

**Spatial Metaphors in Introductory Statements of  
Humanities and Stem Disciplines: A Study of English  
and Mechanical Engineering Departments**

**Olalekan Tunde Adepoju**

University of Louisville, Kentucky, USA

---

**ABSTRACT**

Advances in higher education, specifically in science and technology, have engendered a significant shift of interest from a mainly liberal arts curriculum to STEM-related fields of study, creating a rift in the value systems undergirding the two academic domains. One of the ways the disciplinary disparity is institutionally expressed is through the language used in describing the core values of these disciplines, specifically in the introductory statements of departments. Using the lens of spatial metaphor to consider how the language expresses distinct realities that align with the public perceptions of the disciplines, this paper examines the metaphorical framings in the introductory statements of two disciplines in three US research institutions, representing the humanities and STEM. It explores how such framings help to establish their core values and have facilitated the ascendancy of STEM in recent times. I argue that by understanding the metaphors underlying these statements, we can better

understand how these fields create a distinct representational frame for expressing and promoting their image. I conclude by offering practical implications of how understanding disciplines define and position themselves can improve the quality of higher education.

**Keywords:** spatial metaphor, higher education, disciplinary values, humanities, STEM

---

Metaphors shape our understanding by providing cognitive relations for our language use. Likewise, we shape metaphors by how we interpret and use them. Richards, in fact, notes that “a command (of the interpretation) of metaphors can go deeper into the control of the world that we make for ourselves to live in” (1970, p. 135). This implies that our perspective of the world or aspects of life can be attributed to the ways we interpret and conceptualize language into cognitive domains. From the higher institutions’ perspective, different disciplines describe themselves differently, and that difference is expressed in their use of metaphors. With the ability to unpack more meanings, metaphors allow disciplines to communicate more nuanced perspectives and value systems. This conceptualization holds true for our understanding of the disciplinary divide between the humanities and the science, technology, engineering and math (hereafter referred to as STEM) programs.

Although the language (word choices) used in describing the introductory statements<sup>2</sup> of these programs has similar linguistic appearance, it expresses distinct realities that align with the public perceptions of both disciplines when considered metaphorically. This

---

<sup>2</sup> For this study, introductory statements are those statements that provide information on the overall goals of the department. These statements include mission/vision statement, statement of goals/objectives.

difference in metaphorical representations, therefore, provides a rich ground for the study of various issues about higher education, from how disciplines are positioned in society (and in relation to one another) to how these disciplines approach phenomena, including career, society and life. This article aims to reveal that the disparity between these fields of disciplinary knowledge is a form of social reality that is created not only by the socio-economic demands of innovation but primarily by a language that provides a favored identification to STEM-related programs so much that it could influence the educational choices of prospective students. This language use, particularly in the introductory statements of departments in the humanities and STEM-related programs in select Atlantic Coast Conference (ACC) institutions, will be examined through the lens of the cognitive schema of spatial metaphor as explained in Horn, et al. (2016).

Extant studies have focused on the use of metaphors in different fields and contexts (Fahnestock, 1999; Thonus & Hewett, 2016; Adepoju, 2017). However, little or no attention has been paid to examining metaphoric representations in the descriptions—in the form of introductory statements or departmental goals—of the field of humanities and the field of STEM programs. From a higher education standpoint, studies have analyzed metaphors for their ideological constructions in educational practices (Williams, 2005; Batten, 2012) and government policies (Arcimaviciene, 2015; de Paor, 2021). Batten (2012), for instance, examines the ubiquitous term “learning outcomes” as a metaphorical concept within higher education. Among other things, Batten shows that the term is as an ontological metaphor consistent and coherent with the contemporary development of academic capitalism. Likewise, Arcimaviciene (2015) employs the analytical framework of Critical Metaphor Analysis to analyze the implied value evoked by metaphors in the

mission statements of the first 20 European Universities. The study shows these statements mostly use the commerce metaphors which promotes a consumerist attitude to education and society, thereby ideologically positioning higher education as a business enterprise.

This current study builds on the above discussion by providing intricate detail on how the metaphorical representations of building schema in these introductory statements establish the prioritized values in each discipline. Generally, institutions craft their introductory statements to express their core values and idea of knowledge-making using linguistic forms such as metaphor. Such metaphorical usages create a distinct representational frame of transference for understanding the target domain through the attributes of the source domain (Adepoju, 2017; Chatti, 2020). Specifically, the objectives of this study are to:

- i. examine what constitutes disciplinary knowledge in the humanities and the STEM fields;
- ii. discuss the metaphorical mappings that help to establish the disciplinary knowledge of these fields;
- iii. describe how these metaphorical frames portray these fields' knowledge-making goals as complementary rather than competitive.

To achieve these objectives, I have organized the paper into four main sections. The first section examines the disciplinary divide between STEM-related programs and the humanities with a view to examining what the boundaries are and how they are projected. In the second section, a discussion on how researchers have conceptualized metaphor and its functions over the years is provided. Special attention is given to explaining spatial metaphor (the crux of the analysis in this paper) and the role it plays in understanding the effectiveness of heuristics

in textual analysis. The third section discusses the site for collecting data and presents a textual analysis of some introductory statements of English and mechanical engineering departments—representing the humanities and STEM programs respectively—from the lens of spatial metaphor schema. Finally, some implications and recommendations for rethinking how departments/programs present their core values in institutional documents were offered.

### **Literature Review: Between STEM Programs and Humanities: A Clear Boundary of Disciplinary Ascendancy?**

Disciplinary knowledge in higher education has continued to change over time. Moreover, the advancement in science and technology as well as the uneven social and economic investment in STEM programs over the humanities since the eighteenth century has continued to engender a significant shift of interest from a mainly liberal arts curriculum to STEM-related fields of study. This disciplinary favoritism has nevertheless influenced the perception of students toward their field of study. Bouterse and Karstens, (2015) trace the history of the demarcation between the sciences and the humanities and note that the divide became more pronounced in the second half of the nineteenth century because of the transformations in learning and research at that time. They explain that prior to this period, the divide was centered on the formation of disciplinary knowledge in both fields, noting that because the humanities could not always employ the logical inductive methods of the natural sciences, it had to take recourse to ‘tact’ or artistic means.

Although the literature on the demarcation between the sciences and the humanities discourages a strict boundary between both fields as they exist to complement each other (Bouterse and Karstens, 2015; Wolfe, 2017), the

popularity and preference of the sciences over the humanities continue to enjoy an undoubted ascendancy. Kao (2017) reports that the students majoring in STEM-related programs “exhibit a great deal of apathy and resistance, and usually lack confidence in their abilities to find insightful things to say about literature and art...because of the assumption that that study of literature and art have nothing to do with them” (p. 8). This notion, for instance, attests to the commonplace assumption among students in sciences who privilege drawing conclusions based on scientifically proven means over logical deduction.

Consequentially, higher education has gravitated toward STEM-related programs in recent decades to meet the demands of a competitive global marketplace. At the same time, support for humanities programs, especially from federal sources, has dwindled steadily since the 1970s. This reduction in support echoes Wolfe’s (2017) submission that “the larger challenges on the horizon for the relationship between the sciences and humanities are institutional rather than intellectual” (p. 78). Hence, the STEM field is presently sought after because of its usefulness in the modern world which mostly celebrates progressive scientific and technological development. Likewise, the field is benefiting from the changing philosophies of education which have now seemingly moved away from a liberal arts model toward a more pragmatic and utilitarian model.

Nevertheless, the humanities, though do not receive the same kind of promotion, attention, or funding as STEM, are equally important to better our global world. Following this notion, Nussbaum (1997) insists that humanities competencies play a vital role in cultivating powers of imagination that are essential to becoming global citizens. In a similar manner, Rhee (2018) explains that a “good grounding in the humanities has been heralded in recent

years as integral to success in many professions” (p. 115). This fact holds true in fields, such as nursing, public health and medicine, where professionals and practitioners interact more directly with people to not only better understand them as human beings, but also provide person-centered care, and develop critical thinking.

In his 2013 lecture, Jim Leach, former President of the National Endowment for the Humanities, regarded the disciplinary divide between STEM and the humanities as a false dichotomy. For instance, Ottino and Morson (2016) emphasize in their examination of engineering and arts/humanities that unlike the arts and humanities that promote “creative and metaphorical thinking” (p. 2), engineering departments promote “the production of something new” (p. 3). Nevertheless, these two fields can learn from each other in that STEM advances coupled with greater humanistic understanding are crucial to the advancement of modern society. Essentially, therefore, despite these practical differences in both fields that have led to the ascendancy of STEM over humanities in recent decades, the sciences cannot ignore the humanities any more than the humanities can ignore what science has unveiled because together, STEM and the humanities flourish; apart society is jeopardized (Leach, 2013).

The move toward complementarity encapsulates the current thinking about the disciplinary divide between the fields of humanities and STEM. One avenue for achieving this complementarity, as suggested by Ottino and Morson (2016) is to provide courses that bring different modes of thinking, rather than moving students in parallel, noninteractive tracks. Nevertheless, as this study will reveal, this disciplinary divide as well as the utilitarian usefulness of STEM over humanities is perpetuated by the metaphoric language these disciplines use to present their core values in their introductory statements. The study will make a case for rethinking the composition of introductory

statements in STEM and humanities departments if we are to realize Leach's idea that the humanities and fields of inquiry related to STEM are complementary rather than competitive.

### **Theoretical Framework: (Spatial) Metaphor in Use**

The conceptual framework of metaphor has continued to transform and adapt to realities over the years. Lakoff and Johnson (1980) show that “metaphors help us create realities, especially social realities, and serve as a guide for future action” (p. 156). This description emphasizes that metaphor is a property of the human mind, thus explaining why they are commonly used in everyday interactions. Following Lakoff's conceptual model, Fahnestock (1999) explains that metaphor “occupies the ground in language analysis and in studies of the mind” because scholars believe it presents a “window for a fundamental, generative cognitive process” (p. 5). This explains the fact that metaphor is a means of regulating or making meaning of the world of thought, cognition and interpretation which requires knowledge of linguistic codes used in its formation.

Richards (1979) also shares this opinion when he notes that “thought is metaphoric and proceeds by comparison and the metaphors of language derive therefrom” (p. 94). Therefore, language is considered to be metaphoric—the exchange between thoughts and its signification system (language)—as well as the vehicle by which the metaphoric argument is framed. Additionally, metaphor is described as a linguistic concept that provides a conceptual linking of, or movement between, two distinct lexical terms (Adepoju, 2017; de Paor, 2021). Gross (1996) expatiated on this conceptual linking by noting that “metaphor is a figurative reworking of familiar linguistic propositions or as a pre-figurative rendering of raw experience” (p. 360), in that it helps to create new links that



illuminate one term (or concept) by features or senses borrowed from another. This linkage, according to Gross, is what Lakoff and Johnson claim to be a “conceptual structure of metaphorical projection that moves from the physical to the abstract” (p. 362).

Furthermore, Richards has initially discussed that the co-presence of and interaction between the vehicle and tenor are the primary modes of producing metaphor. The vehicle provides the domain for borrowing these characteristics to describe the tenor (the plain meaning of the word). This classification holds true in the sense that any metaphorical production starts with the mind, mapping ideas and words into domains that seem to have shared relationships and conceptual features. Put in another way, Peters et al. (2019) explain that “metaphor is central to human language and cognition, especially knowledge transfer” (p. 222) from one domain to another. Thus, the mind considers/compares the contexts of both the original idea and borrowed idea—these are contexts we have already mastered as humans—and proceeds to map appropriate contexts to produce metaphorical statements. Gross (1996) adds that it is in this form we see how our epistemology (the source-domain) is mapped onto an abstract target-domain via spatial metaphor.

Spatial metaphor is one of the types of metaphors—others including, territorial, and orientational metaphors (Horn et al., 2016)—used to create a representational framework for understanding the underlying meaning of a text. Horn et al. (2016) explain that spatial metaphor is the “use of a concrete or specific space or location—on the lexical, conceptual or textual level—when spatial characteristics are applied to a single word or phrase” (p. 454). Fahnestock and Secor (1991) aver that spatial metaphor is important for creating a “locus for a reality behind appearance” because it provides a vivid image of a topoi with something underneath; and helps to “reach

through or behind the textual façade to a hidden reality” (p. 86) through close reading. According to Peters et al. (2019), spatial metaphors illustrate limitation, structures and processes and can be applied to an extremely diverse range of situations such as institutional documents. In this paper, therefore, spatial metaphor will serve as the lens through which introductory statements of both the humanities field and STEM-related programs are analyzed to see how spatial terms are metaphorically adopted in these statements and how an understanding of such might help explain the disciplinary divide between both fields.

### **Methods**

This study adopts a case study approach for exploring spatial metaphors in the introductory statements of both the STEM and humanities fields of study. Yin (2008) defines a case study as an “empirical method that investigates a contemporary phenomenon (here, the disciplinary divide between STEM and humanities) in depth and within its real-world context” (p. 45). Since, case study’s strength is in its ability to deal with a full variety of evidence such as documents, artifacts, interviews etc, this research design is best suitable for this study that explores how disciplinary knowledge is propagated in institutional documents. As an exploratory case study, this research offers insights into the realizations and functions of spatial metaphoric frames evidenced in these fields’ institutional documents in an effort to not only develop analytic strategies and questions but also provide substantial information on how metaphoric language use can contribute to contextualized meanings derivable in institutional documents. As such, English and mechanical engineering departments constitute the cases purposively studied for both the humanities and STEM disciplines respectively.

Data for this study was collected from the websites of three public research institutions in the United States namely, the University of Louisville (UofL), Florida State University (FSU) and Virginia Tech (VT)<sup>3</sup>. These institutions are purposefully selected following Patton's criterion sampling approach. As noted by Patton (1990), criterion sampling enables the researcher to identify data sources that exhibit certain predetermined criterion characteristics for in-depth, qualitative analysis (p. 177). Hence, the three institutions are purposefully selected because they are located in the same region (southern region) of the country, and they are peer institutions in Atlantic Coast Conference (ACC). As peer institutions, they not only share similar core values such as academic excellence, development of the total person, innovation, and competitive fairness among others but also promote teaching and learning in the humanities and the STEM-related fields.

In a similar vein, the websites of the English department, which is one of the departments in the humanities, and the mechanical engineering department, a STEM-related program, have been considered as sites for collecting texts for analysis in this paper. The key criterion for choosing the departments for this study was the ease of access to these statements on their respective institution's websites. A combination of these criteria, thus, forms the basis for selecting the data collection site for this study. The respective introductory statements of these ACC institutions are analyzed to find out how spatial metaphors are deployed in composing them. The goal of this analysis is to identify the underlying conditions and to represent disciplinary values that make STEM more sought after than the humanities in recent times.

---

<sup>3</sup> The data for this study were derived from publicly accessible Internet domains of these three (3) institutions.

### **Data Analysis**

This analysis focused on how these institutions describe their academic activities (such as teaching, learning, and research) as well as how they position their students for engaging in the real world. fifty-seven (57) expressions were observed to be framed metaphorically. However, for constraints of space, ten (10) excerpts were purposively chosen for analysis. To identify the metaphors, the entire introductory statements were read to identify the specific concepts forwarded by the statements and assign descriptive codes as appropriate. According to Saldana (2014), descriptive coding summarizes in a word or short phrase—most often as a noun—the basic topic of a passage of qualitative data” (p. 88). Second, the codes are categorized into four (4) broader metaphorical concepts. These four (4) concepts, which include, foundation, key, construction terms and toolbox serve as the source domain references for framing spatial metaphors in the corpus. This frame of reference is illustrated in the tables below:

<b>S/N</b>	<b>Institutions</b>	<b>Metaphorical frames</b>
1	University of Louisville	Foundation Key
2	Florida State University	Toolbox Construction terms
3	Virginia Tech	Foundation Construction terms

Table 1: Representational frame of spatial metaphor in the English department’s introductory statement

<b>S/N</b>	<b>Institutions</b>	<b>Metaphorical frames</b>
1	University of Louisville	Construction terms Key
2	Florida State University	Foundation
3	Virginia Tech	Foundation

Table 2: Representational frame of spatial metaphor in the mechanical engineering department's introductory statement

These representational frames are realized by the building schema of spatial metaphor, in that the frames employ the use of architectural concepts that describe a (or the process of) building. Essentially, understanding the properties of these source domains (the building concepts) provides the frame for understanding the valued disciplinary knowledge in these departmental introductory statements, which is our target domain. Ottati et al. (2014) assert that metaphoric framings are important in the analysis of metaphor because they “activate a root metaphor in the mind of the message recipient” (p. 179). This root metaphor such as *foundation*, *key*, *build*, contains an image or central theme that is associated with the entity, event, or issue being described. Hence, this framing influences the message recipient's attitudes and opinions regarding the entity or issue (Ottati et al. 2014; Ritchie & Cameron, 2014).

As shown on tables 1 and 2 therefore, each institution conceptualizes its disciplinary knowledge using different (though in some cases related) frames of reference. Moreover, when both departments employ the same metaphorical frames of reference as seen in the use of *foundation*, *key* and *construction terms*, their uses and functions differ. That is, though similar in form, those frames not only communicate different disciplinary values but also influence the readers' opinion regarding these values. In the following section, the introductory statements of each department are analyzed and discussed.

### **Analyzing Spatial Metaphors in Departmental Introductory Statements**

Each department at the University of Louisville, Florida State University and Virginia Tech University has

compelling introductory statements on their websites. Flaherty's 2018 publication in *InsideHigherEd* explains that departments in higher institutions make certain rhetorical moves (such as asking 'Why Study English') in their introductory statements to respond straightforwardly to the current crisis in enrollments, largely engendered by the disparity in the knowledge production and prioritized values in the humanities and the STEM-related programs. Hence, the introductory statements are analyzed for how distinct predicators and lexical items used in these statements are metaphorically expressed through the building schema, which is one of the means of generating spatial metaphors.

As Fahnestock (1999) explains, metaphor is a fundamental mechanism in language and thinking whose principle underlies all conceptual systems. Hence, the predicators and lexical items used in these introductory statements are important to our conceptual understanding of the utilitarian values favored by each department. Following from this conceptual view, therefore, we understand the use of language in the development of the introductory statements of these departments as a metaphorical system of the conceptual structure of source domain mapped unto structure of target domain. The following discussion examines the metaphorical frames of target domain reference employed in the introductory statements of both the English and mechanical engineering departments.

### ***Spatial Metaphors in English Department's Introductory Statements***

The English departments of the select institutions under consideration in this paper formulate their introductory statements in a similar manner. These departments, although adopt varied metaphorical expressions of space, highlight similar perspectives to

knowledge production. In the introductory statements of these institutions, the frequently used spatial expressions are *'foundation'*, *'key'*, *'construction terms'*, and *toolbox* metaphors. In this section, each metaphorical frame of reference in the English department's introductory statement is discussed. The English departments, as a vital unit of liberal arts education, seek to train students to, among other things, be literate, responsible and critical thinkers. As observed in the data, these metaphors (that is, *'foundation'*, *'key'*, *'construction terms'*, and *toolbox*) not only align with the liberal arts philosophy but also provide a nuanced understanding of the discipline's academic practices.

Datum 1: In our program, you'll get a strong foundation in liberal arts (VT)

Datum 2: The program for English majors is designed to lay a foundation for careers in writing, teaching, scholarship and research. (UofL)

The conceptual structure of 'foundation' provides a framework for understanding the target domain—which, here, is the English department's valued disciplinary knowledge—in the light of the source domain, a foundation (an example of a spatial entity). The metaphorical concept of building schema is deployed to describe how the English departments of Virginia Tech and the University of Louisville envision and advertise their favored disciplinary knowledge. This metaphorical framing provides vivid imagery—a foundation—of the discursive nature of the English departments of both institutions as an object of disciplinary study. The understanding of the features of the source domain (foundation) as that load-bearing, all-important part of the building sets forth a metaphorical understanding of the target domain, that is, the English department. Moreover, knowing that a foundation, whether done weakly or strongly, determines the durability of the building helps us to conceptualize the English programs as

providing not only stability for knowledge of the society but also a platform for helping the students establish critical intellectual skills for advancing in the society.

Furthermore, Florida State University's English department uses the toolkit metaphor in its introductory statement to position itself as a repository of academic resources, competencies and strategies.

Datum 3: We equip our ambitious, multi-talented undergraduate and graduate students to venture out into every corner of the new creative economies. (FSU)

Using the predicator, *equip*, the English department of Florida State University is metaphorically mapped as possessing the right academic tools with which they prepare the students for the future. The primary aim of equipping the students with these tools is to help them *venture out* with confidence in efforts to resolve issues using best practices. Building on this traditional notion of equipping students with liberal abilities in form of critical thinking, the University of Louisville's English department also portrays itself as the key to unlocking the potential for making a great society.

Datum 4: The overall mission of the English Department is to promote literacy...and skills that are the key to the future of an urban area in an increasingly information-based economy. (UofL)

In the excerpt above, the English department uses another element of the building metaphor, *key*, to establish what it envisions and prioritizes as knowledge-making. As an element of building metaphor, *key* serves as a conceptual frame for understanding the source domain in relation to the target domain. Hence, the *key*, as metaphorically used here, serves the function of unlocking a door in order to gain access to a new space—an urban area that is consistent with modern advances in the society. The English department is, therefore, pivotal in providing a platform for developing liberal skills such as critical thinking and



analytical mind, among others, that literate citizens need to navigate entry or exit points and spaces in the society.

Furthermore, in terms of developing critical thinking skills, Florida State University's and Virginia Tech's introductory statements use construction terms such as *create*, and *build* to map how their respective English departments understand the impact of the knowledge imparted on the students.

Datum 5: We explore the best of the past and present in order to create a better future for everyone who reads (or hears) English. (FSU)

Datum 6: In our program... you will build core skills in critical reading, writing, research, and analysis. (VT)

Construction terms such as *create* and *build* follow from the earlier metaphorical understanding of the English department as a foundation upon which students construct an imagined future for the society. These construction terms are considered process-oriented metaphors because they exemplify the series of necessary actions needed in achieving a better, innovative future. For instance, *build* as a process-focused source domain, is metaphorically used to suggest the crucial impact of the English department to the process of constructing an imagined future through creative activities such as critical reading writing and research.

### ***Spatial Metaphors in Mechanical Engineering Department's Introductory Statements***

A cursory look at the introductory statement on the University of Louisville's and Florida State University's mechanical engineering department websites reveals that assertively performative predicators such as *design*, *manufacture*, *develop*, *control* are used as metaphorical frames of target domain reference. For instance, specific objectives of each of these institutions' mechanical engineering department are to:

Datum 7: you will be trained to design, develop, test, and manufacture components or processes that do useful work. (UofL)

Datum 8: ...analyze, design and control thermal-fluid systems, structural and material systems (FSU)

The interesting aspect of this statement is the complementary information which suggests the department's outward-looking approach to solving practical problems of the society. These lexical items are, here, analyzed for their building schema metaphorical representation. As a source domain, *design, develop and manufacture* are construction terms that provide a process-to-product descriptive framework, especially with regards to spatial spaces. This framework provides a heuristic for determining the valued disciplinary knowledge of the Engineering department—the target domain. As descriptive heuristics, these construction terms portray the Engineering department as a platform for innovative practices—which is one of the pull factors that contribute to the ascendancy of STEM-related programs.

Another way the mechanical engineering department at the University of Louisville enacts the building schema of spatial metaphor in its introductory statement is by envisioning itself as:

Datum 9: ... the key to building the cities of the future (even in outer space) ...to quickly bring life-altering innovations to the market. (UofL)

In line with the metaphorization schema adopted in this study, this statement contains a double spatial metaphor—a *key* and a *building*—and the understanding of one depends on the understanding of the other. This metaphorization thus warrants multiple conceptualizations of the source domain-target domain heuristics. That is, to get an understanding of how these spatial metaphors of key and building work, it is necessary to understand the *key* as not only distinctively metaphorical but also a necessary

exigence for the building process. Hence, the *key* is, here, presented as an indispensable device—what Wolfe refers to as “visible, measurable and immediately applicable knowledge” (p. 77) —that provides necessary information for putting different pieces together to form a tangible whole, the building, that is of ‘innovative, life-altering’ value to the society.

Furthermore, the utilitarian functions of engineering departments go beyond designing and fabricating tangible industrial products; hence the need to develop communication, collaboration and business skills, among other skills in students. To frame the development of these skills, both Florida State University and Virginia Tech employ the building metaphor of *foundation* in the introductory statements of their engineering departments. Datum: 10: ... foundation in communications skills, principles of economics, and other fundamentals upon which they will draw in their professional careers. (FSU)

Here, the engineering department of FSU understands its role as constructing a base on which the life skills needed by students to function in the society rest. Similarly, VT’s engineering department’s *strong ties with the university institutes* is mapped as a foundational element for developing these skills in students. describe their valued knowledge. This metaphorical use of *foundation* in the mechanical engineering department provides an understanding that this discipline, though values tangible outcomes, aims to equip their students with tools to effectively put these outcomes to use in the society. This framing of foundation affirms Bouterse and Karstens’ (2015) claim that while STEM discipline is attributed with progressive scientific and technological development, these disciplines can be complemented by the educational philosophies of the liberal arts.

## Discussion

This study highlights how institutional documents such as departmental introductory statements are embedded with metaphorical usages. The building schema of spatial metaphors has been adopted to examine how these institutional documents promote their valued disciplinary knowledge by mapping (that is, using the attributes of) the source domain (the building schema) to frame our understanding of the target domain—the valued disciplinary knowledge of both fields. STEM programs have continued to enjoy an unprecedented ascendancy and massive government support because of the direct, practical and tangible benefits it affords the society. In addition, the metaphorical concept of building schema has been described as one that starts from the load-bearing base (foundation) to other parts of a building such as the door. This mapping depicts the fact that education, as conceptualized by both departments, is a process that includes several parts; that is, while the humanities department might provide instructions to set appropriate formative practices for the students—such as what happens with the gateway introduction to college writing courses such as English 101 and 102—the STEM-related program, that is mechanical engineering, focuses on their tangible impact on the society.

Although some of the excerpted introductory statements of both English and mechanical engineering departments share similarities in their expression of spatial metaphor, the function of these metaphorical frames differs. Whereas the English department's metaphorical mappings express the ways of knowing, the metaphorical expressions in the introductory statements of mechanical engineering—with an extension to STEM-related disciplines—portray practical ways of doing. In essence, the field of humanities is seen to produce intangible products in the form of knowledge creation that helps shape

the world while STEM-related fields most often than not produce tangible products for industrial and technological development of the world. These findings show how the philosophies of both disciplines have been wittingly or unwittingly foregrounded through metaphorical use of language in these institutional documents.

While this exploration is not the panacea for the disciplinary divide, the evidence of this research indicates that it may provide a useful and timely intervention that helps academic departments/programs move toward rethinking how they present themselves to the public through their metaphoric use of language—a necessary step in actualizing the humanities-STEM complementarity. According to Lakoff and Johnson (1980), introducing new metaphors is the most important way to see beyond a metaphor. As this study has shown, the metaphorical framings in these introductory statements reinforce the dominant disciplinary values of these programs, which has unsurprisingly elevated public perception of STEM programs over the humanities. Nevertheless, to achieve the said complementarity, it is critical that departments in the humanities seek and, more importantly, introduce new metaphors for understanding their utilitarian contributions to societal development.

Furthermore, since metaphorical framings influence the reader's attitude and opinion about the issue (Ottati et al., 2014), the findings of this study, especially the metaphorical framings produced in departmental introductory statements analyzed, should compel institutions as well as academic programs to rethink the constituents of their institutional documents. Such rethinking is necessary in an effort to examine how metaphoric language use could have either reinforced or misrepresented the givens of their institutional values and philosophies. While this study is not calling for an absolute re-designing of these institutional documents based on how

metaphors have been deployed, these institutions can begin to reconsider how these statements align with the needs of 21st-century literate society.

### **Implications**

This study also has implications for interdisciplinary potentials of complementing STEM's objects of study with humanities' objects of study. Following Leach's (2013) suggestion that STEM and humanities are more complementary than competitive as well as Carrell et al.'s (2020) recent proposal to place humanities as the driving force and context of STEM studies, the findings of this study reveal that adopting an interdisciplinary framework for discussing and engaging across the fields of humanities and STEM could bridge the STEM-humanities gap. One of the ways of fostering this merger is by creating interdisciplinary programs that connect STEM approaches with humanities thinking.

Moreover, as these programs are created, attention should be paid to what and how metaphoric language is used to present and promote their valued knowledge in their respective institutional documents. As Ottino & Morson (2016) conclude, an educational system that merges humanities and sciences will “foster more than just innovation... it [will] also yield more-flexible individuals who adapt to unanticipated changes as the world evolves unpredictably” (p. 4). Based on this implication, I recommend that humanities scholars, technical/professional writing programs and other writing-intensive program administrators adopt a more informed perspective towards collaborating with STEM scholars, especially in developing materials that enable students to meaningfully engage the complementarity of the two seemingly different academic worlds.

## **Conclusion**

This study discusses spatial metaphors in the introductory statements of English and mechanical engineering departments in select ACC schools. The aim was to examine how these statements have not only fostered the lore of but also reflected public perceptions of the humanities and STEM-related disciplines. Mechanical engineering department envisions its programs as the innovation-driven, service-providing space into which the English language, through its program offerings, trains students to function. This understanding aligns perfectly with the popular thinking about the institutional divide between the humanities and STEM programs in recent years. The spatial metaphor shows how institutions of higher learning conceptualize disciplinary objectives in different ways that reflect their valued knowledge-making practices. Not only do spatial metaphors analyzed in this study impacts how the disciplines communicate their commercializing values in the society to the prospective students, like Arcimaviciene (2015) opine, they also establish what kind of commercial value they provide, especially in STEM programs focused on utilitarian functions.

While this study aimed to better understand the form and function of metaphorical language used in describing the disciplinary values of humanities and STEM programs, it has certain limitations. The study only analyzes the introductory statement of one department per discipline, which cannot be generalized to or represent a larger dataset. However, by focusing on a specific department, this study draws a more contextualized understanding of how spatial metaphors are used to frame disciplinary values in each program. Further studies can expand the data size or focus on determining if the metaphorical language use in these introductory statements is deliberate or non-deliberate. More importantly, future

studies might conduct qualitative research to examine how students connect and respond to the metaphorical framings in these introductory statements to ascertain the influence of those framings on their decision to enroll in a specific discipline.

### References

- Adepoju, O. T. (2017). Euphemistic metaphors in Nigerian newspaper obituary announcements. *Ife Studies in English Linguistics*, 12(1), 69-80
- Arcimaviciene, L. (2015). EU universities' mission statements: What is popularized by metaphors. *SAGE open*, 5(2), 1-12
- Batten, A. J. (2012). Metaphors we teach by: The language of "learning outcomes". *Teaching Theology & Religion*, 15(1), 16-28.
- Bouterse, J. & Karstens, B. (2015). A diversity of divisions: Tracing the history of the demarcation between the sciences and the humanities. *Isis*, 106 (2), 341-352.
- Burke, K. (1969). *A grammar of motives*. University of California Press.
- Carrell, J., Keaty, H., & Wong, A. (2020). Humanities-driven STEM— using history as a foundation for STEM education in honors. National Collegiate Honors Council, 53-69.
- Chatti, S. (2020). Seasonal metaphors in Arab journalistic discourse. *Metaphor and the Social World*, 10 (1), 22-44.
- de Paor, C. (2021). Credit allocation and program design: insights from metaphor. *Journal of Further and Higher Education* 45 (6), 836- 844.
- Fahnestock, J, & Secor, M. (1991). The rhetoric of literary criticism. In C. Bazerman & J. Paradis (Eds.). *Textual dynamics of the professions: Historical and contemporary studies of writing in professional*



- communities* (pp. 74-96). University of Wisconsin Press.
- Fahnestock, J. (1999). *Rhetorical figures in science*. Oxford University Press.
- Flaherty, C. (2018, July). The evolving English major. InsideHigherEd. Retrieved from <https://www.insidehighered.com/news/2018/07/18/new-analysis-english-departments-says-numbers-majors-are-way-down-2012-its-not-death>
- Gross, D. M. (1996). Metaphor and definition in Vico's new science. *Rhetorica: A Journal of the History of Rhetoric*, 14 (4), 359-381.
- Hawkins, J. N. (2018). Series editor's introduction. In J. N. Hawkins, A. Yamada, R. Yamada and W. J. Jacob (Eds.), *New directions of STEM research and learning in the world ranking movement* (pp. xxiii-xxiv). Palgrave Macmillan.
- Horn, F., Breytenbach, C., Di Biase-Dyson, C., Egg, M., Fuhrer, T., Lobsien, V., Schlesier, R., Stenger, J. & Trînca, B. (2016). Spatial metaphors of the ancient world: Theory and practice." *eTopoi. Journal for Ancient Studies*, 6, 453-480.
- Kao, V. (2017). Science, technology, and the human: Integrating STEM and the introductory humanities course. *Interdisciplinary Humanities*, 34 (3), 7-21.
- Lakoff, G. & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.
- Leach, J. (2013). STEM and the humanities: A false dichotomy. *Speech given at the University of Illinois at Urbana-Champaign, Distinguished Lecture Series, Champaign, IL*.
- Nussbaum, M. C. (1997). *Cultivating humanity: A classical defense of reform in liberal education*. Harvard University Press.

- Ottatti, V., Renstrom, R., & Price, E. (2014). The metaphorical framing model: Political communication and public opinion. In M. J. Landau, M. D. Robinson & B. P. Meier (Eds.). *The power of metaphor: Examining its influence on social life* (pp. 179-201). American Psychological Association.
- Ottino, J. M., & Morson, G. S. (2016). Building a bridge between engineering and the humanities. *The Chronicle of Higher Education*, 14.
- Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Sage.
- Peters, J., Dykes, N., Habermann, M., Ostgathe, C., & Heckel, M. (2019). Metaphors in German newspaper articles on multidrug-resistant bacteria in clinical contexts, 1995–2015: A computer-assisted study. *Metaphor and the Social World*, 9 (2), 221-241.
- Rhee, B. S. (2018). Developing the humanities competencies of STEM undergraduate students: New challenges for Korean higher education. In J. N. Hawkins, A. Yamada. R. Yamada & W. J. Jacob (Eds.). *New directions of STEM research and learning in the world ranking movement* (pp. 111-125). Palgrave Macmillan.
- Richards, I. A. (1970). *The philosophy of rhetoric*. Oxford University Press.
- Ritchie, L. D. & Cameron, L. (2014). Open hearts or smoke and mirrors: Metaphorical framing and frame conflicts in a public meeting. *Metaphor and Symbol*, 29 (3), 204-223.
- Saldaña, J. (2014). Coding and analysis strategies. In *The Oxford handbook of qualitative research*. Oxford University Press

- The rhetoric and the poetics of Aristotle*. (1984). Translated by W. R. Roberts and I. Bywater. Random House, Inc.
- Thonus, T., and & Hewett, B. L. (2016). Follow this path: Conceptual metaphors in writing center online consultations. *Metaphor and the Social World*, 6 (1), 52-78.
- Williams, J. (2005). Skill as metaphor: an analysis of terminology used in success for all and 21st century skills. *Journal of Further and Higher Education* 29 (2), 181-190.
- Wolfe, C. (2017). Theory, the humanities, and the sciences: Disciplinary and institutional settings. *Journal of Literature and Science*, 10 (1), 75-80.
- Yin, R. K. (2018). *Case study research and applications: Design and methods*. (6th ed.). Sage.
- The data for this study were derived from the following resources available in the public domain:
- About ME | FAMU-FSU*. (n.d.). Retrieved September 27, 2022, from <https://eng.famu.fsu.edu/me/about-me>
- About*. (n.d.). Department of Mechanical Engineering | Virginia Tech. Retrieved September 27, 2022, from <https://me.vt.edu/about.html>
- Department of English*. (n.d.). College of Liberal Arts and Human Sciences | Virginia Tech. Retrieved September 27, 2022, from <https://liberalarts.vt.edu/departments-and-schools/department-of-english.html>
- J.B. Speed School of Engineering. (2020, September 18). *Mechanical Engineering (dept)*. J.B. Speed School of Engineering - University of Louisville. Retrieved September 27, 2022, from <https://engineering.louisville.edu/academics/departments/mechanical/>
- J.B. Speed School of Engineering. (2021, March 29). *Mechanical Engineering*. J.B. Speed School of

Engineering - University of Louisville. Retrieved September 27, 2022, from <https://engineering.louisville.edu/academics/areasofstudy/mechanicalengineering/>

*ME Vision | FAMU-FSU*. (n.d.). Retrieved September 27, 2022, from <https://eng.famu.fsu.edu/me/vision>

*People | The English Department*. (n.d.). Retrieved September 27, 2022, from <https://english.fsu.edu/people>

*Welcome — Department of English*. (n.d.). Retrieved September 27, 2022, from <https://louisville.edu/english>

---

### **Author Bio**

Olalekan Adepoju is a PhD candidate in Rhetoric and Composition, English Department, University of Louisville, USA. He obtained his Bachelor of Arts degree in English Education and Master of Arts degree in English from University of Ilorin, Nigeria and University of Ibadan, Nigeria respectively. His research interests lie in discourse analysis, writing studies, educational practices, and ESL teaching. His research has been published in peer-reviewed journals. Olalekan served as the assistant director of the University Writing Center for graduate writing at the University of Louisville, USA.