Vesalian anatomy but a deliberate didactic choice. Bauhin's contribution lies not in structural innovation but in terminological precision and consistency of nomination. While Vesalius described structures through long topographic–morphological phrases and achieved important progress through the elimination of polysemy, Bauhin took the next step: transforming Vesalian descriptive phrases into standardized binary terms and reducing synonymy in anatomical nomenclature.

1.4. The Problem of Anatomical Terminology Before Bauhin

Problem 1: Proliferation of synonyms. One and the same anatomical structure was designated by multiple names. For example, the clavicle (*clavicula*) also appeared as *furcula*, *iugulum*, and *os iuguli* (Vesalius 1543, Lib. I, p. 142; Bauhin 1605, Lib. II, p. 349); the scapula appeared as *spatula*, *alumae*, and *os latum*. Although Vesalius achieved important progress through the elimination of polysemy—distinguishing *nervus*, *tendo*, and *ligamentum* as separate monosemic terms (Mirchev 2025)—the problem of synonymy remained unresolved.

Problem 2: Incompatible descriptive phrases. Vesalius described structures through long topographic–morphological phrases: “the muscle that moves the eye upward and toward the inner angle” (*musculus qui oculum movet sursum et ad angulum internum*). Although precise, these phrases were cumbersome and not amenable to standardization.

Problem 3: Unsystematic nomenclature. Different authors applied different principles of nomination. Vesalius used descriptive phrases and metaphorical comparisons (*a similitudine*), Falloppio introduced technical terms based on morphological analogy (*uteri tuba, malleus*), and other authors used eponymy or traditional Galenic terms. There was no unified principle of term formation.

Bauhin undertook to resolve all three problems through three methodological strategies: (1) Elimination of synonyms—multiple names → one standard term; (2) transformation of descriptive phrases into fixed terms—Vesalian phrases → Bauhin’s binary terms; and (3) introduction of a binary nominal system—*Substantivum* + *Adiectivum* (or *Genetivus*): *clavicula, musculus rectus, arteria carotis*. While Vesalius eliminated polysemy (one term = one meaning), Bauhin eliminated synonymy (one structure = one term). These two processes—monosemization (Vesalius) and monosynonymy (Bauhin)—represent the two fundamental steps towards modern standardized anatomical nomenclature.

1.5. Aim of the Present Study

The present article aims to analyse the terminological contribution of Gaspard Bauhin as documented in *Theatrum Anatomicum* (1605) within the context of the post-Vesalian anatomical tradition. Through philological analysis of the original Latin text and a comparative historical method (Vesalius → Falloppio → Bauhin), the study identifies the specific mechanisms by which Bauhin transformed the chaotic terminology of the late sixteenth century into a unified nomenclatural system. Three principal research questions are addressed: (1) How did Bauhin eliminate synonymy in anatomical nomenclature? (2) How did Bauhin transform Vesalius’s descriptive phrases and Falloppio’s metaphorical terms into standardized technical terms? (3) What are the principles of Bauhin’s binary nominal system, and how did it influence the modern *Terminologia Anatomica* (1998)?

2. Materials and Methods

2.1. Materials (Primary Sources)

The study is based on the analysis of the following primary Latin texts.

Primary source under investigation: Bauhin, Caspar. 1605. *Theatrum Anatomicum novis figuris aeneis illustratum*. Frankfurt am Main: Matthaeus Becker. <https://archive.org/details/theatrumanatomic01bauh> (accessed on 20 May 2026).

Comparative Bauhin sources: Bauhin, Caspar. 1609. *Institutiones anatomicae corporis virilis et muliebris historiam exhibentes*. Basileae: Apud Ioann. Schroeter (https://www.e-rara.ch/bau_1/content/structure/16418571, accessed on 20 May 2026); Bauhin, Caspar. 1623. *Pinax theatri botanici*. Basileae: Impensis Ioannis Regis (<https://archive.org/details/mobot31753003011050>, accessed on 20 May 2026).

Comparative anatomical sources: Vesalius, Andreas. 1543. *De humani corporis fabrica libri septem*. Basileae: Ex officina Ioannis Oporini; Falloppio, Gabriele. 1561. *Observationes anatomicae ad Petrum Mannam medicum Cremonensem*. Venetiis: Apud Marcum Antonium Vlmum.

All analysis was conducted on the original Latin texts without recourse to translations.

2.2. Methods

2.2.1. Philological Analysis

Step 1: Systematic reading of *Theatrum Anatomicum* (Libri I–IV) with focus on the nomination of anatomical structures. Step 2: Extraction of key terminological passages—Latin term, definition, mentioned synonyms, and morphological structure. Step 3: Classification according to four models: (A) elimination of synonyms (multiple names → one term); (B) transformation of descriptive phrases into binary terms; (C) conservative osteology—

retention of genitive constructions for cranial bones; (D) implicit consolidation of terms of different origin and disputed priority. Step 4: Analysis of the binary nominal system (*substantivum* + *adiectivum/genetivus*).

2.2.2. Comparative Historical Method

Step 1: Identification of equivalent passages in Vesalius, Bauhin, the Basle Nomina Anatomica (BNA) (Eycleshymer et al. 1917), and *Terminologia Anatomica* (1998) for each analysed structure. Step 2: Comparative tables of terminological evolution (see Table 1). Step 3: Documentation of types of terminological transformation and assessment of survival in *Terminologia Anatomica* (1998).

Table 1. Comparative terminological evolution: Vesalius (1543) → Bauhin (1605) → BNA (1895) → *Terminologia Anatomica* (1998).

Structure	Vesalius (1543)	Bauhin (1605)	BNA (1895)	<i>Terminologia Anatomica</i> (1998)
Clavicle	<i>clavicula, furcula, iugula, claves</i>	<i>clavicula</i>	<i>clavicula</i>	<i>clavicula</i>
Superior oblique muscle (eye)	<i>descriptive phrase</i>	<i>musculus obliquus superior</i> (index of figures, p. 1495)	<i>musculus obliquus superior</i>	<i>musculus obliquus superior</i>
Auditory ossicle	<i>a similitudine</i>	<i>malleus, incus, stapes</i>	<i>malleus, incus, stapes</i>	<i>malleus, incus, stapes</i>

2.3. Selection Criteria

Terms were selected according to: historical significance (survival in the modern *Terminologia Anatomica*), illustrative value (clearly demonstrating the four models), and verifiability (clear Latin citations in the primary sources). All citations were verified by cross-referencing with multiple digitized copies.

3. Results

Systematic analysis of *Theatrum Anatomicum* (1605) identifies four principal mechanisms through which Gaspard Bauhin transformed the anatomical nomenclature of the late sixteenth century into a unified system. The results are organized according to the four models of terminological contribution.

3.1. Model A: Passive Monosynonymy Through Etymological Legitimation

Bauhin does not eliminate synonyms through explicit declaration but through passive normativity—he either legitimizes the chosen term etymologically without discussing alternatives or simply renders them invisible.

3.1.1. Example 1: Clavicula (Clavicle)

Latin citation (Bauhin 1605, Liber II, Caput XII: De Claviculis, pp. 347–48): “CLAVICULÆ a quæ κλείδες b ex eo quod vniuersum thoracem b claudant, dicuntur. . . vnde forte rectius f clauiculâ dici rentur, & Celfius Iugula à iungendo. . . nominantur.”

Translation: “The clavicles, which are called κλείδες because they close the entire thorax. . . whence they may perhaps more correctly be called *clavicula*, and Celsus calls them *Iugula* from *iungendo* (joining). . .”

Analysis: Bauhin mentions that Celsus uses the term *Iugula* but does not adopt it. The phrase “forte rectius. . . dici” indicates an implicit normative choice. The etymology from Greek κλείδες and Latin *claudere* legitimizes *clavicula* as the correct term. Vesalian synonyms such as *furcula* and *os iuguli* simply disappear from the terminological space. Result: *Clavicula* survives unchanged in *Terminologia Anatomica* (1998).

3.1.2. Example 2: Scapula (Shoulder Blade)

Latin citation (Bauhin 1605, Liber II, Caput XXXI: De Scapularum ossibus, p. 484): “SCapulae ὅς ὠμοπλάτη, b Græcis. . . vtrinque vnum est, os posterius summis costis instar alonis scuti, propugnaculi causâ. . .”

Translation: “The scapulae, which the Greeks call ὠμοπλάτη. . . are one on each side, the posterior bone of the uppermost ribs, like a protective shield. . .”

Here, passive normativity is even more pronounced: Bauhin simply uses *Scapulae* and provides the Greek equivalent, without mentioning any synonyms. Vesalian alternatives such as *spatula*, *os latum*, and *alumae* simply do not exist in the text. Result: *Scapula* survives unchanged in *Terminologia Anatomica* (1998).

3.2. Model B: Visual Standardization Through Binary Nomenclature in the Illustrations

Bauhin transforms Vesalius’s descriptive phrases into concise binary terms—not in the main descriptive text but in the anatomical illustrations and their indexes.

3.2.1. Traditional Nomenclature in the Main Text

In the main text (Liber III, Caput XXXV: *De musculis oculorum*, pp. 733–40), Bauhin describes the ocular muscles using numbering and functional names. Latin citation (Bauhin 1605, p. 735): “. . . in superiori locus, carnosus, & teres. . . attollens & superbus [. . .] huic opposito inferiore situs. . . deprimens & humilis [. . .] nasum. . . Adducens & bibitorius vocatur [. . .] angulum. . . indignatorius dicitur.” Bauhin employs functional (attollens, deprimens) and moral metaphors (superbus, humilis, indignatorius) for naming of the muscles—a traditional style inherited from Galen and Vesalius and developed in the late Renaissance by Jessenius, who, in his *Anatomiae, Pragae* (1601), already employs binary topographic forms (*Supernus, Obliquus infernus*, p. 115) for the extraocular muscles, anticipating the binary structure of Bauhin’s index of illustrations.

3.2.2. Binary Nomenclature in the Index of Figures

In the index of anatomical illustrations (p. 1495), the same muscles are designated with binary terms. Latin citation: “H.1.2.3.4. Musculus obliquus superior, seu trochlea, cuius tendo a. trochlea b. notatur. I.2.3.4. Musculus oculi obliquus inferior.” The binary structure is complete: substantivum, musculus; adiectivum 1, obliquus (morphological); adiectivum 2, superior/inferior (topographic); genetivus, oculi. Result: Musculus obliquus superior and musculus obliquus inferior survive in *Terminologia Anatomica* (1998) as standard terms.

3.3. Model C: Conservative Osteology—Cranial Bones and the Galenic Tradition

Examination of *Theatrum Anatomicum* (1605, Lib. III, p. 531) and *Institutiones anatomicae* (1609, pp. 145–47) reveals that Bauhin does not introduce binary nomenclature for the cranial bones. In the main text of *Institutiones anatomicae*, Bauhin writes: ‘Primum est os Frontis. . . Secundum & Tertium Syncipitis. . . Quartum Occipitis’ (p. 146). The accompanying marginal note reads: ‘Gal. de ossib.; alijs ossa temporum, saxeae, parietalia, arcualia, squamiformia, mendosa’. Here, Bauhin cites Galen’s *De ossibus* as the source for the cranial discussion but assigns the Latin binary forms (parietalia, arcualia, squamiformia, mendosa) explicitly to ‘other authors’ (alijs). In both works, Bauhin consistently employs genitive constructions (see Table 2).

Noteworthy is the terminological choice for the parietal bones: instead of the adjective *parietale* (from *paries*, wall), Bauhin uses *syncipitis* (from *sinciput*, crown of the head)—a topographic term with a different etymological base. The term *parietalia* appears in both works exclusively in marginal notes, invariably attributed to alternative Latin authorities (alijs).

Table 2. Cranial bone nomenclature: modern standard (*Terminologia Anatomica* 1998) versus Bauhin's active nomenclature (1605/1609).

Modern Term (<i>Terminologia Anatomica</i> 1998)	Bauhin (1605/1609)	Form
<i>os frontale</i>	<i>os Frontis</i>	genitive
<i>os parietale</i>	<i>ossa Syncipitis</i>	genitive + different stem
<i>os occipitale</i>	<i>os Occipitis</i>	genitive
<i>os temporale</i>	<i>ossa Temporum</i>	genitive

3.4. Model D: Implicit Consolidation of Terms with Disputed Priority

3.4.1. Example 1: Auditory Ossicles

Vesalian metaphorical description (1543): “Ossiculum. . . quod mallei figuram refert, a similitudine” (Vesalius 1543, Lib. I). Falloppian stabilization (1561): “. . .divinus Vesalius. . . alterum quod prius est malleolum, alterum vero incudem a similitudine appellauit” (Falloppio 1561, p. 73). Bauhin's consolidation (1605): “alia auditui inseruentia. . . in quolibet temporum osse tria, incus, malleus, stapes” (Bauhin 1605, Lib. III, p. 524). Bauhin consolidates malleus and incus together with stapes—a term of disputed priority—in a single enumeration, sanctioning them through their inclusion in an authoritative systematic text. Result: Malleus, incus, and stapes survive in *Terminologia Anatomica* (1998) as the standard triad.

3.4.2. Example 2: Uterine Tube

Vesalius does not mention the structure, as explicitly noted by Bauhin: “Vesalius non meminit” (Bauhin 1605, Lib. I, p. 229). Falloppian innovation (1561): “. . .ideo a me uteri tuba vocatus est” (Falloppio 1561, p. 73). Bauhin's consolidation (1605): “. . .tubæ extremo orificio simile (hinc vteri tubam Fallopius nominauit). . .” (Bauhin 1605, Lib. I, p. 219). Bauhin attributes the term to Falloppio without the *primus* qualifier. Result: The term survives as *tuba uterina* in *Terminologia Anatomica* (1998).

3.5. The Binary Nominal System: Statistical Analysis

For this quantitative analysis, the Index Rerum of *Theatrum Anatomicum* (Bauhin 1605, pp. 1340–80) was used as a controlled source: it is Bauhin's own alphabetical inventory of terms employed in the main text and therefore reflects his standardized usage rather than the editorial decisions of later transcribers. The sample comprises all entries in the Index designating individual anatomical structures of the muscular and skeletal systems. For muscles, this yielded 60 entries under *Musculus* + qualifier (e.g., *Musculus deltoides*, *Musculus biceps*). For bones, this yielded 36 entries under *Os/Ossa* + qualifier, comprising both singular forms for individual bones (*Os Frontis*, *Os ethmoides*, *Os hyoides*) and plural collective forms for paired or grouped bones (*Ossa Temporum*, *Ossa Syncipitis*, *Ossa coxae*). Each entry was then classified by morphological structure as either *Substantivum* + *Adiectivum* (binary form, e.g., *Musculus deltoides*, *Os ethmoides*) or *Substantivum* + *Genetivus* (genitive form, e.g., *Musculi capitis*, *Os Frontis*).

The data confirm the selective nature of Bauhin's standardization. In muscle nomenclature, the binary form of *substantivum* + *adiectivum* dominates, at 70%—reflecting the deliberate programme of replacing numerical designations with descriptive terms. In bone nomenclature, however, the genitive construction prevails, at 59%—confirming Model C. An important methodological qualification: the genitive forms in muscle nomenclature (*musculi capitis*, *musculi femoris*) are topographic group designations rather than alternatives to the binary form. Also noteworthy is that the term for the auditory ossicles appears as

Ossicula auditus—the only binary form in the osteological section of the index—confirming the implicit consolidation described in Model D.

4. Discussion

4.1. Bauhin as a Reformer of Anatomical Nomenclature

The specialized historiographical review by Ghosh (2016) explicitly notes that Bauhin's anatomical works contained “few novelties”. Unlike Vesalius, who laid the empirical foundations of modern anatomy through systematic dissection, and unlike Falloppio, who introduced new terms for incorrectly described or unknown structures (*uteri tuba*), Bauhin undertook terminological consolidation—a systematic review of existing nomenclature with the aim of eliminating synonymy and establishing a unified principle of nomination. The detailed analysis that follows shows that his contribution lies less in the discovery of new anatomical structures than in the systematic reorganisation of existing terminology.

It is important to note, however, that some historiographical overviews characterize Bauhin's contribution as the introduction of “descriptive nomenclature” to replace Vesalius's ordinal system (Ghosh 2016, p. 161). Bauhin did the opposite—he replaced descriptive phrases with concise binary terms (*musculus obliquus superior*), introducing a predictable structural principle in place of description. The present philological analysis shows this characterization to be imprecise: descriptive nomenclature is precisely Vesalian—long topographic–morphological phrases of the type of “*musculus qui oculum movet sursum et ad angulum internum*”.

The four identified models—passive monosynonymy (Model A: *clavicula*, *scapula*), visual standardization through the indexes (Model B: ocular muscles), conservative osteology (Model C: cranial bones), and implicit consolidation (Model D: auditory ossicles)—reveal a systematic yet selective methodological approach. Bauhin did not apply a single formula mechanically but adapted his method to the specific terminological situation. The evidential weight of these cases is not uniform. For the clavicle and scapula, Bauhin gives an explicit etymological argument for his chosen term; for the auditory ossicles and the uterine tube, he offers no such argument and simply includes the terms in an authoritative list, leaving his intent to be inferred. The regularity of presentation in Section 3 should not obscure this difference in the strength of the underlying evidence.

This process of terminological reform is normative in nature. Analysis of *Theatrum Anatomicum* reveals consistent use of the declarative first-person plural as an instrument for prescribing a standard. On p. 42, Bauhin writes: “*quam membranam, non tunicam vocamus*”, justifying the choice etymologically. On p. 994: “*quos Bronchios vocamus, eò quòd arteriæ asperæ perpetuo hæreant*”. On p. 997: “*Crycothyroideos anticos nominamus*”. The pattern is consistent: Bauhin (1) declares the term with *vocamus* or *nominamus*, (2) justifies the choice, and (3) rejects alternatives when necessary.

4.2. Evolution of Terminological Method: From Vesalius to Bauhin

Analysis of terminological evolution in the period of 1543–1605 reveals three successive phases of standardization.

Phase 1: Vesalius (1543)—Monosemization. Vesalius established the principle of univocality—one term for one structure—applying it consistently within his own text: “*hanc partem callosum corpus semper appellavi*” (Vesalius 1543; Mirchev 2025). Nevertheless, the Vesalian reform remained an authorial project. The problem of inter-authorial polysynonymy remained unresolved, with its definitive institutional resolution achieved only with the *Basle Nomina Anatomica* (1895) (Eycleshymer et al. 1917).

Phase 2: Falloppio (1561)—Stabilization and Innovation. Falloppio stabilized Vesalius's metaphorical terms: “*divinus Vesalius. . . alterum quod prius est malleolum, alterum vero*

incudem a similitudine appellauit” (Falloppio 1561, p. 73). He also introduced new terms: *“ideo a me vteri tuba vocatus est”* (Falloppio 1561, p. 417). His contribution was, however, selective—a supplement to Vesalius, not an alternative to wholesale reform (Mirchev 2026).

Phase 3: Bauhin (1605)—Monosynonymy and Binary System. Bauhin completed the process of standardization through two interrelated mechanisms: monosynonymy (one structure = one term) and the introduction of a predictable principle of nomination (*substantivum + adiectivum/genetivus*). This evolutionary scheme, supported by the research of Sawai (2019)—according to whom Vesalius introduced the principle of univocality and Bauhin systematically applied adjectival naming—confirms that terminological standardization in anatomy is a multi-stage process. Vesalius, Falloppio, and Bauhin were not competitors but mutually complementary participants in one and the same multi-stage process.

4.3. Bauhin and Botanical Nomenclature: An Interdisciplinary Parallel

The dual contribution of Bauhin in anatomy (*Theatrum Anatomicum*, 1605) and botany (*Pinax Theatri Botanici*, 1623) reveals a unified methodological principle applied across two different scientific disciplines. In *Pinax Theatri Botanici* (Bauhin 1671, Lib. XII, Sect. IV, p. 481), Bauhin organizes plants according to the scheme of *genus + differentia*: under the heading of *Rosa* are *Rosa rubra*, *Rosa purpurea*, *Rosa versicolor*, and *Rosa maxima multiplex* are systematically arranged. The structural model is identical to the anatomical binary form (see Table 3).

Table 3. Structural parallel between botanical (*Pinax Theatri Botanici* 1623) and anatomical (*Theatrum Anatomicum* 1605) nomenclature in Bauhin.

	Botany (<i>Pinax Theatri Botanici</i> 1623)	Anatomy (<i>Theatrum Anatomicum</i> 1605)
Genus/Substantivum	<i>Rosa</i>	<i>Musculus</i>
Differentia/Adiectivum	<i>rubra, purpurea</i>	<i>obliquus, rectus</i>
Example	<i>Rosa rubra</i>	<i>Musculus obliquus</i>

An important methodological qualification is that Bauhin occasionally employs a ternary structure (*Rosa rubra pallidior*, *Rosa provincialis major*), indicating that his system is proto-binary rather than strictly binary. It is precisely this inconsistency that Linnaeus eliminated in *Species Plantarum* (1753). In this sense, Bauhin was a precursor, not the creator, of Linnaean binary nomenclature. The parallelism reflects a unified Aristotelian principle of classification through *genus et differentia*, demonstrating the universal applicability of the binary nominal model for scientific classification.

4.4. Influence on Modern Anatomical Nomenclature

The historical trajectory of Bauhin’s nomenclature towards the modern standard may be traced through two key moments of codification: Bauhin (1605) → BNA (1895) → TA (1998). The *Basle Nomina Anatomica* (1895) codified Bauhin’s structural principle. Although the BNA eliminated eponymy (*tuba Fallopii* → *tuba uterina*) and introduced stricter Latin grammar, the structure of *substantivum + adiectivum/genetivus* remained unchanged. Concrete examples of direct continuity include *clavicula* and *scapula* (Model A) and *musculus rectus* and *musculus obliquus* (Model B)—surviving four centuries without modification.

Noteworthy is the fact that not all terms associated with Bauhin’s nomenclatural reform actually originate in *Theatrum Anatomicum*. The historiographical literature broadly characterizes Bauhin as the figure who “defined names for the individual bones, muscles and vessels” (Pretterklieber 2024, p. 336; cf. Ghosh 2016, pp. 161–63; Sakai 2007) and locates his work within the systematic trajectory leading from Vesalius to the Basle Nomina

Anatomica (1895). This general attribution is substantiated through specific examples from muscular nomenclature—semimembranosus, scalene, pectoralis, supinator, and pronator (Ghosh 2016, pp. 161–62)—and the present philological analysis confirms it for that domain (Section 3.2, Table 4). For the cranial bones, however, no comparable documentation has been provided in the secondary literature, and direct examination of the primary sources yields an interesting result: *os frontale*, *os parietale*, and *os occipitale* do not appear in Bauhin’s active nomenclature. Both *Theatrum Anatomicum* (Bauhin 1605, Lib. III, p. 531) and *Institutiones Anatomicae* (Bauhin 1609, pp. 145–47) consistently employ genitive constructions *os Frontis*, *ossa Syncipitis*, *os Occipitis*, and *ossa Temporum*, while the binary adjectival forms appear only in marginal notes attributing them to alternative Latin authorities. This result refines rather than contradicts the broader picture of Bauhin’s standardization programme: his terminological reform was systematic but selective, with cranial osteology constituting one of its principal exceptions (Model C).

Table 4. Statistical analysis of binary versus genitive forms in the index rerum of *Theatrum Anatomicum* (1605).

Category	Subst. + Adiectivum	Subst. + Genetivus	Total
<i>Musculus/Musculi</i>	42 (70%)	15 (25%)	60
<i>Os/Ossa</i>	13 (38%)	20 (59%)	36
Total	55 (57%)	35 (36%)	96

4.5. Scope of the Study and Future Perspectives

The present study has three principal methodological parameters. First, the analysis is focused on the structural models of Latin terminology in *Theatrum Anatomicum*, with the etymological layer addressed only when Bauhin, himself, employs it as justification. Second, the study primarily analyses *Theatrum Anatomicum* (1605) as its principal source, while *Institutiones Anatomicae* (1609) was used for the verification of specific terminological observations—in particular, regarding the cranial bones (pp. 145–47). Future research may trace the evolution of Bauhin’s terminology across the full corpus of his works. Third, the study focuses on textual terminology and does not analyse the visual nomenclature in the copper engravings. Future research may analyse the relationship between text and image in Bauhin’s terminological system.

4.6. Significance for the History of Medical Terminology

Three principal conclusions follow from the present study. First, terminological standardization is a multi-stage process requiring successive interventions: Vesalius eliminated polysemy through monosemization, Falloppio stabilized metaphors and introduced new terms, and Bauhin significantly reduced synonymy and introduced a binary system of nomination. Its institutional completion was achieved only with the *Basle Nomina Anatomica* (1895). Second, Bauhin’s binary system is a generative principle that permits the creation of new terms without additional normative intervention—verified in the index of *Theatrum*: *musculus temporalis*, *musculus triangularis*, *musculus quadratus*. Third, Bauhin’s model demonstrates the interdisciplinary applicability of binary nomenclature. The application of the same principle of *genus + differentia* in anatomy and botany shows that the binary system is a universal instrument for scientific classification, anticipating the Linnaean reform of 1753.

5. Conclusions

The present study demonstrates that Gaspard Bauhin and *Theatrum Anatomicum* (1605) represent an important stage in the evolution of anatomical terminology—not through the discovery of new structures but through the systematic unification of existing nomenclature.

Problem 1 (synonymy) → Model A—passive monosynonymy: Bauhin eliminated synonymy through the explicit selection of a single standard term for each anatomical structure. Multiple names (*clavicula*, *furcula*, *os iuguli*) were reduced to a single legitimate term, with Bauhin employing normative language—“*vocamus*” (pp. 42, 59, 827, 994, 1007) and “*nominamus*” (p. 997)—to establish terminological authority.

Problem 2 (descriptive phrases) → Model B—visual standardization: Bauhin transformed Vesalius’s descriptive phrases into concise binary terms according to the principle of *substantivum + adiectivum*. The functional description “the muscle that moves the eye upward and toward the inner angle” was transformed into *musculus obliquus superior*. Statistical analysis of the *Index Rerum* reveals 70% binary form in muscle nomenclature.

Problem 3 (unsystematic nomenclature) → Models C and D + normative language: Bauhin introduced a predictable structural principle, applied selectively. For the cranial bones (Model C) he retained the genitive constructions (*os Frontis*, *ossa Syncipitis*). For the auditory ossicles (Model D), he consolidated terms of different origin (*malleus*, *incus*, *stapes*) in a single enumeration.

While Vesalius eliminated polysemy (monosemization: one term = one meaning), Bauhin significantly reduced synonymy (monosynonymy: one structure = one term). The dual contribution of Bauhin in anatomy (*Theatrum Anatomicum*, 1605) and botany (*Pinax Theatri Botanici*, 1623) points to the wider applicability of the binary nominal principle of *genus et differentia* beyond anatomy, anticipating the Linnaean reform of 1753.

Gaspard Bauhin deserves recognition not only as a lexical innovator—as Falloppio was, above all—but primarily as a structural innovator and architect of terminological standardization: a figure who transformed the chaotic nomenclature of the late sixteenth century into an ordered nomenclature governed by a predictable structural principle, serving as one of the key methodological precursors of the *Basle Nomina Anatomica* (1895) and the modern *Terminologia Anatomica* (1998). *Theatrum Anatomicum* is not merely an anatomical textbook—it is a terminological codex that contributed significantly to the standardization of scientific nomenclature in the centuries that followed.

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