The spaces and places of argumentation: Developing a spatial model of argumentation

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In this paper, I argue that the cognition on which argumentation depends is intimately related to spatial reasoning, which in turn opens the door to new approaches to modeling argumentation. Argument modeling has proved useful for argumentation studies and pedagogy but largely is limited to conceiving of arguments as static, isolated phenomena. Building on the successes of argument mapping, this paper proposes a model for mapping the space of argumentation and imagines the use of such a tool in argument pedagogy.

KEYWORDS: abstract reasoning, argument, argument mapping, argumentation, argumentation pedagogy, cognition, space, spatial reasoning.

1. INTRODUCTION

Argumentation is goal-driven; most arguments exist for the ultimate purpose of convincing an audience to accept or reject a proposition. The discipline of argumentation studies recognizes this imperative as a call for attention to the normative pragmatics of argumentation: insights about argumentation are valuable insofar as they offer guidance to arguers seeking this goal. The intimate relationship between argumentation theory and practice is the product of this perspective.

Hence the practical focus of argumentation theory. This focus has produced a wealth of highly-utilitarian resources to improve arguer's ability to argue effectively, resources that are in demand now more than ever. (Kuhn, 2009) While advancement in teaching people to argue effectively has been steady, a need for further development of effective pedagogical tools and techniques continues to exist. (Kuhn, Hemberger, & Khait, 2017; Millard & Menzies, 2015)

Attention to understanding how we conceive of arguments and their functioning will continue to produce such advancements. In particular, the present survey attempts to understand the cognitive space

within which arguments function with an eye toward improving our ability to argue effectively.

2. COGNITION AND SPACE

The study of human cognition increasingly is converging around the conviction that understanding how humans think requires attention to the evolutionary forces that shape our mechanisms of cognition. Such an idea seems, if not inevitable, at least overdue. The notion that *homo sapiens* are the product of the challenges we faced and the adaptations that helped us overcome those challenges obviously is not a new idea; application of that perspective to the machinery of cognition is opening doors to a richer understanding of the means by which we think.

Of the physiological and psychological mechanisms that natural selection produced, Pinker (1999) argues that the visual perception organs and their functions are foundational to human cognition: "The repercussions reach to the rest of our psyche. We are primates—highly visual creatures—with minds that evolved around this remarkable sense." (p. 214) Given how important recognizing threats and opportunities is to the selection of those who survive, it's no surprise that the underlying organs devoted to these tasks would come to dominate our thinking. Visual perception is directly connected to spatial cognition; we rely upon both to develop our understanding of the world around us and where we are in it. Pinker's point is that sense of sight and the spatial cognition attached to it are both the product of our environment and, consequently, the foundation of our approach to thinking about that environment.

This connection between the visual and the rest of our mind is increasingly being explored by those interested in one area of cognition in particular: abstract thought. Casasanto (2009) explains: "Many linguists have noted that when people talk about states, possessions, ideas and desires, they do so by co-opting the language of intuitive physics. In particular, words borrowed from physical domains of space, force, and motion, give rise to linguistic metaphors for countless abstract ideas." (p. 456) Other contributions to the study of the relationship between thinking and space come from cognitive science. Talmy (1988) explores the relationship between our conceptions of force and our linguistic representations of abstract ideas. Gärdenfors (2004, 2014) offers a complete theory of conceptual formation explained by the geometry of conceptual spaces.

In these and other cases, insight into how cognition functions is gained by examining the relationship between what had long been seen as different ways of thinking: spatial cognition was one mode of thought; abstract reasoning was another. These scholars are challenging that assumption: could it be that abstract reasoning is the direct descendent

of spatial reasoning? It's one thing to suggest that relationships exist between different modes of thought and the organs on which we rely to produce that thought. It's quite another to suggest that the cognitive organs on which we rely to undertake different operations might not be distinct at all but are, in fact, different versions of the same organ. Pinker (2009) explains:

> Evolutionary change often works by copying body parts and tinkering with the copy. For example, insects' mouth parts are modified legs. A similar process may have given us our language of thought. Suppose ancestral circuits for reasoning about space and force were copied, the copy's connections to the eyes and muscles were severed, and references to the physical world were bleached out. The circuits could serve as scaffolding whose slots are filled with symbols for more abstract concerns like states, possessions, ideas and desires. The circuits computational abilities, continuing to reckon about entities being in one state at a time, shifting from state to state, and overcoming entities with opposite valence. When the new, abstract domain has a logical structure that mirrors objects in motion—a traffic light has one color at a time but flips between them; contested social interactions are determined by the stronger of two wills—the old circuits can do useful inferential work. They divulge their ancestry as space- and force-simulators by the metaphors they invite, a kind of vestigial cognitive organ. (p. 355-356)

Dubbed *exaptation* by Stephen Gould and colleagues (1982), the pressing of cognitive processes into service for which they were not originally adapted may help explain why metaphors of space and force are so prevalent in our languages. The prevalence of these metaphors lead Pinker (2009) to conclude that their use wasn't merely a coincidence but revealed something far more significant: "Models of space and force don't act like figures of speech intended to convey new insights; they seem closer to the medium of thought itself." (p. 357)

New research seems to support this contention. Building on Nobel Prize-winning work on the functioning of specialized "grid" and "place" neurons that function as the mind's "GPS system" for navigating physical space, Bellmund et. al. (2018) (in cooperation with the aforementioned Gärdenfors) have used neural imaging to demonstrate that these systems function similarly when employed for abstract thought. "The hippocampus' place and grid cells, in other words, map not only physical space but conceptual space. It appears that our representation of objects and concepts is very tightly linked with our representation of space." (Rajagopalan, 2019)

3. ARGUMENTS, ARGUMENTATION AND SPATIALITY

It should, at this point, come as little surprise that the prevalence of linguistic metaphors related to space and force that generally are pervasive in our languages are similarly prevalent in the language we use to talk about argumentation. Indeed, a cursory examination of the lexicon of argumentation studies reveals that those who argue *stake out* positions, define the *boundaries* of conflicts, *frame* controversies, argue from *standpoints* and expect that claims will rest upon acceptable *grounds,* all while seeking to *move* audiences, *advance* positions, *sway* opponents, *follow* lines of argument, take logical *leaps,* and engage in *strategic maneuvering*. The relationship between spatial reckoning and making arguments—at least as revealed by linguistic metaphors—is intimate.

This intimacy is based, in part, on the inherent logic of spatial relations. Pinker (2009) notices this when discussing the use of visualization to solve logical problems:

> [Visualizing logical problems] supplies many truths of geometry for free. For example, left-to-right arrangement in space is transitive: if A is to the left of B, and B is to the left of C, then A is to the left of C. Any lookup mechanism that finds the locations of shapes in the array will automatically respect transitivity; the architecture of the medium leaves it no choice. (p. 291)

Consideration of the models used to represent relationships in set theory demonstrate the same principle. As Venn (1880) noticed, the relationships between concepts that share (or are distinguished by) characteristics can be represented by overlapping circles; Venn diagrams are spatial and, therefore, logical. While a thorough exploration of the spatial dimensions of arguments and argumentation is beyond the scope of my present effort, suffice it to say that the evidence for the connection is intriguing and that there may be much to be gained by more fully exploring the spatiality of argumentation.

One area of argumentation theory that has capitalized on and contributed to our understanding of this phenomenon is the mapping (or diagramming or visualization) of arguments. In its most basic form, argument mapping attempts to make plain the critical elements of arguments and the relationships between those elements. Most argument mapping follows a very similar approach: by representing arguments' elements and relationships graphically, an argument map distills the complexity of natural language argumentation to a standard form whose operations can be observed, understood and critiqued. Argument mapping emerged in parallel to the greater attention directed toward argumentation theory. (Goodwin, 2000) Such approaches have

demonstrated great utility in improving students' critical thinking skills (van Gelder, 2015) and iterative, guided practice in the parsing and diagramming of arguments has produced abundant evidence of impressive pedagogical outcomes. (Davies, 2012; Dwyer, Hogan, & Stewart, 2012; Kunsch, Schnarr, & van Tyle, 2014; Rider & Thomason, 2014; van Gelder, 2003, 2005; van Gelder, Bissett, & Cumming, 2004)

Broadly speaking, extant approaches to argument mapping fall into two categories that parallel those introduced by Woods (1995) in his discussion of the methods of analyzing fallacies. Woods (1995) employs the metaphor of a butcher preparing meat for sale to distinguish between arguments as they occur in natural language and those prepared for analysis. Groarke (2019) explains: "[A]rguments *on the hoof* are arguments as they appear in their real life contexts. One *dresses* them to identify and isolate their key components in a way that prepares the way for argument evaluation." (pt. 3.0; emphasis added) This distinction between "dressed" arguments and arguments "on the hoof" may be used to distinguish the current approaches to argument mapping: some argument maps function to reduce complex arguments to their essential elements; other approaches attempt to capture the complexity of natural language argumentation in its extant state. Woods' metaphor will also serve the basis for my contention that there is another, unexplored aspect of argumentation yet to be mapped. Before I turn my attention to this *terra incognita* of argument mapping, I'll review both the major contributions and state-of-the-art of both existing approaches.

3.1 Mapping "dressed" arguments

Argument mapping developed in parallel to the growing interest in the process and product of argumentation. Early evidence of the inclination toward mapping may be found in Whatley's *Elements of Logic* (1897), where he advises that "many students probably will find it a very clear and convenient mode of exhibiting the logical analysis of the course of argument, to draw it out in the form of a Tree, or Logical Division." (p. 253) Contributions to the approach from Wigmore (1913), Beardsley (1959) and Toulmin (1958) helped to cement mapping arguments as a useful prerequisite to studying and teaching argumentation. These early efforts—and the modern versions based on these early developments discussed below—largely take the same approach: arguments are distilled to their essential components; those components and the relationship between them are then laid out in a graphical representation. Relationships are typically depicted as hierarchical, demonstrating the connections between superior, subordinate and coordinate ideas.

More recently, argument mapping has moved from the static paper-and-pencil approach to the more dynamic digital environment.

Known generally as Computer-Supported Argument Visualization (CSAV), the effort is a significant leap forward for argument mapping. It's not necessary to trace the history of CSAV here in order to understand where it fits in the development of argument mapping; Buckingham Shum (2003) has produced a very good record of its development. As Kirshner et. al. (2012) argue in the preface to their book on the subject, the potential benefits of using dynamic, adaptive models of argument include nothing less than creating a common language for management of humanity's most pressing problems.

3.2 Mapping arguments "on the hoof"

A second important effort at argument mapping constitutes a more holistic approach to mapping arguments though, unlike mapping Woods' "dressed" arguments, this effort focuses on the larger natural language context in which arguments are exchanged. As an example, consider the project undertaken by Horn et. al. (2003) to map not just individual arguments but the entire debate of a complex controversy. Their effort is impressive: mapping the manifold interactions between participants over time produces rich, intricate and holistic visual representations of debates that include decades of contributions from hundreds of arguers. Yoshimi (2004) differentiates their effort from argument mapping, explaining that

> … whereas argument diagrams relate premises and conclusions *within* an argument (allowing one to distinguish divergent, convergent, linked and serial arguments, among others), debate maps relate whole arguments (allowing one to distinguish different forms of thread, debate, and position). Thus, every node on a debate-map can be represented by its own argument map, resulting in a graph of graphs. (p. 3)

While the scope of "debate mapping" certainly differs from most other argument mapping schemes, the fundamental approach is decidedly similar to other argument-mapping techniques. While I in no way intend to diminish the importance of their work or to understate their contributions to the methods of evaluating controversies at the systems level, it would appear that their "graph of graphs" represents a difference of scale rather than substance. The result of their efforts—often comprising several poster-sized displays for a single debate—is nothing short of comprehensive.

To advance, the field of argument mapping must continue down this road, turning its attention to argumentation as process and designing maps, models and tools that capture the dynamic, situated and interactive operations of arguments within argumentation, particularly as that dynamism, situation and interactivity relates to the space in which

argumentation occurs. Exploring the uncharted terrain on which arguments roam would be a step in the right direction.

4. A SPATIAL MODEL OF ARGUMENTATION

In his explanation of the metaphor distinguishing arguments "on the hoof" from those "dressed" to better understand their constituent parts, Woods (1995) offers an intriguing footnote. The butcher analogy, says Woods, is "… a gory metaphor. In the fateful passage from range to abattoir to table, beef on the hoof is 'dressed' before it is submitted to the final cut (reconstruction) in the meat department of Safeway." Though Woods is primarily interested in the passage of arguments from their natural language form to the reconstructed, analytic representation of those arguments, the "range" on which those arguments roam is equally worth exploring. It is to this territory to which I'll now turn my attention.

4.1 The territory of argument

To conceive of argumentation spatially demands examination of a couple of underlying assumptions. First, we conceive of arguments as possessing materiality. The perception of materiality is reflected in the previously-discussed metaphoric frames we use to describe arguments and corresponds with our inclination to imbue arguments with seemingly-material features: elements, dimensions, valence, boundaries, force, etc. That we conceive of arguments as possessed of materiality also invites consideration of what we know of the perception of material things. Gestalt psychology identifies "figure-ground differentiation" as a basic principle of perception. (Schacter, Gilbert, & Wegner, 2010) Arguments, as phenomena to which we impart the characteristics of material objects, are subject to the same perceptual principles: conceived of as material objects, we assume that arguments have both definition (as discrete objects, separate from other discrete objects) and exist in a context against which those discrete objects may be observed (a "space" in which arguments exist).

Following on from the first, the second assumption underpinning the spatiality of argumentation is that arguments' existence in space permits them to interact. Arguments may be located, manipulated and oriented relative to the space in which they exist and relative to other arguments. This interaction is the product of energy applied through argumentation and influences the arguments themselves and space within which those arguments interact. Through the argumentative practices of construction, refutation and comparison, our conception of argumentation is predicated on the assumption that arguments' operation affects other arguments and the context in which they exist. Representing this context and the interactions it contains in a graphic

model may lend insight into the function of arguments and the operations of argumentation.

These two assumptions indicate that a spatial model of argumentation should reflect the dimensions of *space* and *force*. *Space* primarily is concerned with the demarcations necessary to conceptualize arguments and the exchange of those arguments within argumentation; *force* acknowledges the energy applied to and within that space as manifest by the interaction between arguments.

4.2 Space & Argumentation

Argumentative space is initially demarcated by contest over and convergence on the substance and focus of the dispute. When an arguer advances an argument, they demarcate the space of argumentation either implicitly (by defining the terms of their argumentative efforts or making the substance and focus of the controversy known via the arguments they advance) or explicitly (by identifying or accepting the proposition offered for the controversy). The defined space of argumentation may be thought of as a field of play or, as noted by Goodwin (2002), as "territory" defined by the exchange of arguments; in either case, the space of argumentation may be modeled simply, as represented by Figure 3 below.

Figure 3 – Representing the space of controversy

Even at this rudimentary level, the model has utility. Boundaries around the controversy space define relevance: those subjects contested by the arguers (and all potential subjects they may contest in the course of the argumentation) are included within the bounds of the controversy; irrelevant subjects are outside the bounds of the controversy. In this way, the spatiality of argumentation functions much like a concept, grouping similar ideas together in coherent constructs. Unlike simple concepts,

however, the space of argumentation makes possible a particular cognitive functioning defined by and necessary for argumentation.

The concept of *audience acceptance* is fundamental to understanding the space of argumentation. Audience acceptance is a presumed goal of argument; to select information, identify relationships between different kinds of information, structure the presentation of that information and articulate the whole effort in a way that increases the chance that the audience will accept the novel or controversial is the essence of argumentation. Pursuit of audience acceptance defines the efforts of those advancing, critiquing and evaluating arguments in an exchange. *Audience acceptance*, as it constitutes the space within which argumentation occurs, may be defined only as it exists in tension with that which *has not* been accepted. Inch et. al. (2006) explain: "Because arguments occur only when people disagree with each other, we can imagine a line that separates the statements of belief and value with which an audience agrees from those with which it disagrees. In other words, for any issue we can think of, there is a line that separates what we are willing to accept from what we are unwilling to accept." (pp. 46-47) This tension helps to elaborate on the distinction between simple conceptual space and that cognitive space defined by and dedicated to argumentation. The functional distinction between simple conceptual space and the unique attributes of argumentative space echoes Gärdenfors' (2004) discussion of the function of nonmonotonic inference in conceptual spaces. Concepts inherently exhibit nonmonotonic inferential features, according to Gärdenfors, insofar as they are constantly challenged by new information in both propositional form (new facts that challenge the boundaries of existing concepts) and conceptual form (deductions of characteristics from inclusion of a new object into an existing category). (pp. 102, 126-131) In argumentative space, this nonmonotonicity is determinate: a space for argumentation doesn't exist without tension between acceptance and rejection of the proposition that defines the space.

Building on the notion of the boundary between accepting and rejecting arguments, the model should reflect that the space allocated to each participant in a controversy is the product of the audience's acceptance of an arguer's position; the more willing the audience is to accept the arguer's position, the more "territory" that position occupies. The representation of controversy in Figure 3 doesn't capture the unique dynamism of argumentative space; to do so, more detail must be added to the model, as shown in Figure 4 below.

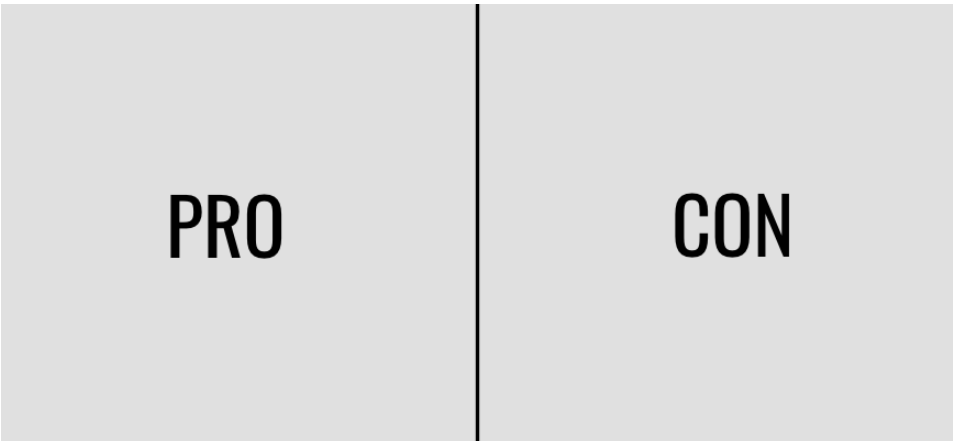

Figure 4 – Dividing the space of controversy into Pro and Con allocations

Here a line dividing Pro territory from Con territory has been added to suggest the space allocated to each side of the controversy. Like the larger space defined by the substance of the controversy, this division allocates territory to those arguments available to Pro and Con sides. The model gains complexity by recognizing that the territory is defined by the goal of the argumentation to be conducted within that space. The contest over the territory allocated to the Pro and Con is the essence of argumentation; that controversy exists both assumes the boundaries around the space within which arguments will be exchanged and the division of that space into (at least) Pro and Con subdivisions.

But the argumentative space itself may be further subdivided to represent areas of focus in argumentation. Generally referred to as *issues*, these subdivisions are similar in function to the general argumentative space defined by a proposition but different in scale as they divide and organize the more precise areas of argumentation within a broader controversy. Issues, according to Goodwin (2002), "… help us organize arguing at all its levels. Issues structure the exchange of individual premise/conclusion units (arguments in the narrowest sense), the fairly pointed, one-to-one exchange of multiple such units in a debate, and the wide-ranging, intermittent and many-to-many exchanges of a social controversy, not to mention fights and other less tightly organized argumentative interactions." (p. 84). From this perspective, issues are the scaffolding of controversy, giving structure and focus to the exchange of arguments. Like the general territory of argumentation defined by a proposition, issues demarcate boundaries around subjects of sub-controversies within the larger territory of the general controversy. In the present model, issues divide the general territory into areas of more narrow focus, as Figure 5 illustrates.

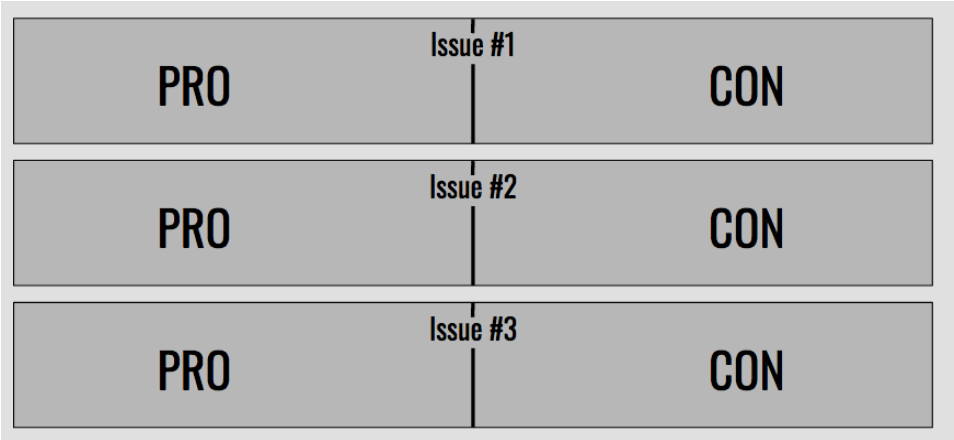

Figure 5 – Subdivision of the argumentative space into issues

Thus, the modeling of argumentation space reveals that space to be the product of the structural functions of reasoning. Insofar as we conceptualize and draw boundaries around the subject of controversy, which is in turn defined by the tension between competing sides in the controversy and organized by the issues considered in service to the larger controversy, the modeling of argumentative space provides insight into critical elements of argumentation.

The utility of the spatial model extends beyond the mere organization of arguments in a controversy. To understand how a spatial model of argumentation may further represent fundamental aspects of argumentation, we must now turn our attention to the second element of argumentation that must be illustrated by a model: *force*.

4.3 Force and Argumentation

Recall that the earlier discussion of efforts to model and map arguments revealed a widespread metaphoric frame employed to discuss arguments; namely, that *argumentation is movement*. Many models of argument already embrace this metaphor. By way of example, Toulmin's definition of argument made clear that motion is the essence of argument, leading an audience from data through warrant to claim. Foss, Foss and Trapp (1991) explain:

> [Toulmin's] layout is based on an analog of motion: "an argument is *movement* from accepted *data*, through a *warrant*, to a *claim.*" (Brockreide & Eningher, 1960) Making an argument is, therefore, analogous to taking a trip. One is trying to "get someplace" from "someplace else." (p. 100)

To be comprehensive, a model of argumentation must account for this movement; the present model will do so by illustrating the effect of *force* as it relates to the operation and exchange of arguments.

The next iteration of the model adds indications of force to represent the respective sides' goal in the exchange: each side endeavors to move the line dividing Pro from Con ground in an effort to occupy a greater amount of the audience's acceptance. The model incorporates arrows, illustrated in Figure 6, to represent this effort.

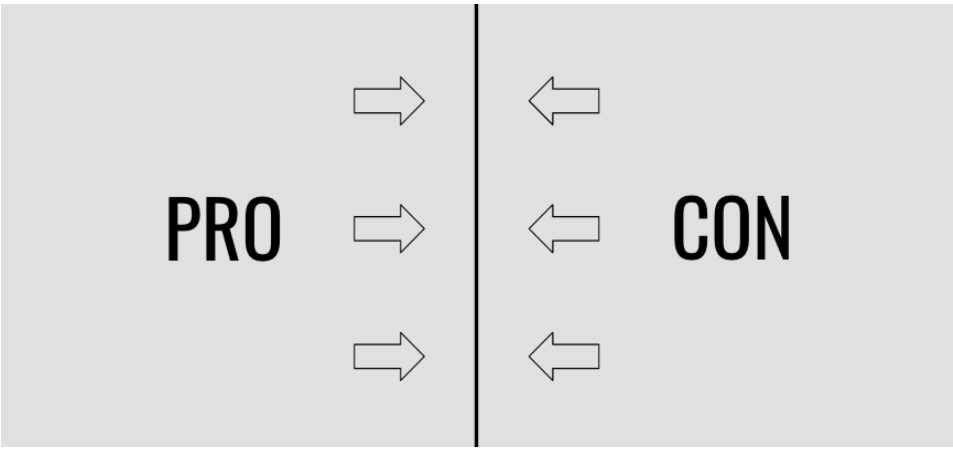

Figure 6 – Arrows illustrate the tension between the Pro and Con efforts

The tension created by these competing efforts represents the "clash" of positions advanced by the Pro and Con. This tension both defines the space (as discussed in the section above) and represents the potential energy inherent in argumentation: the effort to capture the acceptance of the audience defines argumentation and creates the space within which that argumentation plays out.

When applied to further structural refinements in the model, the representation of force also holds relevance. The issues that structure the sub-territory of argumentation within a controversy are subject to forces similar to those that act in the general space of argumentation. Figure 7 makes this clear.

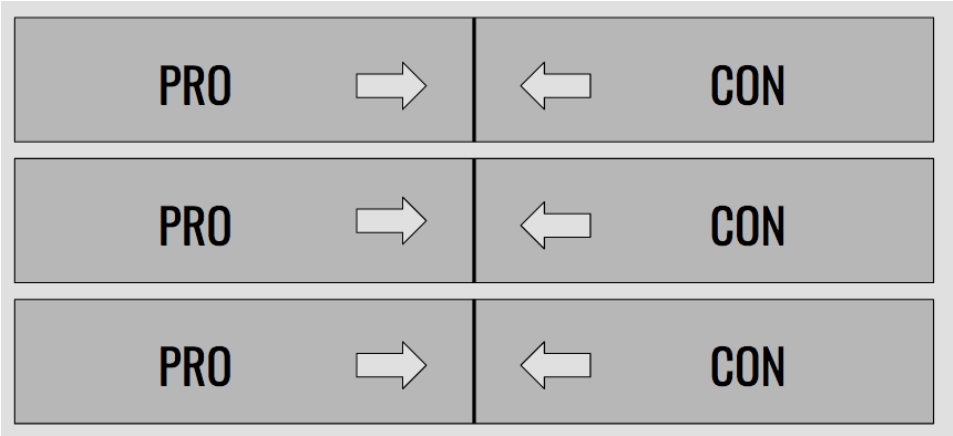

Figure 7 – Arrows indicate the goal of Pro and Con within the issue subdivisions

Here, the force of the Pro and Con efforts to capture territory within each of the issues is represented by arrows. Each side endeavors to establish arguments that will prove convincing to their audience while diminishing the force of their opponent's arguments; that effort acts upon the space of argumentation to allocate ground favorably to one side or the other. Figure 8 below reveals the measure of this effort; specifically, that the allocation of acceptance between Pro and Con's arguments is the result of the audience's *preference* for one side's arguments over the other.

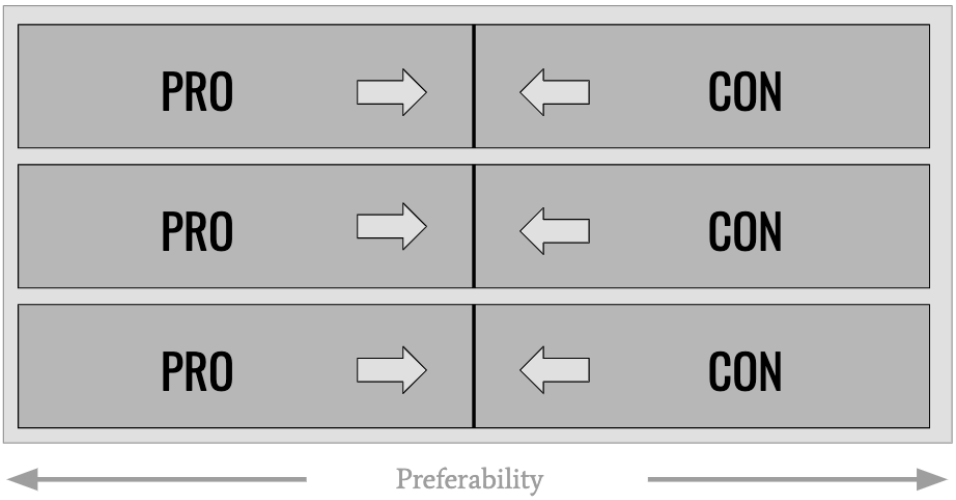

Figure 8 – Preference allocates territory within issues

The exchange of arguments within issues produces a preference on the part of the audience and, correspondingly, an allocation of territory based on that preference. We may refer to the goal of this effort *distribution*,

where gains in one side's territory correspond with losses to the other's, as is made clear in Figure 9.

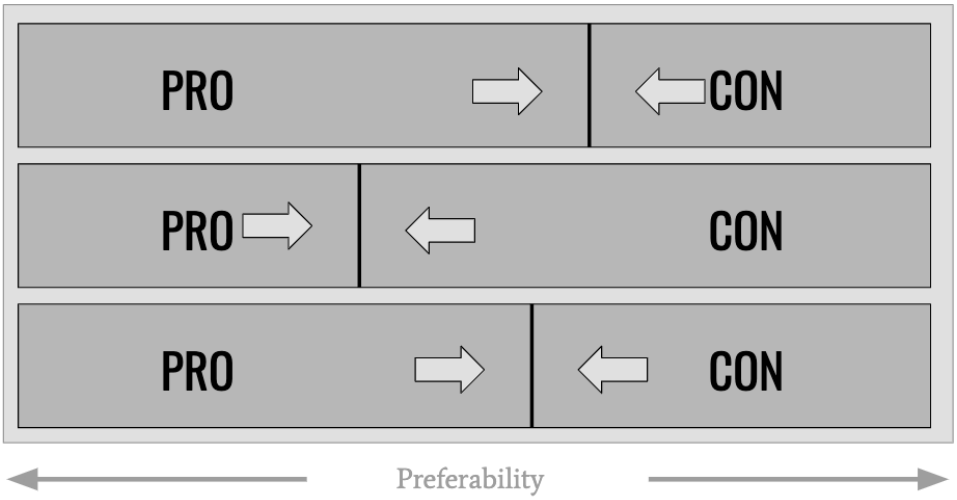

Figure 9 – Territory within issues is distributed by the audience's preference

Force acts upon the relationship between issues as well. Successful arguers attend not only to advancing arguments (within an appropriate issue to gain territory) and critiquing their opponent's arguments (in an effort to prevent them from doing the same), they also must be concerned with elevating the issues on which they're likely to prevail to a greater level of relative significance than other, competing issues. Goodwin (2002) observes that issues are not all created equally; some are more important than others: "It is very common to speak of issues on some sort of scale: that is, as more or less *big, important, major, prominent, significant, key, central, basic, fundamental, vital, pressing, necessary* and so on. … [A]n issue is big (etc.) because the *fact of contention* matters more." (p. 85) The force of an arguer's effort to establish the *significance* of one issue over another may be modeled as illustrated in Figure 10.

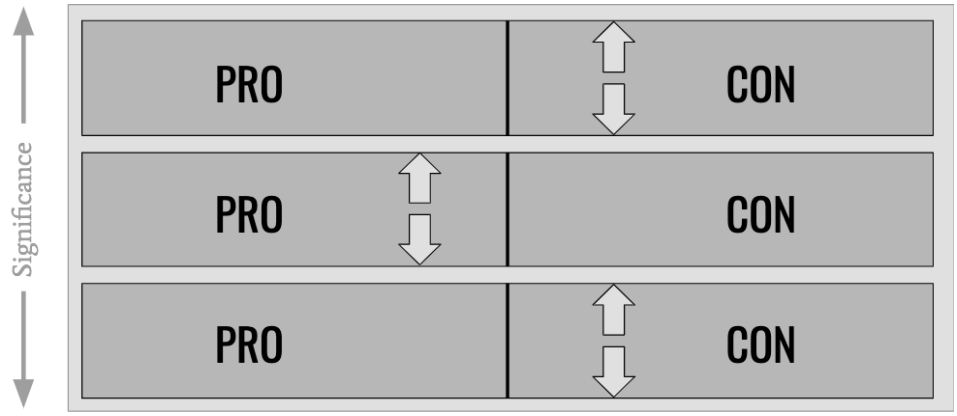

Figure 10 – Comparison of issues establishes the significance of each

The goal of this effort is *displacement* of other issues. If the amount of (audience acceptance) territory available to occupy is fixed by the boundaries of the controversy, each increase of an issue's size will correspond with a decrease in the size of other issues. When an arguer convinces an audience of the significance of one issue over others, the territory is allocated accordingly, as Figure 11 shows.

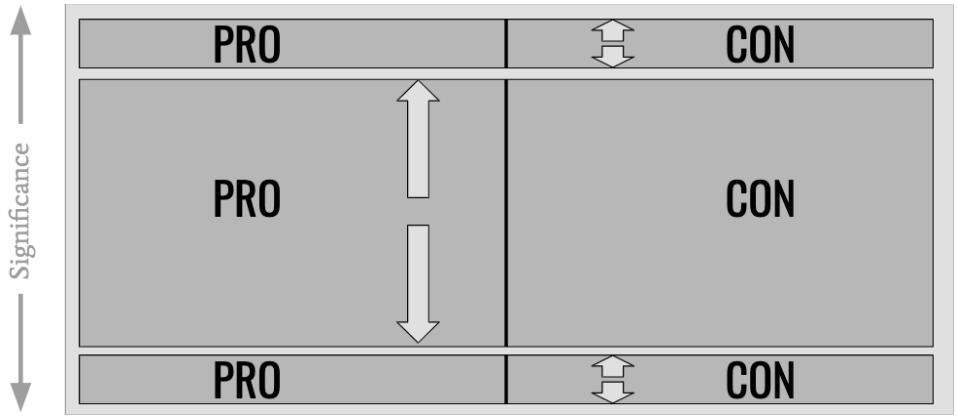

Figure 11 – Comparison displaces one issue in favor of another according to the audience's perception of significance

5. CONCLUSION

Through the integration of representations of both *space* and *force*, the utility of the model becomes more evident. Argumentation, as a communication phenomenon, may be extraordinarily complex. The uncertain nature of the subject matter, the partisan nature of the participants, the various strategies and tactics employed (or misemployed) by advocates and the potentially diverse perspectives of an audience create potential for a befuddling exchange. As such, the pedagogy of argumentation presents unique challenges.

Clear, functional models may help alleviate that confusion, illustrate basic principles of argumentation, structure practice in the exchange of arguments and provide a common frame of reference for discussions about those argumentative efforts. Consider, for example, an exchange of arguments between students for the proposition "Tobacco products should be banned." Using the model, Figure 12 illustrates how the exchange may be scaffolded for novice arguerers, providing guidance and predictability that will enhance their efforts to engage in a productive exchange of arguments.

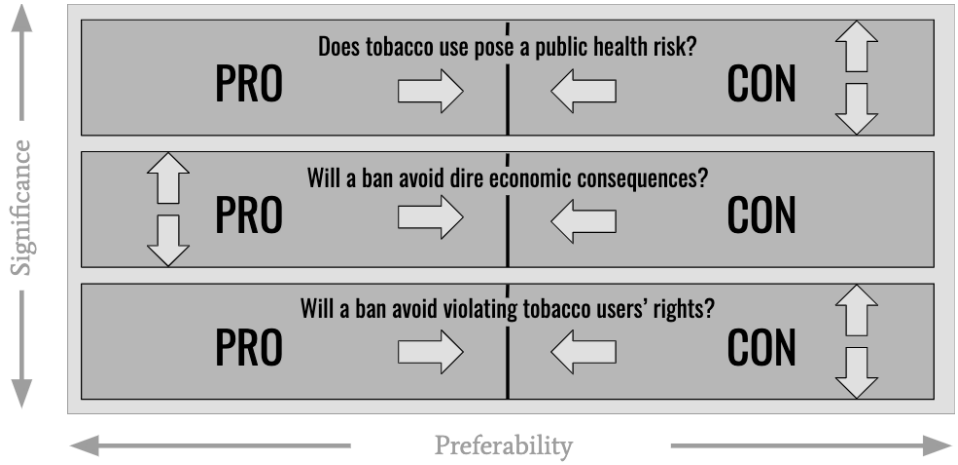

Figure 12 - Scaffolding an exchange of arguments for novice arguerers

From the certainty provided by this structure for the exchange, the students can proceed to offer their arguments for and critique their opponents' arguments against the proposition utilizing a structure that maximizes the precision of those efforts. As the debate unfolds, the audience is able to follow more clearly the arguments exchanged, having already been provided with a "map" of the "territory" the debaters intend to cover. Further, this approach imagines that the audience could use the model to represent their individual assessment of the exchange,

allocating territory to reflect their perceptions of the preferability of positions articulated by each side as well as the significance of each issue debated. Figure 13 illustrates how the arguments made by Pro and Con in the tobacco ban debate may be rendered by an audience member to allocate their acceptance of the arguers' efforts:

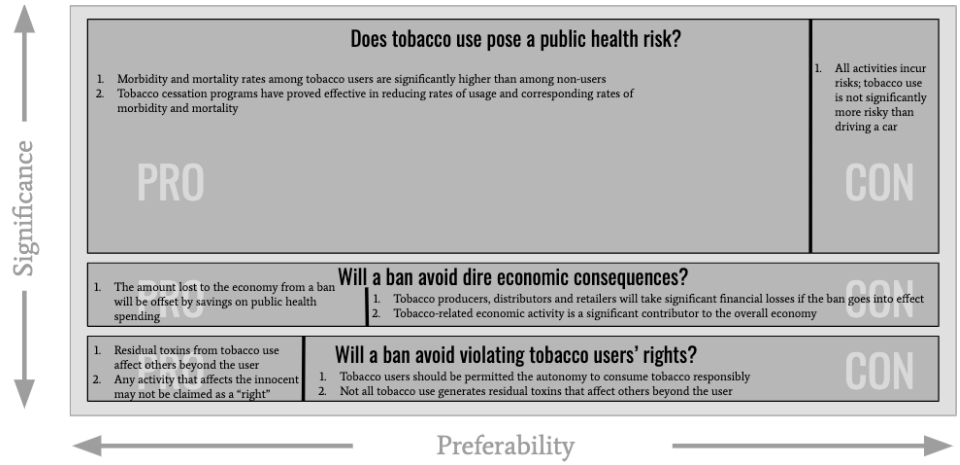

Figure 13 – The "territory" of the audience's acceptance after the debate

This demonstrates only one of the ways that a model of argumentation may contribute argumentation pedagogy. Other considerations—such as defining the terms of a proposition, identifying and building strategy around anticipated issues, analyzing the audience's presumption by considering their allocation of acceptance relative to the proposition and many other such theories and practices—may be made more accessible to students with such a model. In all, and as is the case with the majority of argumentation theory, such insights are the product of interaction between the insights that emerge as argumentation is more fully explored and the adjustments to practice and pedagogy that necessarily follow.

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