

THE COGNITIVE REPRESENTATION OF PHRASEOLOGICAL UNITS IN THE DOMAIN OF "SCIENCE" IN FRENCH PHRASEOLOGY

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Abstract

This article provides an in-depth exploration of the cognitive and cultural characteristics of phraseological units (PUs) within the domain of "science" in French phraseology. By integrating insights from cognitive linguistics, phraseology, and cultural studies, the article examines the semantic, grammatical, and etymological aspects of these units. Special attention is given to the role of metaphorical mapping, syntactic rigidity, and cultural alignment in shaping science-related PUs. The findings contribute to a better understanding of how these units reflect epistemological values and cultural narratives embedded in French scientific discourse.

Introduction

Phraseological units (PUs) serve as linguistic windows into the culture, values, and intellectual traditions of a language community. In the context of French scientific discourse, PUs are not merely linguistic artifacts but also carriers of epistemological values, reflecting the intellectual rigor and cultural heritage of France. Cognitive linguistics provides a powerful framework for understanding the formation, usage, and interpretation of these units by highlighting the interplay of metaphor, structure, and cultural meaning.

This article explores the characteristics of French science-related PUs by addressing key questions: What are the semantic and structural features of science-related PUs in French? How do these PUs reflect cognitive strategies like metaphorical mapping and categorization? What cultural and historical factors influence their formation and usage?

By answering these questions, this study aims to offer a comprehensive analysis of the cognitive and cultural dimensions of French scientific phraseology.

Main Body

1. Lexical and Semantic Characteristics; science-related PUs in French often revolve around key lexical terms such as: *raison* (reason), *preuve* (proof), *connaissance* (knowledge), *hypothèse* (hypothesis).

These terms act as the semantic core of many PUs. For example: *chercher la preuve* (to seek proof) highlights the epistemological pursuit of evidence. *Logique implacable* (implacable logic) underscores the rigor required in scientific reasoning.

According to Mel'čuk (1998), these PUs are deeply rooted in cognitive processes like categorization and metaphorical mapping. For instance, the metaphor *la connaissance est une lumière* (knowledge is light)

underpins expressions like *éclairer un problème* (to shed light on a problem), linking the concept of understanding to illumination[3].

2. Grammatical and Structural Features

French PUs exhibit a high degree of syntactic rigidity, ensuring their idiomaticity. For instance: *Tirer une conclusion* (to draw a conclusion) follows a fixed syntactic structure that resists alteration without losing its idiomatic meaning.

Gross (1996) emphasizes the importance of this rigidity in preserving the semantic unity of PUs. Moreover, the combination of abstract nouns (e.g., *raison*, *preuve*) with dynamic verbs (e.g., *tirer*, *chercher*) reflects the procedural nature of scientific inquiry[7].

3. Metaphorical and Cognitive Dimensions

Metaphors play a central role in the cognitive structuring of science-related PUs[5]. Drawing on Lakoff and Johnson's (1980) theory of conceptual metaphor, several dominant metaphors in French scientific discourse can be identified: *science is a journey*: *Poursuivre une hypothèse* (to pursue a hypothesis) conceptualizes scientific exploration as movement toward a goal.

Science is construction: *Bâtir une théorie* (to build a theory) portrays scientific work as architectural construction.

These metaphors not only simplify abstract concepts but also align with broader cultural narratives, such as the Cartesian emphasis on clarity and rationality.

4. Cultural Dimensions

French scientific PUs are deeply embedded in the country's intellectual traditions. The Cartesian legacy, emphasizing reason and methodical doubt, is evident in expressions like: *Esprit critique* (critical mind) – representing analytical thinking. *Doute méthodique* (methodical doubt) – reflecting Descartes' approach to skepticism as a pathway to truth. These PUs serve as linguistic manifestations of the epistemological principles that underpin French scientific thought.

5. Etymological Analysis

The historical roots of French science-related PUs often trace back to Latin and Greek. For example: *Faire une démonstration* (to make a demonstration) originates from the Latin *demonstrare* (to show clearly), highlighting the importance of clarity in communication[2]. *Théorie* (theory) derives from the Greek *theoria* (contemplation), reflecting the contemplative nature of scientific inquiry. Etymological analysis also reveals the interdisciplinary exchange of concepts. Terms like *preuve* evolved from legal contexts to become central to scientific discourse, illustrating the dynamic nature of phraseological development.

Science-related phraseological units (PUs) in French are often characterized by their reliance on Latin and Greek roots, which serve as the foundation for much of the scientific lexicon. These PUs are not just linguistic constructs; they also carry significant semantic and structural features that ensure their precise use in scientific discourse.



Examples of latin and greek root integration: "Faire unedémonstration" (to demonstrate). The verb faire (to make) combines with démonstration, derived from the Latin demonstrare (to show clearly). The prefix de- implies "thoroughly," while monstrare means "to show or point out." Together, they emphasize the act of presenting evidence in a clear and methodical way[4]. This PU underscores the importance of transparency and rigor in scientific presentations, reflecting the Enlightenment's emphasis on empirical evidence.

Structural Rigidity: The phrase relies on the strict combination of faire with a noun object (démonstration). Any alteration (e.g., démonstration faire) would disrupt its idiomatic meaning.

"Esprit critique" (critical mind) the term esprit (mind, spirit) originates from the Latin spiritus (spirit, breath). In scientific discourse, it signifies intellectual rigor and the ability to evaluate ideas critically. This PU embodies the French tradition of rational skepticism, aligning with the Cartesian principle of questioning assumptions.

Structural Functionality: The adjective critique (critical) modifies esprit to specify its function within a scientific context. The fixed pairing ensures the expression conveys a nuanced concept of rational inquiry[5].

6. Cognitive Strategies

Cognitive linguistics sheds light on the strategies employed in the formation and interpretation of science-related PUs: metaphorical Mapping: Associating abstract scientific concepts with concrete experiences, as in jeter la lumière sur (to cast light on)[1]. Categorization: organizing related concepts under shared schemas, as in théories concurrentes (competing theories). Frame Semantics: understanding PUs within the broader context of scientific discourse, as in mettre à l'épreuve (to test). These strategies enhance cognitive efficiency, allowing speakers to navigate the abstract and complex domain of science with greater ease.

Conclusion

French science-related phraseological units are not just linguistic expressions but cognitive and cultural artifacts that encapsulate the epistemological values of French scientific discourse. Through their lexical, grammatical, and metaphorical features, these PUs reflect the intellectual traditions and cultural narratives of France.

The findings of this study underscore the importance of phraseology in understanding the cognitive and cultural dimensions of scientific language. By integrating insights from cognitive linguistics, etymology, and cultural studies, this article provides a holistic view of the mechanisms underlying the formation and interpretation of science-related PUs. Future research could extend this analysis to comparative studies, exploring cross-linguistic variations and their implications for global scientific discourse.

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