

DOI 10.51558/2490-3647.2026.11.1.223

UDK 81'373.6:398
398:81'373.6

Primljeno: 19. 11. 2025.

Pregledni rad
Review paper

Lidija Beko

ETYMOLOGY AND GEOMYTHOLOGY: UNCOVERING HIDDEN HISTORIES OF EARTH AND LANGUAGE

This paper investigates the interrelated roles of etymology and geomythology in revealing how human cultures have interpreted, named, and remembered the Earth across time. By situating language at the centre of interdisciplinary inquiry, the study demonstrates how scientific terminology, particularly vocabulary with Greco-Roman roots, encodes narratives, metaphors, and cultural memory within its structure. Drawing on connectionist cognitive theory, it argues that etymology strengthens semantic networks by linking linguistic forms to mythic and symbolic associations, thereby enhancing vocabulary acquisition and conceptual understanding. The paper then turns to geology and mythology, showing how traditional societies encoded environmental events such as earthquakes, eruptions, and floods into durable mythic narratives. Through foundational geomythological scholarship, including Vitaliano's work and subsequent cross-cultural studies, the analysis demonstrates how myths function as repositories of environmental knowledge. In parallel, scientific nomenclature continues to draw on mythological figures, such as Atlas, Prometheus, or Hades, embedding cultural memory within modern mineralogy and chemistry. Finally, the paper examines the figure of Hades/Pluto as an interdisciplinary nexus connecting geology, psychology, astronomy, art, and pedagogy. This approach illustrates how geomythology serves as a bridge between the sciences and humanities, offering an integrated framework for teaching, interpretation, and understanding the deep entanglement of Earth, language, and imagination.

Key words: geomyth; etymology; symbolism; transformation; reflection

1. INTRODUCTION: ON ETYMOLOGY AND CONNECTIONISM

This section establishes the linguistic-conceptual foundation necessary for understanding how geomythology connects language, culture, and geology. Etymology is not a digression; it demonstrates how myth persists within scientific terminology and prepares the conceptual ground for geomythological interpretation.

1.1. Introducing the linguistic premise: why begin with etymology

The anonymous quote “Words are born to be loved, not imprisoned” reflects the idea that all languages are equal and exist to give meaning to human experience. To do this, languages constantly borrow and build new vocabulary from one another. English, once confined to England in the early Middle Ages, is now a global *lingua franca* (Crystal 2003).

About 5–6% of English words have direct Greek origins, but this modest figure understates Greek’s true influence. When considering Latin – estimated to contribute roughly 60% of English vocabulary – many Latin words themselves trace back to Greek roots. This complex etymological heritage forms the foundation of much of English vocabulary. Latin entered English mainly through Norman French after the 1066 Norman Conquest, introducing a sophisticated lexicon rooted in Roman law, administration, and culture. However, Latin had already absorbed a large number of Greek terms during the Roman Empire’s cultural and scientific flourishing.

Consequently, a significant portion of English vocabulary today – whether borrowed directly or indirectly – owes much to ancient Greek, especially in scientific and technical fields. Terms like biology (“bios” = life, “logos” = study), chemistry, physics, and telescope (“tele” = far, “skopein” = to look) illustrate how Greek morphemes underpin much of modern scientific language. In science and technology, the proportion of English words with Latin or Greek roots rises dramatically, reaching up to 90% by many estimates. Greek’s precision and adaptability make it especially suitable for naming new discoveries and concepts. Understanding terms like geology, derived from *geo-* (earth) and *-logy* (study), helps reveal how ancient languages continue to shape contemporary knowledge.

1.2. Greek linguistic heritage in scientific vocabulary

The word etymology itself comes from the Greek ἐτυμολογία (etumología), combining étumon (ἔτυμον), meaning “true sense,” and -logia (-λογία), meaning “study of.” Thus, etymology literally means “the study of true meaning.” As the famous Erasmus allegedly said, “To know the origin of words is to understand the roots of our knowledge.” Etymology explores the history, transformations, and paths of words across time and cultures. It is linguistic archaeology that uncovers how words were formed, carried, reshaped, and reinterpreted by speakers over centuries. To etymologize a word is to trace its lineage through languages and time, examining phonetic changes and shifts in meaning. By revealing the origins of names for objects, ideas, and phenomena, etymology sheds light on the logic – and sometimes the mystery – of language evolution.

Etymology also serves as a bridge between language and myth, carrying forward the stories, symbols, and cultural archetypes of ancient civilizations into modern usage. Many English words, particularly those with Greco-Roman roots, bear the imprint of mythology not only in their literal meanings but also in the wide array of fields they permeate. A striking example is the word Atlas, originally the name of the Titan in Greek mythology who was condemned to hold up the sky for eternity. This mythic image – of immense strength, burden, and endurance – has left a broad linguistic legacy.

In contemporary English, atlas commonly refers to a collection of maps, symbolically linking the Titan’s role in supporting the world to our efforts to understand and chart it. In the 16th century, Flemish cartographer Gerardus Mercator published a collection of maps with an image of Atlas on the cover, leading to the title of his book being “Atlas” and setting a precedent for subsequent collections of maps. In anatomy, the atlas is the name given to the first cervical vertebra, which supports the skull – mirroring the mythic Atlas’s burden of bearing the heavens. The name also appears in geography, with the Atlas Mountains of North Africa evoking a rugged and enduring natural presence.

Beyond these more familiar contexts, the influence of Atlas spreads into diverse domains: in psychology, an “Atlas or Atlantean personality” describes someone who takes on excessive responsibility, often from a young age, reflecting the emotional weight of bearing the world. In astronomy, Atlas names a moon of Saturn, a star in the Pleiades cluster, and a lunar crater – celestial bodies still echoing his cosmic burden. In biology, we find Atlas beetles, known for their size and strength, and Atlas

cedars, towering trees that evoke the Titan's might. Even architecture carries the image forward, with sculpted male figures supporting structures being termed Atlantes, the masculine counterpart to caryatids.

Technological and military uses include the Atlas missile, one of the first intercontinental ballistic missiles developed in the United States and later repurposed for space launch vehicles – extending the name's association with power and the heavens. Linguistically, in Berber-speaking regions, “Atlases” denotes both a mountain range and a group of dialects.

These layered meanings illustrate how one mythic figure has generated a network of terms that span anatomy, geography, psychology, biology, space science, and beyond. Through etymology, we can trace these branches back to a common root – a narrative image born in myth, extended through metaphor, and naturalized in the language of everyday life and specialized disciplines alike.

Furthermore, etymology is far more than a historical account of words – it is a cognitive tool that reveals the interconnectedness of language. By breaking complex words into their roots, prefixes, and suffixes, learners are not only able to decode meaning but also to discover relationships between seemingly unrelated terms (Akbulut 2017; Bellomo 2005). This approach brings to light the stories embedded in language, offering cultural and historical insight that deepens understanding and fosters a more intuitive grasp of vocabulary (Maxson 2010; Arbib 2012).

1.3. Connectionism: linking etymology and geomythology

The relevance of etymology to modern language learning is supported by connectionism, a cognitive theory that views learning as the result of forming and reinforcing neural associations between linguistic units. Unlike rule-based approaches, connectionism emphasizes the gradual development of language through exposure, repetition, and contextual usage (Ellis 2003; Sloutsky et al. 2017). As learners encounter words across different contexts, they build mental networks – semantic maps – linking words to meanings, pronunciations, and connotations.

Connectionism also thrives on semantic networks – webs of meaning formed by related concepts (Rumelhart and Todd 1993). Etymology enriches these webs by linking language to cultural archetypes. Consider Pluto, God of the underworld: his name forms the basis for plutonic (relating to deep Earth structures), plutonism (the theory of subterranean geological formation), and plutonium (a radioactive element hidden deep within matter). Understanding these etymological connections adds layers of

meaning that go beyond surface definitions, anchoring vocabulary in narrative and imagery.

This mythological layering is not merely decorative; it is functional. Studies show that memory is enhanced when learners create meaningful associations (Boers 2004). Etymology enables such associations by offering patterns and analogies that make unfamiliar words easier to predict and retain (Bereiter 1991; Grabe 1991). Learners who understand, for instance, that *geo* means “earth” can decode geology, geotechnics, hydrogeology, and geophysics, all without memorizing them individually.

Jia and Sun (2021) present a typology of five principal teaching methodologies, each underpinned by linguistic theory of connectionism, which posits that learning occurs through the formation and reinforcement of associations within neural networks. This perspective emphasizes the importance of building and reinforcing associative networks among linguistic units. Integrating cultural narratives, such as Greco-Roman mythology, with structured and context-rich vocabulary instruction may provide the multi-layered input necessary for strengthening neural connections, thereby supporting more enduring and meaningful vocabulary acquisition.

The sensory-based approach, grounded in psycholinguistic information processing, aligns closely with connectionist principles. It involves encoding vocabulary through auditory and visual stimuli, helping learners establish neural links between a word’s form and meaning. The associative method, rooted in cognitive linguistics and employing Prototype and Conceptual Metaphor theories, further reflects connectionist tenets by encouraging learners to map new vocabulary onto pre-existing mental schemas. This strategy strengthens the interconnected web of semantic relationships and enhances conceptual depth. The morphological method, which teaches vocabulary through word formation processes (e.g., affixation and compounding), cultivates systematic connections among related lexical items. From a connectionist standpoint, this builds associative pathways between morphemes and meanings, promoting more efficient vocabulary retrieval. The context-based approach, which incorporates linguistic, situational, cultural, and pragmatic contexts, supports vocabulary acquisition by embedding words within meaningful usage scenarios. Connectionism suggests that repeated exposure to words in diverse contexts enhances neural connections and reinforces language patterns. Finally, the etymological method, which draws on the historical roots and mythological origins of English words – particularly from Greco-Roman mythology – resonates with connectionist views by linking vocabulary learning with narrative and cultural context. These rich semantic associations can create more robust memory traces.

2. ON GEOLOGY AND MYTHOLOGY

2.1. Traditional holistic worldviews

Traditional cultures were characterized by a fundamentally holistic worldview. For pre-modern societies, the world was not divided into discrete domains – nature, society, knowledge, and spirit – but was instead perceived and experienced as an interconnected whole. Religion, mythology, governance, subsistence, kinship, and natural phenomena were experienced not as separate strands but as integral components of a single cosmological fabric. Within such frameworks, a volcanic eruption could simultaneously signify a geological process and a divine pronouncement, while a drought might represent both ecological failure and a moral or ritual breach. This holistic orientation provides the conceptual backdrop necessary for understanding how geological phenomena became embedded in mythic narrative.

Modern epistemologies, by contrast, privilege analytical division. The scientific method, for all its explanatory power, tends to separate the empirical from the sacred, nature from culture, myth from data. Knowledge is compartmentalized into disciplines – physical, social, and life sciences – each with its own lexicon and conceptual boundaries. While such specialization yields precision, it can obscure the integrated and symbolic ways in which traditional societies understood their world. As Claude Lévi-Strauss (1963) observed, myths are not merely primitive attempts at science; rather, they function as “machines for the suppression of time,” collapsing history, cosmology, and narrative into enduring symbolic forms. Take *disaster*, which originates from Latin *dis-* (“bad”) and *astrum* (“star”), conveying the ancient belief that celestial bodies influence human fate. This contrast between holistic and analytical worldviews sets the stage for understanding why myths became durable vessels for environmental memory.

2.2. Geomythology: memory encoded in myth

Contrary to idealized notions of primordial harmony, ancient landscapes were frequently shaped by catastrophic events – floods, earthquakes, droughts, eruptions, epidemics, and meteor strikes. Cultural memory preserved these disruptions across generations, encoding them within mythic narratives. In doing so, traditional cosmologies sought to reconcile human experience with the larger rhythms of the cosmos. These belief systems were not simply superstitions but complex, adaptive

frameworks – part ritual, part empirical observation, part collective memory – designed to render a hazardous world intelligible and meaningful.

The field of geomythology emerges from this insight, examining how myths encode and transmit memories of geological events. Within this context, myth can be defined as:

“A myth is a narrative within the oral tradition of a community, regarded as true and sacred, set in a distant past – often in an earlier or otherworldly realm – and featuring gods or supernatural beings as its main characters. [...] myths serve to explain the origins of the world, natural phenomena, or cultural practices, employing symbolic and etiological (cause-explaining) elements.” (Vitaliano 1968: 3)

This definition aligns with the foundational work of Dorothy Vitaliano (1968), who first coined the term *geomythology* to describe the study of myths and legends that preserve collective memory of geological events. Vitaliano’s scholarship also underscored the importance of linguistic and cultural competence for geologists, arguing that true engagement with global scientific knowledge requires more than technical skill – it demands an ability to read original texts and appreciate their cultural and historical contexts.

Understanding myths as repositories of environmental knowledge further requires attention to the cognitive and symbolic principles that structure them. Barber and Barber (2005), drawing on anthropological, psychological, and linguistic research, outline key principles that elucidate how memory, trauma, and meaning are encoded in myth.

- The analogy principle: Traditional reasoning often operates through analogy rather than formal logic, assuming meaningful connections between phenomena that resemble each other. Myths preserve such analogical insights, which may appear obscure to modern interpreters who lack the cultural context.
- The wilfulness and kinship principles: Natural forces are personified and integrated into kinship networks, rendering them intelligible within human social frameworks. Phenomena are animated and familial, with gods and spirits enacting the forces of nature.
- The multiple aspects principle: Mythological accounts embrace multiple perspectives on the same event, much like different camera angles capture different facets of a scene. The eruption of Thera, for example, survives in diverse traditions – Egyptian, Greek, and Hittite – each emphasizing different aspects of the catastrophe.

- The perspective principle: Oral traditions compress historical events into archetypes and symbolic forms. While chronological details may be lost, emotional truths and environmental cues persist, reinforced by the enduring presence of geological landmarks (Barber and Barber 2005).

Thus, myth does not simply mirror geological events; it encodes them in emotionally resonant form. As Mircea Eliade (1963) observed, myth and geological time often run in parallel: landscapes become sacred archives of memory. In this way, the Earth is not only a physical archive but also a symbolic altar, a place where narrative and materiality converge.

Furthermore, modern scholarship has expanded this perspective. Burberry (2021) argues that geomythology is not only a tool for interpreting ancient stories, but also a pedagogical instrument: geomyths foster risk awareness, cultural memory, and environmental imagination in contemporary learners. Edited volumes like *Myth and Geology* (Piccardi and Masse 2007) bring together geological case studies with mythic analysis, demonstrating how this interdisciplinary approach can enrich both natural science and humanities.

For example, Masse (2007) explores myths in South America that may reflect cosmic impacts or massive volcanic eruptions, offering empirical foundations for legends of landscape change. In Greece, Piccardi et al. (2008) examine fault-fluid emissions under Delphi, suggesting that the Oracle's prophetic vapours may have originated in geological activity – thus bringing together geochemistry, structural geology, and myth. Parallel work in India by Chandrasekharam (2007) links local myths to seismic activity, showing that tectonic events shaped early cosmologies in ways that continue to resonate.

Even Indigenous Australian traditions provide geomythological insight: Hamacher and Norris (2010) document oral accounts of meteoritic events, while Hamacher (2014) catalogues observations of fireballs and meteorites in lore. These stories offer not only cultural richness, but also potential evidence of geophysical events, highlighting how oral myth and scientific inquiry can mutually inform one another.

2.3. Myth, science and nomenclature

Just as myths encode the memory of cataclysmic events in symbolic language, the names we assign to minerals and elements often reflect the enduring legacy of ancient narratives. Modern science, though governed by empirical methods, still draws from the deep well of classical mythology when naming newly discovered materials. These

names are more than aesthetic choices – they are acts of continuity, embedding cultural memory into the very language of scientific classification. In this way, the transition from mythic narrative to scientific nomenclature demonstrates the persistent entanglement of geology, language, and myth. The periodic table and the mineralogical lexicon can be read not only as scientific catalogues but as mythopoetic texts: layered with meaning, history, and human imagination.

The naming of minerals is a systematic yet culturally rich practice that reflects the intersection of scientific classification and human imagination. Governed by conventions established by organizations such as the International Mineralogical Association (IMA), mineral nomenclature is typically based on a variety of criteria: chemical composition, crystallographic structure, locality of discovery, or distinguishing physical properties. However, throughout history, naming has also drawn on broader cultural sources – including mythology, literature, and the names of historical figures. This practice reveals a human tendency to embed symbolic meaning into scientific language, transforming raw material into culturally resonant substance. By naming minerals after mythological figures or deities, scientists participate – consciously or not – in a long-standing tradition of imbuing the natural world with narrative and memory. These names often carry metaphorical weight, linking the physical qualities of a mineral with the traits or fates of their mythic namesakes. Thus, mineral nomenclature not only serves descriptive and classificatory functions but also acts as a subtle form of cultural storytelling, preserving fragments of ancient worldview within the modern scientific lexicon.

The list below illustrates the practice of naming minerals after Greek mythological beings. Note that the last two minerals, although belonging to modern history, bear the names of Greek gods and mythic figures, each revealing a symbolic or metaphorical resonance with the material's properties.

Table 1. List of chemical elements and minerals named after Greek deities

Amethyst (SiO₂)	The Greeks associated amethyst with Bacchus and the Romans with Dionysus. According to myth, Bacchus, angry with mortals, vowed to unleash tigers on the first person he encountered. This unlucky girl was Amethyst, who prayed to Artemis for protection. The goddess transformed her into a white crystal. In remorse, Bacchus poured wine over the crystal, giving it a beautiful purple hue. The mineral symbolizes sobriety.
Selenite (CaSO₄·2H₂O)	Selenite, named after Selene, the Greek goddess of the Moon, is renowned for its luminous, milky-white appearance, symbolizing purity, calm, and the Moon's influence. It also symbolized rebirth and renewal. In his "Natural History" (1885), the ancient naturalist Pliny the Elder referred to it as "lapis specularis". Selene, a daughter of Hyperion and Theia, and sister to Helios and Eos, was associated with romance and light in darkness. Due to its white, milky appearance, selenite was believed to have calming properties similar to the Moon's influence, a belief still prevalent in pseudo-science today.
Heliotrope (SiO₂)	Heliotrope is associated with the sun god Helios. The Greeks believed that this mineral contained life-giving power, with its dark green colour representing the sea and red specks created by the sun's rays at sunset. Also known as bloodstone, this mineral is a blend of green and black jasper mixed with red hematite. In the 1st century, Pliny the Elder was the first to record its use by magicians, who believed it could grant invisibility.
Promethium (Pm)	During World War II, as part of the Manhattan Project, chemist Charles Coryell, along with his team members Larry Glendening and Jacob Marinsky, worked to identify elements created through the nuclear fission of uranium. The name "promethium" for the radioactive element was suggested by Coryell's wife, Grace Mary. It was inspired by Prometheus, the Greek Titan who defied the Olympians by stealing fire and giving it to humanity. As punishment, Zeus condemned him to be bound to a mountain, where an eagle would eternally feast on his regenerating liver. The name promethium reflects both the dramatic nature of its creation through nuclear fission and serves as a cautionary symbol of the potential consequences, likened to the punishment of war's destructive force. (Beko and Mićović 2022)
Tantalum (Ta)	The name derives from the Greek "Tantalus", for the mythological character who was banished to Hades, the

region of lost souls where he was placed up to his chin in water, which receded whenever he tried to drink it and under branches of fruit, which drew back whenever he tried to pick their fruit. This name was selected because of the insolubility of tantalum in acids, thus when placed in the midst of acids it is incapable of taking any of them up.

3. ON INTEGRATING GEOMYTHOLOGY WITH SCIENTIFIC, ARTISTIC AND PSYCHOLOGICAL THINKING THROUGH GOD HADES

3.1. Geomythology as a pedagogical bridge

Geomythology, as defined by Vitaliano (1973), is the study of myths and legends that preserve cultural memories of geological events such as earthquakes, volcanic eruptions, and landform genesis. Introducing students to these narratives fosters not only linguistic and cultural competence but also a deeper appreciation of geology as a discipline embedded in human experience. This pedagogical approach aligns with research emphasizing the value of visual and metaphorical thinking in teaching complex geological concepts (Davis 2014). Metaphors and imagery throughout geomythology help students navigate the spatial and temporal scales of geological phenomena, enhancing comprehension and interpretive skills (Risch 2008). Furthermore, integrating mythology bridges the sciences and humanities, promoting interdisciplinary awareness and cultivating a holistic understanding of how natural and cultural forces intertwine (Piccardi and Masse 2007).

Incorporating mythological narratives and artistic metaphors into English instruction for geology students transcends conventional methods by fostering creativity, cultural literacy, and critical engagement with the Earth's history through both scientific and humanistic lenses.

3.2. Interdisciplinary resonances of Pluto/Hades

This subsection demonstrates how Hades/Pluto functions as a unifying metaphor across multiple fields, linking the Earth's physical depths, human psychology, and artistic representation.

- **Interdisciplinary resonances: Pluto and the underworld.**
 - The figure of Pluto (Hades) serves as a rich metaphor across disciplines, embodying themes of hiddenness, transformation, and depth that resonate in geology, astronomy, psychology, and art (Beko 2024). These interdisciplinary connections make Pluto a powerful teaching tool to help students see geological, astronomical, and cultural phenomena as interconnected.
- **Geological analogies: The underworld as Earth's interior.**
 - In geology, the term pluton refers to an intrusive igneous rock body crystallized beneath the Earth's surface.
The association extends to the notion of the Earth as a source of fertility and mineral wealth, reflecting the mythic idea of Pluto as the keeper of both death and abundance. Linking geological terminology to the myth of Pluto enables students to grasp Earth's hidden processes through narrative and metaphor.
- **Astronomical and astrological symbolism: Pluto as a dwarf planet.**
 - Astronomically, Pluto was discovered in 1930 as a distant, cold, and enigmatic celestial body. Its later reclassification as a dwarf planet did little to diminish its symbolic power.
 - In astrology, Pluto represents transformation, regeneration, and the revelation of hidden forces – mirroring its mythological counterpart. These symbolic parallels help learners integrate astronomical knowledge with cultural and mythological awareness.
- **Psychological depths: katabasis.**
 - In psychology, Pluto is associated with the unconscious and the concept of katabasis – the descent into one's inner depths, Odysseus, Heracles, Orpheus, and Aeneas all undertake katabatic journeys.
 - The underworld remains accessible in myth through psychopomps like Hermes the narrative of which emphasizes that descent is not final but transformative – a passage to knowledge and renewal.
 - Jungian theory views this journey as essential for individuation, involving confrontation with the shadow (the repressed self) and eventual integration into a more complete personality. The katabasis narrative thus becomes a metaphor for psychological rebirth and transformation. Studying katabasis allows students to link mythological narrative to human psychology and explore how humans internalize natural and existential challenges.

- **Psychological and literary interpretations.**
 - In depth psychology, their partnership symbolizes the integration of conscious and unconscious forces, a prerequisite for personal growth (Jung 1959). Literary works from Eliot's *The Waste Land* to Atwood's *The Penelopiad* reinterpret Persephone's journey as one of self-realization and reconciliation of opposites. This demonstrates to students how myth can serve as a bridge between literature, psychology, and understanding of the natural world.
- **Artistic metaphors: chiaroscuro and depth.**
 - In the visual arts, the interplay of light and darkness (chiaroscuro) symbolizes the descent into the unknown and the emergence of hidden truths.
 - Literature, too, draws on katabasis themes – from Dante's *Inferno* to modern reinterpretations – where the underworld serves as a space of trial, insight, and renewal. These artistic representations make abstract geological and psychological concepts tangible and memorable for learners.
- **Artistic and ecological influence.**
 - This duality has inspired funerary art, neoclassical painting, and literary depictions that frame the underworld not simply as a place of punishment but as a liminal space for transformation and remembrance.
 - The myth also aligns with scientific and ecological paradigms, in which decay and regeneration are part of the same cycle. Linking artistic and ecological interpretations with myth reinforces holistic thinking about environmental and cultural systems.
- **The marriage of Hades and Persephone: duality and transformation.**
 - The myth of Hades and Persephone exemplifies the cyclical nature of life and death, light and dark, and the balance between concealment and revelation. Furthermore, their union reflects the balance between death as an ending and as a transformative beginning.
 - Unlike many turbulent Olympian unions, Hades and Persephone form a functional partnership governing the underworld, with Persephone as Queen and co-sovereign. Their story provides a narrative framework for students to understand ecological cycles, transformation, and interdependence in both natural and cultural systems.
- **Minerals and rocks associated with Hades.**
 - **Stibnite.** Strongly associated with Pluto and the concepts of rebirth and manifestation.

- **Obsidian.** A volcanic glass, obsidian was often used in ancient times for making tools and weapons, and its dark, reflective surface was also linked to the Underworld and the realm of the dead.
- **Onyx.** The dark, opaque mineral/rock that was used for jewelry and decorative objects.
- **Jet.** A fossilized form of lignite coal, jet was extensively used in funerary jewelry during the Roman period, symbolizing mourning and connection to the underworld.
- **Hematite.** The iron oxide mineral is known for its metallic lustre and dark grey to black colour. It was believed to have protective properties and was sometimes associated with death and the afterlife.
- **Malachite.** Though green and associated with life, malachite's deep coloration and use in ancient amulets linked it sometimes with protection against evil spirits, including those from the underworld.

These examples show students how mythological associations can be linked to tangible geological materials, reinforcing memory and interdisciplinary connections.

- **Minerals associated with Persephone.**

- **Garnet.** The garnet is most famously linked to Persephone because of its deep red colour, symbolizing the pomegranate seeds she ate in the underworld. Garnets are also seen as symbols of commitment, destiny, and cycles – perfect for Persephone's dual life between the world above and below. In magical or modern esoteric traditions, garnet is sometimes called the “stone of the underworld queen.”
- **Obsidian.** Already mentioned with Hades, but it also suits Persephone during her chthonic (underworld) phase. Represents protection, transformation, and shadow work – themes central to her descent and return. Obsidian's reflective, glassy surface can symbolize inner truth and the mystery of feminine power.
- **Labradorite.** Known for its iridescent, shifting colours, labradorite symbolizes hidden knowledge, mystery, and the veil between worlds – perfect for Persephone as a threshold figure between life and death. Often used in modern mystical practices to represent transformation and feminine initiation.
- **Peridot.** Associated with spring, renewal, and vitality, matching Persephone's return to the surface and her identity as goddess of vegetation and growth. Its bright green hue contrasts beautifully with darker underworld stones, reflecting her dual nature.

These minerals exemplify how myth informs cultural and symbolic understanding of natural resources.

- **Plants associated with Hades and Persephone.**

- **Asphodel.** This plant is strongly associated with the afterlife in Greek mythology. The *Asphodel Meadows*, where the souls of the dead reside, are often depicted as being covered in asphodel flowers.
- **Cypress.** The cypress tree is a symbol of mourning and is considered sacred to Hades.
- **Narcissus.** In the myth of Persephone's abduction, Hades uses a narcissus flower to lure her away from her companions, leading to her descent into the underworld.
- **Pomegranate.** The pomegranate is known as the "fruit of the dead" and is prominently featured in the story of Hades and Persephone. Persephone eats six pomegranate seeds in the underworld, which binds her to Hades for a portion of the year.
- **Mint.** Mint is linked to Hades through the myth of Minthe, a nymph who was transformed into a mint plant by Persephone out of jealousy.
- **White poplar.** The white poplar is also associated with Hades, sometimes through myths involving his consort Persephone. By connecting myth to flora, students can see the interplay between cultural symbolism, ecology, and environmental awareness.

- **Animals associated with Hades.**

- **The screech-owl.** A bird of ill-omen was sacred to the god Hades. It was the metamorphosed form of Askalaphos, the daemon orchardist of Hades who was transformed into a screech-owl by the goddess Demeter as punishment for reporting Persephone's tasting of the pomegranate seed.
- **Cerberus.** The three-headed dog guarding the gates of the Underworld, preventing the dead from leaving and the living from entering.
- **Snake / Serpent.** Commonly linked with the underworld and regeneration due to shedding their skin; snakes were sacred to Hades and often depicted around his throne.
- **Black rams and goats.** Animals sacrificed to Hades in ancient rituals; their dark color symbolized death and the chthonic (underworld) realm.
- **Vultures.** Scavenger birds are often associated with death and the transition between life and the underworld.
- **Bats.** Nocturnal and dwelling in caves, bats symbolize darkness and the hidden, linking them metaphorically to the realm of Hades.

These associations illustrate to learners how myths encode knowledge about animal behaviour, symbolism, and ecological roles, enriching their holistic understanding of the natural world

4. CONCLUSION

Geomythology reminds us that beneath the surface of the Earth and the words we use to describe it lie layers of human memory, imagination, and meaning. As this paper has shown, myths are not relics of superstition but enduring narratives that encode collective experience, emotional truth, and symbolic understanding of natural events. From the etymological roots of our scientific language to the metaphors that shape our psychological and artistic worlds, geomythology bridges disciplines, illuminating how language and landscape reflect and inform each other across time.

In recovering the hidden connections between geology and mythology, we rediscover the value of holistic thinking – where the physical, cultural, and spiritual dimensions of human life are intertwined. The figure of Pluto exemplifies this principle, embodying depth, concealment, and transformation across geology, astronomy, psychology, and art. His mythological dominion over what is buried parallels the geologist's work of unearthing the Earth's secrets, the psychologist's journey into the unconscious, and the artist's exploration of darkness and light. Myths of Persephone, Tantalus, Prometheus, and others likewise reflect a profound human awareness of cycles of destruction and renewal, abundance and loss, that continue to resonate in contemporary ecological and cultural contexts.

Just as the famed assertion, attributed to Charlemagne, that “to know another language is to possess a second soul” points to the transformative power of new understanding, so too does the study of geomythology draw us into a deeper journey of revelation and self-discovery. Myths rooted in the landscape are not merely echoes of ancient belief – they are living codes, inviting us to remember, reinterpret, and reimagine. In engaging with them, we alchemize our being, unlocking gifts and potentials in ways that are both unprecedented and unlimited.

The pedagogical implications are equally significant. Integrating geomythology into education nurtures not only linguistic and scientific competence but also creativity, cultural literacy, and emotional engagement. It encourages students to think metaphorically and critically, to recognize that knowledge is not merely technical but also narrative, symbolic, and transformative. In doing so, geomythology cultivates a kind of intellectual humility: a recognition that the past is never entirely past, and

that our understanding of the Earth and ourselves is always provisional, always open to deeper layers of meaning. The future of geomythology thus lies in its capacity to reveal the past – not only as it was, but as it continues to live on in our words, our landscapes, and our imaginations.

REFERENCES

1. Akbulut, Fatma Demiray (2017), "Effects of Morphological Awareness on Second Language Vocabulary Knowledge", *Journal of Language and Linguistic Studies*, 13(1), 10–26.
2. Arbib, Michael Anthony (2012), *How the Brain Got Language: The Mirror System Hypothesis*, Oxford University Press, Oxford
3. Barber, Elizabeth Wayland, Paul Thomas Barber (2005), *When They Severed Earth from Sky: How the Human Mind Shapes Myth*, Princeton University Press, Princeton
4. Beko, Lidija (2024) "Teaching English language vocabulary through geomythology", In: *Zapisnici srpskog geološkog društva za 2024. godinu, e-biblioteka*, <https://ebiblioteka.sgd.rs/items/show/213> .
5. Beko, Lidija, Dragoslava Mićović (2022), "Theory of Practice and a Brief Overview of Task Design in University CLIL Teaching – an Example of Geomitology", In: *Philologist: Journal of Language, Literature, and Culture*, 25, 203–221.
6. Bellomo, Tom (2005), *Latinate Word Parts and Vocabulary: Contrasts among Three Groups Comprising the Community College Preparatory Reading Class*, PhD diss., University of Central Florida
7. Bereiter, Carl (1991), "Implications of Connectionism for Thinking about Rules", *Educational Researcher*, 20(3), 10–16.
8. Boers, Frank (2004), "Expanding Learners' Vocabulary through Metaphor Awareness: What Expansion, What Learners, What Vocabulary?", In: *Cognitive Linguistics, Second Language Acquisition, and Foreign Language Teaching*, edited by Michel Achard and Susanne Niemeier, De Gruyter Mouton, Berlin, 211–232.
9. Burberry, Timothy (2021), *Geomythology: How common stories reflect Earth events*, Routledge
10. Chandrasekharam, Dornadula (2007), "Geo-mythology of India": In Luigi Piccardi & W. B. Masse (Eds.), *Myth and Geology*, Geological Society

- Special Publications, 25–40.
11. Crystal, David (2003), *English as a Global Language*. 2nd ed., Cambridge University Press, Cambridge
 12. Davis, Kathryn (2014), "Engaged Language Policy and Practices", *Language Policy*, 13(2), 83-100.
 13. Eliade, Mircea (1963), *Myth and Reality*, Translated by Willard R. Trask, Harper, New York
 14. Ellis, Nick Clifford (2003), "Constructions, Chunking, and Connectionism: The Emergence of Second Language Structure", In: *The Handbook of Second Language Acquisition*, edited by Catherine J. Doughty and Michael H. Long, Blackwell, Malden, MA, 63–103.
 15. Grabe, William (1991), "Current Developments in Second Language Reading Research", *TESOL Quarterly*, 25(3), 375–406.
 16. Hamacher, Duane (2014), "Recorded accounts of meteoritic events in the oral traditions of Indigenous Australians", *arXiv preprint*
 17. Hamacher, Duane, & Norris, Ray P. (2010). Australian Aboriginal geomythology: Eyewitness accounts of cosmic impacts? *arXiv preprint*.
 18. Jia, Fan, Sun Yu (2021), "The Application of Greco-Roman Mythology Learning in English Vocabulary Teaching from the Perspective of Etymology", *International Journal of Languages, Literature and Linguistics*, 7(1), 38–43.
 19. Jung, Carl Gustav (1959), *The Archetypes and the Collective Unconscious*, 2nd ed., Vol. 9, Princeton University Press, Princeton, NJ
 20. Lévi-Strauss, Claude (1969), *The Raw and the Cooked: Introduction to a Science of Mythology, Vol. I*, Harper and Row, New York
 21. Maxson, Rachel Elizabeth (2010), *A Kachina by Any Other Name: Linguistically Contextualizing Native American Collections*, Master's thesis, University of Denver
 22. Piccardi, Luigi, W. Bruce Masse (eds.) (2007), *Myths and Geology*, Geological Society of London, London
 23. Piccardi, Luigi, Cassandra Monti, Orlando Vaselli, Franco Tassi, Kalliopi Gaki-Papanastassiou, Dimitris Papanastassiou (2008), "Scent of a myth: Tectonics, geochemistry, and geomythology at Delphi (Greece)", *Journal of the Geological Society*, 165(1), 5–18.
 24. Pliny the Elder (1885), *Natural History*, Translated by John Bostock and H. T. Riley, Taylor and Francis, London

25. Risch, Janet (2008), "Metaphor and Information Visualization: The Importance of Metaphorical Thinking in Visual Problem-Solving", *Information Visualization*, 7(2), 111–124.
26. Rumelhart, David Everett, Peter Mark Todd (1993), "Learning and Connectionist Representations", In: *Attention and Performance XIV: Synergies in Experimental Psychology, Artificial Intelligence, and Cognitive Neuroscience*, edited by David E. Meyer and Sylvan Kornblum, MIT Press, Cambridge, MA, 3–30.
27. Sloutsky, Vladimir, Hyungwook Yim, Xin Yao, Simon Dennis (2017), "An Associative Account of the Development of Word Learning", *Cognitive Psychology* 97, 1–30.
28. Vitaliano, Dorothy (1968), "Geomythology", *Journal of the Folklore Institute*, 50(1), 11
29. Vitaliano, Dorothy (1973) *Legends of the Earth: Their Geologic Origins*, Indiana University Press, Bloomington

ETIMOLOGIJA I GEOMITOLOGIJA: OTKRIVANJE SKRIVENIH ISTORIJA ZEMLJE I JEZIKA

Sažetak:

Rad razmatra međusobno uslovljene uloge etimologije i geomitologije u tumačenju načina na koje su ljudske kulture kroz istoriju konceptualizovale, imenovalе i memorisale Zemlju. Polazeći od jezika kao centralne kategorije interdisciplinarnog istraživanja, pokazuje se da naučna terminologija, posebno ona grčko-rimskog porekla, u svojoj unutrašnjoj strukturi inkorporira narativne, metaforičke i memorijske slojeve kulturnog iskustva. U okviru konekcionističke kognitivne paradigme argumentuje se da etimološka analiza doprinosi jačanju semantičkih mreža povezivanjem jezičkih formi sa mitskim i simboličkim asocijacijama, čime se unapređuju leksičko usvajanje i konceptualno razumevanje. Dalja analiza usmerava se na interakciju geologije i mitologije, ukazujući na činjenicu da su tradicionalne kulture prirodne fenomene, poput zemljotresa, vulkanskih erupcija i poplava, kodirale u trajne mitske strukture. Oslanjajući se na fundamentalne studije geomitologije, uključujući radove Vitalijano, kao i na naknadna interkulturalna istraživanja, pokazuje se da mit funkcioniše kao repozitorijum ekološkog i geološkog znanja. Istovremeno, savremena naučna nomenklatura nastavlja da se oslanja na mitološke figure poput Atlasa, Prometeja i Hada, čime se kulturno pamćenje transformiše i održava u domenu mineralogije i hemije. U završnom delu, figura Hada/Plutona interpretira se kao

interdisciplinarni čvor koji povezuje geologiju, psihologiju, astronomiju, umetnost i pedagogiju. Na taj način, geomitologija se konceptualizuje kao medijator između prirodnih i humanističkih nauka, pružajući integrisani teorijsko-metodološki okvir za nastavu, tumačenje i razumevanje složene isprepletenosti Zemlje, jezika i imaginacije.

Ključne reči: geomit; etimologija; simbolizam; transformacija; refleksija

Author's address

Adresa autorke

Lidija Beko

University of Belgrade

Faculty of Mining and Geology

lidija.beko@rgf.bg.ac.rs