

Research Article

Performance Operating Units and Meaning: Fusion Theory and Writing Pedagogy

James Dale Williams*

Soka University, University Writing Program, Aliso Viejo, California, United States of America

Abstract

Performance Operating Units and Meaning. Many investigations of writing pedagogy and students' writing performance have focused on gaining a better understanding of language production, commonly based on handbook dicta relate to sentence-level concerns. The easy availability of computers in the 1980s offered a new way to examine student writing and sentence-level concerns by studying "performance units" characterized by various writing behaviors, such as starting, stopping, substitutions, deletions, and revision. Given that revision is central to effective writing, computer analyses allowed researchers to investigate not only the frequency and types of student revisions but also the duration of their performance units. Various studies, however, have reported that the insights drawn from performance units research has not resulted in either better pedagogy or better student writing. Drawing on sociolinguist theory as well as Fusion Theory, this paper examines the value of performance units in writing pedagogy from a linguistic perspective that emphasizes the interactional and transactional nature of writing.

Keywords

Fusion Theory, Intention, Intentionality, Interaction, Language Acquisition, Meaning, Performance Units, Pragmatics, Transaction

1. Introduction

Serious efforts to understand successful writing processes in the US began in the 1960s with Francis Christensen [1] and Kellogg Hunt [2]. Their goal was to identify sentence-level characteristics of successful writers—such as the use of nominative absolutes and limitations on prepositional phrases—and make available the professional use of these characteristics to writing teachers who would pass them on to students. Sentence combining exercises became popular in writing classes from coast to coast. In theory, modeling successful writers would improve student outcomes. Student writing performance, however, did not improve but according to the US Census Bureau and various studies rather declined

[3-8]. Even the most dedicated efforts at sentence combining, for example, failed to improve overall student performance.

Some of the reasons for this failure are reported in various federal studies related to the US poverty rate, which experienced steep declines from 1948 to 1968 but has remained essentially static, fluctuating between 12% and 15% ever since the Johnson administration's War on Poverty was fully implemented in 1970 [4, 9].

Exacerbating the effect of the stagnant poverty rate on student performance was the adoption in public education of standards-based reforms (e.g., Common Core). When students failed to meet those standards, schools simply lowered

*Corresponding author: jwilliams@soka.edu (James Dale Williams)

Received: 24 November 2023; **Accepted:** 4 January 2024; **Published:** 13 March 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

them to support the mantra that “failure is not an option” [4, 7, 10-12]. Then there was the fact (seldom considered) that successful writing is not based solely or even primarily on sentence structure.

The easy availability of computers in the 1980s offered a new way to examine student writing by studying “performance units” characterized by various writing behaviors, such as starting, stopping, substitutions, deletions, and revision. Given that revision is central to effective writing, computer analyses allowed researchers to investigate not only the frequency and types of revision but also the duration of student performance units. Hayes [13] and Quigley [14], for example, advocated the analysis of performance units as a way to gain valuable perspectives on how students write, why they fail to revise, and how to improve teaching methods.

Research on performance units revealed, however, that students resist substantive revision. Various studies have examined why students do not revise what they write and why they should. Paul [15], for example, concluded that students fail to revise their writing simply because they *object to the additional work*. She also reported that only 27% of 12th grade students write at a “proficient level.” Many studies have reported similar or even more dire findings, but all reports consistently indicated that students are reluctant to change what they have already written [16, 17].

Essentially unwilling to devalue their time investment in an assignments that have no personal value, students tend to focus merely on exchanging one word for another, tinkering with punctuation, or correcting spelling [18]. The result was that the focus is again on sentences rather than on the whole essay or on the sociolinguistic factors that not only govern but initiate real writing [19, 20].

2. Fusion Theory and Pedagogy

Stated simply, a significant issue in the performance literature is that the focus on the *physical act* of writing gives little attention to the *reasons* for writing [8]. Most writing in the adult world is based on workplace requirements, which is why biologists and historians, physicists and psychologists, etc., don’t produce the same types of texts. Furthermore, we expect texts to *mean something*. In the United States, however, the pedagogical focus on sentence structure and personal assignments associated with feelings and self-reflection deemphasizes the social, transactional nature of “real” writing [8], a point that the research on performance units has made clear [14].

Although a fundamental aim of education is to prepare young people to be successful in their chosen fields of work, very little of our writing research and pedagogy—other than some WAC/WID literature—emphasizes the transactional, sociolinguistic components of writing. Effective writing instruction and research necessarily must involve parameters of language acquisition with an emphasis on *textual meaning*.

Fusion Theory [21, 22] elevates the importance of mean-

ing in the context of students’ life goals that involve identity fusion. Ask a nurse what he does, and he will reply, “I am a nurse”; ask an engineer what she does, and she will reply, “I am an engineer.” Examining performance units does not address this fundamental truth. The very nature of performance units research is focused on structure and word choice, not meaning or identity.

At what point in the majority of writing classes do students manipulate text to express and clarify meaning associated with the professional group that they want to join? At what point do they identify themselves with what they do? My multiple decades as a program director at four different universities suggests that this question is unlikely to appear in the overwhelming majority of writing courses.¹ The very nature of performance units results in a pedagogical focus on structural and word-choice issues, not meaning.

There is faith in the notion that good professional writing and good academic writing—in all disciplines—do have traits in common. We expect engineers, nurses, social workers, cops, business workers, and undergraduates in all disciplines to use Standard English and to provide readers with useful and accurate information. In writing classes, we strive to teach students to use Standard English and to provide readers with useful and accurate information regardless of topic. The key issue involves transference: If we teach freshman composition students how to write an analysis of a poem, do we improved their ability to write a history essay, a physics lab report, a business proposal, a legal brief, a job evaluation, a police report, a letter to the editor? We may want to believe that we do, but given the sociolinguistic characteristics that govern writing for these different audiences are significantly different, we may be fooling ourselves.

3. Meaning and Transaction

Many investigations of writing pedagogy and students’ writing have focused on gaining a better understanding of language production, commonly based on handbook dicta relate to sentence-level concerns [8]. A majority of these studies have not been produced by linguists or psychologists, even though it has become increasingly clear that answers to important questions about discourse will come from studies of human cognition and language acquisition [5, 8].

Linguistic research enhances our knowledge of the ways people use language, and the relationships between writing and cognitive development are being reexamined [24]. In the United States, with the exception of our traditional composition classes, the style of language is often viewed through a sociolinguistic lens that relates it to *register* [24], [25]. Work in linguistics therefore provides a fuller understanding of the cognitive effects of writing and its *interactional* use in social

¹ Some EAP—English for Academic Purposes—courses touch on this issue, but their primary focus is to help foreign students to become better in using and understanding English.

reinforcement broadly understood. Fusion Theory emphasizes why engineers write for engineers, not for anthropologists; why psychologists write for psychologists, not for mathematicians, and so on.

In addition, much of the writing we produce as adults is for information exchange, through reports, directions, and educational information. This is its *transactional* use. Style plays a part in the success of a text insofar as we equate “style” with appropriate linguistic register and the guidelines that govern writing in specific disciplines or for specific audiences/purposes.

The transactional function of most real writing necessarily challenges the literary emphasis that dominates so many of our writing classes in public schools and college. This emphasis is usually justified on the ground that it improves students’ critical thinking. When we look at assessments of students’ critical thinking growth over time, however, the data show that students’ critical thinking ability is not significantly affected.

The Collegiate Learning Assessment Plus (usually referred to as the CLA+) assesses the effect of education on writing skills and critical thinking. Arum and Roksa [26] reported that “With a large sample of more than 2,300 students, we observed no statistically significant gains in critical thinking, complex reasoning, and writing skills” (p. 36). The more recent CLA+ from 2018 [27] tested approximately 19,000 students from their college freshman year to graduation and found that critical thinking skills increased only 8.9%. Much, if not all, of that figure was probably the result of increased age and associated maturation, not a composition class.

Content-area teachers at the university level in the US have complained for decades that writing instruction focused on literary analysis and personal confessions fails to prepare students to meet the writing demands across the curriculum and in the workplace. Although there is nationwide support for writing instruction, aligning that instruction with writing assignments in content-area courses that lead to a degree outside of English has proven difficult. The situation is so serious that Carnegie Mellon University’s Eberly Center [28] felt compelled to issue the following campus-wide statement: “Good writing in one discipline is not necessarily good writing in another” because “students familiar with *expressive styles of writing*² (from English or creative writing) may bring these habits into scientific or engineering contexts” (p. 1).

This statement was deemed necessary because few of the insights into the nature of language in general and writing in particular over the last 30+ years have been adopted in composition studies. The emphasis on “self-expressive” writing that emerged in the late 1970s, for example, dominates many composition classes even though it is not aligned with helping students succeed in their content-area courses or in the workplace after graduation [7].

3.1. Pragmatics and Semantics

Generally, *linguistic pragmatics* is limited to speech, with a focus on implicatures, whereas *semantics* addresses meaning in written discourse [29]. Even so, most writing actually entails both pragmatic and semantic issues, especially discipline-specific writing, which is pragmatic insofar as it is an intentional action like speech.

Such writing is goal-related and is necessarily concerned with context and audience, which includes not only psychosocial linguistic features but also the register and semantics related to the specific language event. Writing in engineering, for example, is different in key respects from writing in psychology and history. In this regard, written language is similar to other forms of intentional behavior.

Reflections on language in general and writing in particular lead to the question of how the words we hear and read have meaning. *How are they transactional?* Is meaning inherent in the words and phrases and sentences we produce, or is it created in the mind? If the latter, what is the process?

These questions raise the issue of unperceived existence that has interested philosophers and physicists since the 1700s and that we should recognize as being germane to writing pedagogy. In his *Treatise Concerning the Principles of Human Knowledge*, for example, George Berkeley [30] proposed that “The objects of sense exist only when they are perceived” (section 45). Perception, therefore, would appear to be a significant factor in all matters of meaning.

Addressing the issue of perception nearly 150 years ago, *Scientific American* [31] proposed that “Sound is vibration, transmitted to our senses through the mechanism of the ear, and recognized as sound only at our nerve centers. The falling of the tree or any other disturbance will produce vibration of the air. If there be no ears to hear, there will be no sound” (p. 218).

3.2. Meaning Potential and Intention

What a text and a falling tree have in common is *meaning potential*. There is the potential for someone to hear the sound of the falling tree and associate that sound with a cause. There is also potential for a reader to extract meaning from a text. The transaction in both instances is predicated on perception.

Reading, however, is more complex for both writer and reader. A transactional prerequisite is that the author of a text must have the cognitive and linguistic tools required to turn prior intention (“I will write an essay or I will write a book.”) into text that will communicate information to a reader [32].

It also seems intuitive that the words in a book or an essay have the *potential for meaning* when someone reads and understands the words and the underlying context. Writing therefore is a linguistic transaction between writer and reader. Likewise, a book or an essay can have potential meaning only when the author has the cognitive tools required to transfer his or her intention into words and sentences that have the po-

² Emphasis added.

tential to be read and understood. But there is another layer of complexity that is too frequently absent in writing pedagogy: the question of a real audience.

A text cannot have any inherent meaning because linguistic processing depends on a brain experiencing and processing words and sentences that have the potential to be read and understood. Given that each reader varies across multiple dimensions, we are obliged to propose that any given text has only *potential meaning* until it is read, and even then that meaning may be affected by the reader's knowledge base, lexicon, training, intelligence, and life experience. The reader's brain must decode the words and sentences and use existing knowledge—of context and content—to construct the meaning of the text.

All language therefore requires a mental decoder that translates intentional signs, the sound waves of speech and the visual perception of written words, into the listener's or reader's personal neurolinguistic wetware. Language per se is nothing more than ink on a page or the vibrations in the air, or movements of the hands. It is the brain that processes them into meaningful words and sentences, and it is able to do so because most of us began learning our home language in utero [33]. Although there are several dialects of English, even within individual countries they are generally all mutually intelligible.

Formalists have argued that meaning is truth conditional and therefore determined by the specific content of a given discourse unit. Conventionalists, on the other hand, have proposed that meaning is essentially arbitrary and varies according to the individual mind generating or experiencing the discourse unit. We can better understand the conventionalist perspective if we consider whether someone trained in law or sociology can understand a paper on synchronicity research. Maybe, but a fifth-grade student or college freshman probably cannot.

A question that warrants consideration is whether both views are correct. Slang, for example, often reverses the meaning of words in ways that require recognition of the context to extract meaning. Consider the expression "That's so sick" and the conditions in which it means the complete opposite of its individual words and indicates that something is really "cool."

The formalist view is challenged because meaning arises out of theoretical relationships between language use and reality. Those relationships involve the formulation of hypotheses concerning world-models as well as the utilization of a contextualized testing procedure to validate or invalidate those hypotheses. A significant issue here is whether those theoretical relationships between language use and reality are sufficiently accurate to allow us to formulate viable hypotheses about the world we live in. I would suggest that at best the answer is just "sometimes." Do studies of performance operating units tell us anything about this complex neuro-linguistic mechanism? No.

Questions of meaning permeate almost every aspect of

language study. However, with the exception of literary criticism, such questions in our writing classes tend to focus on reading rather than writing, as in the case of students being told that Steinbeck's use of the color yellow in *Chrysanthemums* must mean something. Nevertheless, the real emphasis in our writing classes appears to be on sentence structure and style, not how to develop meaningful texts that inform readers. For this reason, performance operating units may tell us something about a student's understanding of punctuation and the difference between the restrictive and nonrestrictive use of the relative pronoun "which," but such studies are not likely to tell us anything about the writer's understanding of audience and appropriate register.

The reasons are both historical and practical. We can, for example, trace the separation of form (*forma*) and content (*materia*) back to the Sophists, who argued that discourse does not necessarily have to mean anything as long as it is clever or pleasing to the ear. The belletristic background of writing teachers is heir to the sophistic tradition, and its influence has long been, and continues to be, felt throughout the field.

4. Questions of Meaning and Rhetorical Intention

A focus on style rather than meaning lends itself to an algorithmic process that students and teachers can follow. Indeed, the study of application performance units in student writing suggests that writing is an algorithmic process. But is it? Or is writing—and education itself—organic, as John Milton [34] argued?

What we do know is that since E. B. White [35] published *Elements of Style*, writing and writing pedagogy have been characterized as an algorithmic process that students are expected to learn and apply via a writing handbook. The problem is that much of what the handbooks have to say about writing is incorrect. Every paragraph must begin with a topic sentence? Nonsense. Use lots of prepositional phrases to add detail to a sentence? No, they actually make a sentence less readable.

Questions of meaning force an examination of the abstract notions of Intention [32], audience, information, and coherence, all of which takes instruction well beyond structure. With the exception of "coherence," these features are hard to teach in a vacuum. Arguably, for example, a student's intention associated with writing a paper in a composition class is to get a good grade, not to inform or teach a reader. The student may not even attempt to visualize a potential reader other than the teacher because the classroom dynamic makes it plain that the teacher is the only reader who counts. The student is not writing for a "real" audience but for an audience of two—herself and her teacher. The idea of using that paper to inform or teach the reader doesn't exist in a context that is antithetical to what fusion theory tells us about human interactions. Is the student really capable of teaching the teacher?

The idea that writing is for a specific audience and that it is a learning tool for the reader as well as the writer was a cornerstone of writing in the disciplines and writing across the curriculum [36]. To a limited degree, we find efforts within the various academic disciplines to provide the audience-specific features necessary for producing real writing—that is, writing that targets the interests and needs of the reader. Physics majors are required to write papers that deal with physics. Business majors are required to write papers that deal with business. This isn't rocket science—it is basic sociolinguistics. Assignments target potential readers in a given field and aim to be informative. Consider this excerpt from a WID paper linked to biology: "Ontogenetic color change at sexual maturation can be useful in identifying an appropriate mate for some organisms."

Many business schools on this account require students to take a business writing class, where they learn the conventions that govern business writing so they can produce documents that are congruent with writing in business. Law school students are required to take a legal writing class even though every single one has had at least two undergraduate writing classes. Why the law school requirement? Nothing in the students' composition courses taught them how to write a legal brief. One can argue—and many attorneys have—that legal writing classes don't go far enough to prepare students for the challenge of producing an actual brief, but at least the law schools try. Like business schools, law schools recognize that writing is transactional.

Why do so few undergraduate programs in the US have an upper-division course on writing in academic majors? Part of the problem is that education in general has failed to recognize that writing ability is a cornerstone for success *after graduation*. Consequently, for most students, their "intention" when writing in a composition class is commonly just to complete the assignment and meet the due date. They may not have any other intention, which is why if the teacher asks for 500 words, the student dutifully counts the words to hit that magic number. But *rhetorical intention* isn't embedded in a word count. It is based on the aim of communicating information to readers. As Searle [32] noted, all language is grounded in intention. Grammar, of course, is associated with communication, but its ability to communicate intention is limited and to a certain extent may be considered secondary.

Consider the following sentence: "The mouse opened the moon." There certainly is nothing wrong grammatically with the sentence, and we know what each word means, but we have no clear idea of how to interpret them in this sparse context. We therefore are forced either to reconstruct the sentence or to invent some imaginative or metaphorical action to allow interpretation. That is, we must create a mental world in which the moon can be opened by a mouse. But even if we are successful in imagining such an act, does the sentence give us any insight into the author's intention? If the answer is "no," how, then, do we understand the meaning?

This approach appears to take us into the questions that gave

rise to possible worlds theory. In this context, Tarski's [37] "Convention T" may help us determine how to process the sentence. The convention holds that for every sentence P, P is true if and only if P is true. Translating this into everyday language, we have "A mouse can open the moon if the moon has a door or some other structure that serves as an access point to the interior of the moon." Well, in this case, the sentence obviously is not a true statement. Therefore, from a purely physical perspective, "The mouse opened the moon" is false. Given that meaning arises out of sociolinguistic semantic and pragmatic relationships that exist as the background of all discourse events, failure to manipulate or delineate semantic truth conditions successfully may—or will—result in failure of meaning and, importantly, failure of intention.

5. Conclusion

Supporting any argument that all writing and reading are NOT about intention and meaning is difficult. The embedded axiom is inherent in our understanding that a nontrivial analysis of discourse must consider intention and meaning as fundamental to understanding language. From this perspective, a primary goal of composition studies is not primarily about making students more aware of sentence structure but to a significant extent is about helping them understand the sociolinguistic parameters of meaning and how to produce audience-specific sentences and texts that readers will not only understand but find meaningful. Raising the bar here, we may also want to determine whether that meaning has any *value* within the social context in which and for which it exists. Is it Intentional?

This perspective suggests that a linguistic approach to writing pedagogy is necessarily at odds with a writing pedagogy that focuses on handbook proclamations regarding sentence structure rather than meaning. It does not assert that style is unimportant, but it does lead unequivocally to an understanding that style must conform to both the writer's purpose and the writer's audience because, like speech, writing aims to *do something in a given context*. Performance Operating Units don't help us with these concerns.

Conflicts of Interest

The author certifies that he has NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity associated with the journal or the contents herein).

References

- [1] Christenson, F. (1967). Notes toward a new rhetoric: six essays for teachers. New York: Harper & Row.

- [2] Hunt, K. (1965). Grammatical Structures Written at Three Grade Levels. NCTE Research Report No. 3. National Council of Teachers of English.
- [3] Hunt, K. (1970). Syntactic Maturity in Schoolchildren and adults. Monographs of the Society for Research in Child Development, Vol. 35, No., pp. iii-iv+1-67.
- [4] United States Census Bureau. (1999). Statistical abstract of the United States: 20th Century Statistics. Retrieved on 10/20/2023 from <https://www.cesju.gov/prod/99pubs.sec31.pdf>
- [5] Williams, J. (1993). Rule-governed approaches to language and composition. *Written Communication*, 10, 543-568.
- [6] Williams, J. (2014). Assessing the Effect of WAC/WID Composition on Content-Area Course Grades. Conference Proceedings on Writing Research. University of Amsterdam & Utrecht University.
- [7] Williams, J. (2019). *The Decline in Educational Standards: From a Public Good to a Quasi-monopoly*. Lanham, MD.: Roman & Littlefield.
- [8] Williams, J. (2023). *Language Acquisition and Academic Writing*. New York: Routledge.
- [9] Pew Research Center (2016). American's Shrinking Middle Class: A Close Look at Changes Within Metropolitan Areas. Retrieved on 10/22/23 from <http://pewsocialtrends.org/2016.05.11.america-shrinking-middle-class-a-close-look-at-chan-within-metropolitican-areas>
- [10] Eagle, P. & Black, M. (2008). The effect of poverty on child development and educational outcomes. Retrieved on 10/16/23 from <https://doe.org/101196/annal.1425.0231196/annals.1425.023>
- [11] Krashen, S. (2012). Academic Proficiency (Language Content) and the Role of Strategies. *TESOL Journal* 2.4: 381-393.
- [12] Loveless, T. (2021). Why Common Core Failed. The Brookings Institution. Retrieved on 10-21-2023 from www.brookings.edu/articles/why-common-core-failed/
- [13] Hays, J. R. & Berninger, V. W. (2014). Cognitive Processes in Writing: A Framework. In B. Arf & J. Dockrell, & V. Berninger (Eds.), *Writing Development in Children with Hearing Loss, Dyslexia, or Oral Language Problems: Implications for Assessment and Instruction* (pp. 3–15). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199827282.003.0001>
- [14] Quigley, A. Five Reasons Why Students Fail with Revision. Retrieved from Theconfidentteacher.com, 11/20/2021.
- [15] Paul, N. (2021). Here's Why Students Don't Revise What They Write—and Why They Should. Retrieved on 12/3/23 from <https://theconversation.com/heres-why-students-dont-revise-what-they-write-and-why-they-should-157563>
- [16] Adams, A., Simmons, F., & Pawling, S. (2010). Undergraduate Students' Ability to Revise Text Effectively: Relationships with Topic Knowledge and Working Memory. *Journal of Research in Reading*. Retrieved on 9/22/23 from <https://doi.org/10.1111/j.1467-9817.2009.01432.x>
- [17] Hayes J. R., Flower L., Schriver K. A., Stratman J., Carey L. (1987). Cognitive processes in revision. In Rosenberg S. (Ed.), *Advances in applied psycholinguistics: Vol. 2. Reading writing and language processing* (pp. 176-241). Cambridge: Cambridge University Press.
- [18] Adams, A., Simmons, F., Willis, C., & Pawling, R. (2010). Undergraduate Students' Ability to Revise Text Effectively: Relationships with Topic Knowledge and Working Memory. APA PsycNet. Retrieve on 11/30/2023 from <https://psycnet.apa.org/record/2010-02628-005>
- [19] MacArthur, C. (2007). Student Revision with Peer and Expert Reviewing. *Learning and Instruction*. Retrieved on 12/1/2023 from: <http://dx.doi.org/10.1016/j.learninstruc.2009.08.006>
- [20] Williams, J. & Hattori, M. (2017). First-year Composition and Transfer: A Quantitative Study. *Journal of Pedagogic Development*, 7, 8-21.
- [21] Swann, W., & Buhrmester, M. Identity Fusion. *Psychological Science*, Vol. 24(1), 52-57.
- [22] Purzycki, B., & Lang, M. (2019). Identity Fusion, Outgroup Relations, and Sacrifice: A Cross-Cultural Test. *Cognition*, 186, 1-6.
- [23] Umejima, K., Ibaraki, T., Yamazaki, T. (2021). Paper notebooks vs. mobile devices: brain activation differences during memory retrieval. *Frontiers in Behavior Neuroscience*. Retrieved on 12/20/2022 from <https://doi.org/10.3389/fnbeh.2021.634158>
- [24] Biber, D. & Conrad, S. (2017). *Register, Genre, and Style*. Cambridge: Cambridge University Press.
- [25] Ferreira, A. & Zappa-Hollman, S. (2019). Disciplinary Registers in a First-Year Program. Retrieved on 12/22/2022 from <https://doi.org/10.1075/langct.00007.fer>
- [26] Arum, R. & Roksa, J. (2010). *Academically Adrift*. Cambridge: Cambridge University Press.
- [27] Zahner, D. et al. (2022). The Collegiate Learning Assessment—Performance Based Assessment of Generic Skills: Does Higher Education Teach Student to Think Critically? Retrieved on 12/28/2023 from <https://www.oecd-ilibrary.org/sites/6c58ae81-en/index.html?it emId=/content/component/6c58ae81-en>
- [28] Carnegie Mellon University Eberly Center. (2022). *Learning Principles*. Retrieved on 9/12/23 from <https://www.cmu.edu/teaching>.
- [29] 29] Levinson, S. (1983). *Pragmatics*. Cambridge. Cambridge University Press.
- [30] Berkely, G. (1734/1982). *A Treatise Concerning the Principles of Human Knowledge*. Cambridge: Cambridge University Press.
- [31] Scientific American (1884). What is sound? Vol. 50, No. 14. April 5.

- [32] Searle, J. (1983). *Intentionality*. Cambridge: Cambridge University Press.
- [33] De Boysson-Bardies, B. (2001). *How Language Comes to Children*. Cambridge, MA: MIT Press.
- [34] Milton, J. (1644). *Areopagitica*. Retrieved 10/22/23 from <https://oll.libertyfund.org/title/jebb-areopagitica-1644-jebb-ed>
- [35] White, E. B. (1918). *Elements of Style*. Mineola, NY: Dover.
- [36] Williams, J., Huntley, D., & Banks, C. (1992). *The Interdisciplinary Reader*. New York Harper-Collins.
- [37] Tarski, A. (1956). *Logic, Semantics, Metamathematics*. Oxford: Oxford University Press.