

SYNTACTIC COMPLEXITY IN THE PERCEIVED CREDIBILITY OF ACADEMIC WRITING: A CROSS-DISCIPLINARY ANALYSIS

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The given research aims at examining the role of syntactic complexity in shaping the perceived credibility of ideas and tenets expressed in scholarly articles across four disciplines, such as bioengineering, physics, history and sociology. The study resorts mostly to the qualitative analysis of complex, multi-clause structures in recent scientific articles, attempting to draw lines between the specifics and the communicative goals of each discipline and the syntactic peculiarities employed to their felicitous implementation. The findings indicate that the appropriate use of sophisticated syntactic constructions ensures the necessary balance between the clarity and explicitness and scholarly precision and academic depth. Hence, in bioengineering and physics, multi-clause sentences are used to emphasize empirical precision and highlight functional relationships. In history, causal and sequential links, as expressed by the corresponding syntactic constructions, provide coherent narratives, thereby promoting authenticity and reality in historical interpretation. Sociological texts mostly rely on embedded and relational clauses for presenting social phenomena from various perspectives and planes. While the sciences tend to emphasize precise measurements and straightforward technical language, the humanities and social sciences place more value on contextual depth and narrative cohesion. The comparison of disciplines in terms of syntax use, comes to prove the vital role of the latter as a direct indicator of intellectual rigor and credibility of academic texts.

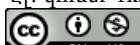
Key words: *syntactic complexity, academic writing, perceived credibility of texts, multi-clause structures, cross-disciplinary analysis*

Introduction

The role of syntax in academic writing goes far beyond structuring sentences. Namely, it is pivotal for shaping the tone, manifesting the authority, and ensuring the cogency and influence of any scholarly work. The effect of syntactic complexity on the perceived credibility and precision of the scholarly articles cannot be overestimated. Firstly, it should be mentioned that by “perceived credibility” we come to define the crucial and fundamental concept of academic writing and the ultimate goal of any

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research, namely the extent to which readers find a text trustworthy and authoritative. In fact, the successful interplay of syntax – an ultimate tool for the verbal realization of human logic flow, and the credibility the clarity of the writing attributes value to the findings and further development of the scientific findings revealed. As is observed by Halliday and Matthiessen syntax is more than just a grammatical framework; it serves as a means to enact meaning and social roles in communication. They assert that "Language is as it is because of what it has to do" (Halliday & Matthiessen, p. 31), underscoring the central role of syntax in achieving communicative objectives. This perspective suggests that the choice of the appropriate syntax in academic writing conveys signals of authority, expertise, and the final purpose of the research. While clarity ensures that ideas are presented in a comprehensible and inambiguous way, syntactic sophistication often serves as an indicator of professionalism and intellectual depth. However, these should be used harmoniously to serve its function. Oversophisticated syntax may lead to uncertainty and equivocation of the article which is unacceptable for scientific work, while overly simplistic structures can diminish the text's perceived depth and scholarly rigor.

The importance of this issue is further explored in T. Givón's research into the cognitive demands imposed by syntactic structures. Givón argues that while more intricate syntax can enhance the semantic parameter and precision, it also places greater cognitive demands on the reader (Givón, p. 17). This creates a tension in academic writing, where authors must navigate the need for syntactic sophistication while ensuring that their work remains engaging and comprehensible. Different academic disciplines deal with this challenge in distinct ways. Fields such as physics and bioengineering often rely on highly technical language and dense formulated syntactic units to communicate complex and precise concepts. By contrast, disciplines like history and sociology tend to employ more narrative-driven approaches for readability and rhetorical persuasion, alongside with technical detail. These differences rise the following questions: Are there levels of syntactic complexity that are particularly effective for ensuring high credibility of the text within specific disciplines? Can these levels be identified and optimized?

The study presented addresses these questions, undertaking a systematic analysis of academic texts across four disciplines: history, physics, sociology, and bioengineering. These fields were selected to represent a diverse spectrum of writing styles and approaches. The analysis focuses on a number indicators of syntactic complexity, including sentence length, the use of subordinate clauses, embedded phrases, and overall syntactic variability. By examining these elements, the study seeks to reveal the samples of syntactic organization that are in alignment with particular disciplinary conventions and goals.

The findings of this research may have practical implications for academic writers. By understanding the optimal level of syntactic complexity for various disciplines, authors can better balance the demands of clarity and credibility, ensuring that their work is both accessible to readers and reputable.

Hence, below we analyze how syntactic complexity varies across different academic disciplines and if there is an optimal level of complexity that enhances perceived credibility while maintaining clarity. Through a detailed analysis of texts from history, physics, sociology, and bioengineering, this study aims to offer a detailed understanding of how syntax influences the perception of academic work.

Qualitative Analysis of the Syntactic Complexity in Selected Papers

To address the questions outlined above we employ a qualitative method of analysis, which is a weighty approach to examine syntactic complexity across disciplines. Through the study of randomly selected samples from recent publications across all the four disciplines mentioned, we make an attempt to bring to light the most effective syntactic conventions that shape felicitous and pertinent scholarly communication. This examination allows for a detailed, context-driven exploration of syntactic structures and their role in academic writing. Specifically, the analysis focuses on two contemporary papers from each of the following disciplines: History, Physics, Sociology, and Bioengineering. These fields were chosen to represent a diverse spectrum of academic style, from narrative-driven to highly technical, providing a broad basis for comparative analysis.

The qualitative method places syntactic structures within the broader context of each article's content, objectives, and intended audience, which is critical for interpreting how syntax aligns with disciplinary norms. For example, the dense technical jargon as highly exploited by physics papers, or the narrative techniques in historical writing acquire more transparency when analyzed through the prism of the syntactic strategies that support these features. The contextual approach ensures that findings are both meaningful and applicable to the unique norms of each discipline.

For higher credibility, we have made the selection of articles from high-impact, peer-reviewed journals, reflecting the highest standards of modern academic writing. The comparative nature of this analysis sheds light on both differences and similarities in syntactic complexity across disciplines, offering valuable insights into effective academic communication and better understanding of how syntax underpins diverse scholarly practices.

Selected papers for analysis are:

Sociology

1. *Making the match: How Chinese food-movement organizations develop consumers in the alternative market.*

Sociological forum, 2024

2. *The unstable social networks of students: Where does dissimilarity drive tie dissolution?*

Sociological forum, 2024

History

1. *The formation and cross-border connectivity of bank branch networks across the Canadian provinces: regional internationalization via interbank networks and foreign trade (1879–1900)*

The Economic History Review, 2024

2. *Review of periodical literature for 2023:(iii) 1500–1700*

The Economic History Review, 2024

Physics

1. *Dynamical Sensitivity of Three-Layer Micro Electromechanical Systems to the Optical Properties of the Intervening Liquid Layer*

Physics, 2023

2. Optical Properties of Two Complementary Samples of Intermediate Seyfert Galaxies

Physics, 2023

Bioengineering

1. Electroconductive Nanofibrous Scaffolds Enable Neuronal Differentiation in Response to Electrical Stimulation without Exogenous Inducing Factors

Bioengineering, 2023

2. Improved Hypertension Risk Assessment with Photoplethysmographic Recordings Combining Deep Learning and Calibration

Bioengineering, 2023

Specific syntactic structures from the selected texts in History, Physics, Sociology, and Bioengineering, will be examined to assess the complexity and functional use of syntax in each discipline. The structures mentioned will be mostly subordinate clauses (e.g., adverbial, relative, and complement clauses), coordination patterns, and the use of embedded structures. Sentence length, frequency of passive voice, and nominalization patterns are also within the focus of our attention to understand how these structures contribute to the scholarly solidity and readability of the texts.

The theoretical basis of the analysis draws on the work of Noam Chomsky (2014) in *The Minimalist Program*, which explores the hierarchical nature of syntax and its implications for linguistic economy. Chomsky's insights are crucial for understanding the balance between syntactic complexity and the transparency of meaning. Additionally, Talmy Givón's (2009) *Syntax: An Introduction*, where the cognitive load of speech is associated with layered syntactic constructions. This perspective provides an appropriate a framework to assess how complex structures impact reader comprehension. He notes that "the more complex the syntactic structure, we resort to the greater the processing load on the reader's working memory" (Givón, 2001, p. 45). In other words, under this light the importance of balance between syntactic complexity and the clarity of expression facilitates effective communication in academic writing.

Based on the above, the study is set to uncover disciplinary differences in the use of syntactic structures and their potential role in shaping the perceived credibility of academic texts. The detailed and multilevel analysis is a profound channel for arriving at the understanding of how syntactic choices reflect and reinforce the communicative goals of each field.

Syntactic Analysis of Sentences Across the Disciplines

Let us start by analyzing complex sentences from the papers mentioned. We have made sampling and selected a number of multi-clause constructions from each field to showcase how each of the fields employs syntactic tools to implement and realize its specific objectives with the final goal of making the texts credible for the audience.

Bioengineering

Consider the sentence: "While scaffolds must provide mechanical strength to support tissue growth, they should also degrade over time, which allows the body to replace the

scaffold with its own tissue, and this degradation must match the rate of new tissue formation to ensure proper integration."

Here, the sentence integrates numerous syntactic devices to address both functional and biological considerations. The concessive clause, "*While scaffolds must provide mechanical strength to support tissue growth,*" establishes an equilibrium between two competing objects, emphasizing the dual demand on scaffolds. The main clause, "*they should also degrade over time,*" introduces the primary clause, which is further expanded by a relative clause, "*which allows the body to replace the scaffold with its own tissue.*" This relative clause, in its turn, flows into a coordinated main clause, "*and this degradation must match the rate of new tissue formation,*" culminating in a purpose clause, "*to ensure proper integration.*" Together, these syntactic choices intertwine the technical requirements of scaffold design with the biological processes they aim to support. The multi-level construction mirrors the interplay between engineering precision and biological complexity.

Physics

In physics, syntactic constructions are of extreme importance to convey the overcomplicated meaning of practical and theoretical phenomena in the most precise, yet logical and consecutive manner. Consider: "*When electrons are confined in a quantum well, the density of states becomes quantized, which fundamentally alters the energy distribution, and this phenomenon is critical for designing optoelectronic devices that rely on precise control of electron behavior.*"

The temporal adverbial clause, "*When electrons are confined in a quantum well,*" sets the background and conditions wherein the physical processes are to unfold. The main clause, "*the density of states becomes quantized,*" delivers the core scientific observation, while the relative clause, "*which fundamentally alters the energy distribution,*" presents the theoretical implications. The coordinated main clause, "*and this phenomenon is critical for designing optoelectronic devices,*" shifts from theory to application, illustrating how fundamental principles turn into technological innovation. Finally, the embedded relative clause, "*that rely on precise control of electron behavior,*" echoes back to the practical dependencies on quantum mechanics. The syntax here reflects the discipline's emphasis on linking fundamental theory with technological advancement.

History

In historical writing, syntax is often used as a means of coherent flow of historical events and cause-effect smooth and organic transition. Consider the sentence: "*Although the Great Depression devastated global economies, some nations implemented protectionist policies that exacerbated economic tensions, which later contributed to the rise of authoritarian regimes, and these regimes, in turn, catalyzed conflicts that culminated in World War II.*"

The concessive clause, "*Although the Great Depression devastated global economies,*" introduces the background for the further development of the events flow highlighting the contrast of economic hardships with the idea presented in the main clause, "*some nations implemented protectionist policies,*" which presents the initial action. The following relative clause, "*that exacerbated economic tensions,*" reveals its

immediate consequences. The next relative clause, "*which later contributed to the rise of authoritarian regimes*," widens the chain of consequentiality, leading into a coordinated main clause, "*and these regimes, in turn, catalyzed conflicts*." The final relative clause, "*that culminated in World War II*," results in the logical historical endpoint. The sentence's structure reflects the natural course of historical events in full harmony with the syntactic mechanisms, where one event leads to another.

Sociology

In sociology, syntax often reflects the complexity of social dynamics and their gradual unraveling. The sentence "*While friendships often form based on shared interests and values, they may dissolve when structural embeddedness weakens, which reduces opportunities for interaction, and this loss of contact can lead to diminished emotional closeness, ultimately causing the relationship to end*" exemplifies this approach.

The concessive clause, "*While friendships often form based on shared interests and values*," introduces a general principle about relationship formation, while the main clause, "*they may dissolve*," shifts focus to their fragility. The conditional adverbial clause, "*when structural embeddedness weakens*," explains a key mechanism behind dissolution. The relative clause, "*which reduces opportunities for interaction*," delves deeper into this process, leading to the coordinated main clause, "*and this loss of contact can lead to diminished emotional closeness*." Finally, the causal adverbial clause, "*ultimately causing the relationship to end*," ties the narrative to its emotional and social outcome. The sentence's progressive embedding mirrors the gradual nature of social disintegration, emphasizing the interconnectedness of structural, interpersonal, and emotional factors.

Comparative Observations

1. Clause Variety:

- All disciplines use concessive, relative, and adverbial clauses to structure complex ideas.
- History tends to emphasize causal relations, while sociology integrates emotional and structural mechanisms.
- Physics and bioengineering use conditional and purpose clauses to describe functional relationships and implications.

2. Coordination vs. Embedding:

- Bioengineering and sociology favor embedded clauses to reflect interdependencies within processes.
- History leans on coordinated clauses to depict sequential historical events.
- Physics uses a balance to highlight both cause-effect relationships and applications.

3. Disciplinary Focus:

- Bioengineering: Balances descriptive and functional clauses.
- Physics: Focuses on theoretical implications leading to applications.
- History: Uses narrative progression to show consequentiality.
- Sociology: Explains social dynamics through multi-level relationships.

Conclusion: Syntactic Complexity and Perceived Credibility Across Disciplines

Syntactic complexity enhances perceived credibility by showcasing depth, precision, and nuanced reasoning, with each discipline employing it differently to meet audience expectations.

- **Bioengineering** uses multi-clause constructions to link specific processes (e.g., scaffold degradation) with measurable outcomes, emphasizing systematic and empirical rigor to foster credibility.
- **Physics** relies on layered clauses to explain logical and causal relationships in theoretical and applied contexts, signaling analytical precision and reliability.
- **History** employs complexity to connect events and their consequences, using temporal and causal chains to provide coherent narratives and establish trust in the interpretation of interconnected phenomena.
- **Sociology** integrates complex syntax to explore nuanced social interactions, balancing empirical analysis with relational depth, thus aligning analytical rigor with human complexity.

While sciences emphasize measurable precision, humanities and social sciences focus on narrative and contextual clarity. Across disciplines, syntactic complexity reflects intellectual rigor and builds credibility by tailoring arguments to the expectations and needs of specific audiences.

ՈՈՒԶԱՆԱԿԱՐԱՎԵՏՅԱՆ – Շարակյուսական բարդության դերը ակադեմիական գրագրության ընկալման հավաստիության համար. միջամտավարզային վերլուծություն – Այս հետազոտությունը նպատակ ունի քննելու շարակյուսական բարդության ազդեցությունը գիտական հոդվածներում ներկայացված գաղափարների և դրույթների ընկալող համոզության ձևավորման վրա գիտական չորս ուղղությունների՝ կենսահնմեներիայի, ֆիզիկայի, պատմության և սոցիոլոգիայի օրինակով։ Ուսումնասիրությունը հիմնականում հիմնվում է որակական վերլուծության վրա՝ քննարկելով արդի գիտական հոդվածներում հանդիպող բազմաբաղդրիչ բարդ նախադասություններ և փորձելով զուգահեռներ անցկացնել յուրաքանչյուր ոլորտի առանձնահատկությունների ու հաղորդակցական նպատակների միջև, ինչպես նաև բացահայտել շարակյուսական այն առանձնահատկությունները, որոնք նպաստում են այդ նպատակների արյունավետ իրագործմանը։

Արդյունքները ցույց են տալիս, որ բարդ շարակյուսական կառույցների տեղին կիրառումը պահովում է անհրաժեշտ հավասարակշռություն հստակության և պարզության, ինչպես նաև գիտական ճշգրտության ու ակադեմիական խորության միջև։ Այսպիսով, կենսահնմեներիայում և ֆիզիկայում բարդ նախադասությունները օգտագործվում են, որպեսզի ընդգծեն էմպիրիկ ճշտությունը և ակնհայտ դարձնեն գործառությունները։ Պատմության մեջ պատճառահետևանքային և հաջորդական կապերը, որոնք արտահայտվում են համապատասխան շարակյուսական կառույցներով, ապահովում են միասնական պատումներ՝ բարձրացնելով պատմական մեկնաբանությունների իսկությունն ու իրականության զգացողությունը։ Սոցիոլոգիական տեքստերը հիմնականում օգտագործում են ներդրված և հարաբերական նպաստություններ՝ սոցիալական երևույթները տարբեր դիտանկյուններից և մակարդակներից ներկայացնելու համար։

Եթե բնական գիտությունները որպես կանոն շեշտադրում են չափումների ճշգրտությունը և ուղղակի տեխնիկական լեզուն, հումանիտար և հասարակական գիտություններում ավելի մեծ կարևորություն է տրվում համատեքստային խորությանը և պատումային համախմբվածությանը: Տվյալ ոլորտների շարականական առանձնահատկությունների համեմատությունը հաստատում է դրանց վճռորոշ դերը որպես մտավոր հիմնավորվածության և գիտական տեքստերի համոզականության ուղղակի ցուցիչ:

Բանալի բարեր – շարականական բարդություն, ակադեմիական գրագրություն, տեքստերի ընկալման հավաստիություն, բարդ կառուցներ, սիօգիտակարգային վերլուծություն

РУЗАННА КАРАПЕТЯН – Синтаксическая сложность в восприятии достоверности академического письма: междисциплинарный анализ. – Данное исследование направлено на изучение роли синтаксической сложности в формировании воспринимаемой убедительности идей и положений, изложенных в научных статьях по четырём дисциплинам: биоинженерии, физике, истории и социологии. В работе преимущественно используется качественный анализ сложных многоклаузных структур в современных научных публикациях, с попыткой провести параллели между спецификой и коммуникативными целями каждой дисциплины и теми синтаксическими особенностями, которые применяются для их эффективной реализации.

Результаты показывают, что правильное использование сложных синтаксических конструкций обеспечивает необходимый баланс между ясностью, доступностью и научной точностью, а также академической глубиной. Так, в биоинженерии и физике многоклаузные предложения применяются для подчёркивания эмпирической точности и выявления функциональных взаимосвязей. В исторических исследованиях причинно-следственные и последовательные связи, выраженные соответствующими синтаксическими конструкциями, создают связное повествование, повышая тем самым аутентичность и убедительность исторической интерпретации. Социологические тексты, как правило, опираются на встроенные и реляционные придаточные предложения, чтобы представить социальные явления с разных точек зрения и на разных уровнях.

В то время как в естественных науках делается упор на точные измерения и буквальный технический язык, в гуманитарных и социальных науках больше внимания уделяется контекстуальной глубине и связности повествования. Сопоставление дисциплин с точки зрения синтаксиса ещё раз подчёркивает его ключевую роль как прямого показателя интеллектуальной обоснованности и убедительности научных текстов.

Ключевые слова: синтаксическая сложность, академическое письмо, воспринимаемая достоверность текстов, сложные конструкции, междисциплинарный анализ.

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