

WHERE RHETORIC AND LEAN MEET

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ABSTRACT

This paper aims at an initial analysis and explanation of lean through the lens of the discipline of rhetoric. First, the ancient origin, central ideas, subsequent history and current interpretations of rhetoric are outlined. Then, the overall meeting points of rhetoric and lean are discussed. At the outset, it is contended that certain arguments that can be used as a justification in rhetoric seem fertile for understanding the difference between lean and conventional management. Then, persuasion towards compliance in production is discussed. The field of visual management is argued to have an implicit foundation in rhetoric. The existence of a common ground of values, facts and presumptions between the speaker and the audience is emphasized in rhetoric; it is contended that lean construction in many ways endeavours to create such a common ground among the project participants. Regarding deliberation, the rhetorical dimensions in the methods of A3 and Choosing by Advantages are discussed. Further, Target Value Design is identified as based, for their part, on rhetorical ideas. In conclusion, it is contended that many aspects of lean, which as such may seem odd and perhaps peripheral, can be explained through the classical and modern understandings of rhetoric.

KEYWORDS

Lean construction, lean production, rhetoric.

INTRODUCTION

What does happen between the representation of the building (drawings) and the process (plan), on the one hand, and the completed building, on the other hand? Obviously, there will be the physical production process, but for achieving a perfect outcome, there needs to be production personnel who *adhere* to the product and process representations. How is this adherence realized?

Actually, the discipline for achieving adherence, rhetoric, is one of the oldest. However, it fell out fashion already in the 19th century, although there is now a movement towards its revival. The question arises whether techniques and principles of rhetoric are already used in lean construction, and if not, could they be used more effectively. A secondary question is whether rhetoric is used in conventional construction management.

The paper is structured as follows. First, the ancient origin, central ideas, subsequent history and current interpretations of rhetoric are outlined. Then, the

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overall meeting points of rhetoric and lean are discussed, focusing on fundamental arguments of production management, on compliance to drawings, standards, plans and instruction, on reinforcing common values and widening the informational common ground, on deliberating, promoting and assessing alternative courses of action, and on inventing requirements, issues and ideas. Conclusions are presented at the end of the paper.

RHETORIC

ORIGIN

The emergence of rhetoric was connected to the need of citizens to speak for themselves and persuade in courts of law in Greece of early Antiquity. A body of knowledge on how to speak publicly was formed. The great scientist of the time, Plato, had a negative view on rhetoric, but his pupil Aristotle systematized it in a treatise. The rhetorical tradition continued to the Roman time, during which several guidebooks on rhetoric were prepared. Cicero and Quintilian are among the more well-known experts and authors of rhetoric in Rome. Rhetoric was a central ingredient of education of sons of noble families, and this role of rhetoric continued until the modern time. Already in Antiquity, rhetoric showed the tendency of migrating, besides writing, to artistic and design fields, such as painting, music, sculpture and architecture (Ballard and Koskela, 2013; Koskela and Ballard, 2013).

CENTRAL IDEAS

Already the Greek and Roman handbooks and treatises on rhetoric contained a wealth of descriptive, explanatory and prescriptive knowledge on oratory. Among the most well known were the stages of preparing and delivering a speech:

- *Inventio* (invention) concerns finding and discovering the topics of a speech; also determining the nature of the case, selecting the intention and analyzing the audience.
- *Dispositio* (arrangement) is about organizing the topics into a speech; parts into a whole.
- *Elocutio* (style) refers to different rhetorical methods and devices by means of which the topics were to be delivered.
- *Memoria* (memory) as a stage is related to the fact that in Antiquity, speeches were mostly delivered from memory.
- *Actio* (delivery) refers to the use of gestures, face expression, voice and similar during the delivery of the speech.

As an example of the early achievements of rhetoric, the suggestion for arranging a legal case by Corax (5th century BC) can be presented. His scheme, falling into guidelines for *dispositio*, contained the following: (1) Introduction, (2) Statement of the Case, (3) Argument Summary, (4) Proof of the Case, (5) Conclusion. Still today, the U.S. Supreme Court requires essentially the same structure to be used (Frost, 2005).

Besides methods and techniques, classical rhetoric embraced a powerful conceptualization of the rhetorical situation, consisting of the orator, the vehicle of persuasion (typically speech), and the audience. This allows for useful and interesting

analyses on situational compatibility of these three different elements. The related idea that a presentation should be adjusted to the intended audience is of course widely known. One more widely known piece of rhetorical knowledge concerns “common ground”, that is, the shared values, facts and presumptions between the orator and the audience².

SUBSEQUENT HISTORY

Since Aristotle’s time, geometry had been seen to provide a model of necessary reasoning and rhetoric, in turn, a model for plausible reasoning. Descartes achieved a radical re-interpretation where only necessary reasoning was accepted as valid. Rhetoric was narrow down and relegated, especially by Ramus (1515 – 1572), into mere elocution, ornamentation of speech (Sellberg, 2014).

Whilst Renaissance (from the 14th to the 17th century) was characterized by the reinvention of the scholarship of Antiquity, Enlightenment (from late 17th to 18th century) represented a counter-move, towards a new understanding, especially of natural science, and a rejection of the authority of classical authors. Indeed, Enlightenment started the so-called Modern period, one characteristic of which is the expectation that useful knowledge is something recently created. Rhetoric, having advanced already in Antiquity, did not fare well in this atmosphere. Of course, the narrowed-down definition of rhetoric influenced in the same direction. A further factor was that the achievements of rhetoric had the tendency of being subsumed by other emerging disciplines, with the outcome of hollowing out of the original discipline. Thus rhetoric encountered a slow decline; for example, the University of Helsinki lost its Chair of Rhetoric in 1852.

CURRENT INTERPRETATIONS AND RE-INVENTIONS (OR ALMOST)

In the beginning of the 20th century, the void left by the neglected discipline of rhetoric started to be filled with new entrants, notably communication studies or communication theory. However, these fields lacked the clear focus, unity and historical continuity enjoyed by rhetoric in its heyday.

In the latter part of the 20th century, there have been initiatives to revive classical rhetoric, led notably by Perelman and Toulmin (2001). Among the newest literature, there are even examples where the historical continuity and the width of application of rhetoric is fully recognized. For example Hellspong (2013) presents rhetorical ideas and guidelines from Antiquity, at equal footing, alongside scholarly views from recent decades.

On the other hand, lacking knowledge of classical rhetoric has led to a situation where time-honored concepts and principles are re-invented (or almost), especially in social and managerial sciences. An intriguing example is provided by the concept of boundary objects, which was forwarded by Star and Griesemer (1989) alongside methods standardization as essential for cooperation between actors with different viewpoints. After that, the concept of boundary object has received constantly

²Noteworthy, the term “common ground” is of Anglo-Saxon origin. It seems to have been a legal term, a synonym of “common land” or “commons”. Thus, the dictionary of Ash (1775) defines “commoner” as “one that has a right to the common grounds”. However, this term has been used in a metaphorical sense from early on. For example, Burnet (1697) writes: “...taking that common ground, which both Moses and all Antiquity presents to us...”.

increasing attention in social sciences, whereas the interest towards methods standardization has been negligible³. Actually, both concepts can be closely connected to rhetoric, especially to the idea of common ground⁴.

In turn, policy analysis and planning encountered an “argumentative turn” in the 1980’s (Fisher and Forester, 1993), but seemingly without any idea that in Antiquity, one of the functions of rhetoric was precisely to help frame speaking about courses of action in public affairs.

A further example is provided by the language/action perspective, originated by the philosopher Austin (1962). He promotes, as a novelty, the concept of performative utterances, through which the speaker is doing something rather than merely saying something, without recognizing that the whole point of rhetoric is to do things with words: to persuade and secure adherence.

WHERE DO RHETORIC AND LEAN MEET?

From the multitude of aspects where rhetoric and lean meet, the following are addressed in this presentation:

- Fundamental arguments of production management
- Compliance to drawings, standards, plans and instruction.
- Reinforcing common values, widening the informational common ground
- Deliberating, promoting and assessing alternative courses of action
- Inventing requirements, issues and ideas.

These are discussed in more detail in the following, also making reference to the state of affairs in conventional production management.

FUNDAMENTAL ARGUMENTS IN PRODUCTION MANAGEMENT

Among the seventeen types of arguments that can be used for rhetorical purposes, listed by Perelman and Olbrechts-Tyteca (1969), at least the following have relevance for production management:

- Argument of means and ends
- Argument of best means
- Argument of waste

³That the idea of boundary objects so directly resonates with the premises of Actor Network Theory, while the connection of method standardization to it is less clear, may explain this discriminating treatment.

⁴ Star and Griesemer (1989) characterize methods standardization as follows: “First, and perhaps most important, methods standardization allowed both biologist and collectors to find a common ground in clear, precise, manual tasks.” Regarding boundary objects, the following quote is revealing: “At the core and beginning of his work, then, he placed a common goal and understanding, with boundaries from several different worlds which coincide. These coincident boundaries, around a loosely-structured boundary object, provide an anchor for more widely-ranging, riskier claims.” Although the authors do not use the term “common ground”, the description fits with it very well. The same applies to a specific type of boundary objects, standardized forms: “These are boundary objects devised as methods of common communication across dispersed work groups.”

- Argument of unlimited development

As it is well known, from these, lean production is based on the arguments of waste and unlimited development. Conventional production management may be mostly be based the argument of means and ends, but also on the argument of best means (the idea of optimal production)⁵. The crucial thing is that the selection of the fundamental argument for shaping production management has far-reaching consequences: if the arguments of waste and unlimited development are relied on, practical efforts will focus on the determination of waste and its elimination through continuous improvement. In turn, if the arguments of means and ends, along with the best means, is relied on, practical efforts will focus on creating a feasible, and if possible, optimal plan⁶. In fact, this gives a high-level explanation for the difference of lean and conventional production management.

COMPLIANCE

In lean construction, one of the major means for achieving compliance is visual management. Galsworth (1997) defines a visual workplace, resulting from visual management, as follows: “A visual workplace is a work environment that is self-explaining, self-ordering, self-regulating, and self-improving - where what is supposed to happen does happen, on time, every time, day and night.” For the person encountering visual management for the first time, there are three surprising features: (1) the wide use of visual means in communication, (2) the tendency to make visual tools understandable for everybody, rather than just the team in question, (3) the pursuit of presenting all relevant information immediately at the place of work.

Actually, there is a rhetorical explanation for all of these three features. First, as commented by Perelman and Olbrechts-Tyteca (1969) as well as van Eck (2007), in classical rhetoric, verbal persuasion was fluidly connected to visual persuasion, and even further, visual arts like painting, sculpture and architecture were shaped based on rhetorical theory. Thus, visual persuasion – and this is what visual management ultimately is - can be seen as a generalization of rhetoric.

Second, although the consideration of the specific audience when preparing a speech is perhaps one of the most well-known principles of classical rhetoric, Perelman and Olbrechts-Tyteca (1969) contend that in rhetoric, the universal audience should also be taken into consideration, besides the specific audience. It seems that visual management seems to completely aligned with this recommendation.

Third, Perelman and Olbrechts-Tyteca (1969) view presence as a major rhetorical device. Indeed, it seems that in visual management, presence is directly and widely used, leading to the systematic posting of relevant information at the work face.

In comparison, the principles used for compliance in conventional production management are not very prominent. However, it is safe to say that these principles of visibility, universal audience and presence are hardly used. Necessary information and

⁵The fate of Critical Path Network (CPM) is illuminating. Whilst in early treatments (Moder and Phillips, 1964), the nature of CPM as optimization is emphasized, recent textbooks, like (Sears, Clough and Sears, 2008) characterize CPM as a predictive model, useful for the management of construction projects. Thus, there has been a withdrawal from the argument of best means to the argument of means and ends.

⁶It can be argued that there is also a presumption of the nearly perfect realization of the optimal plan and thus absence of waste.

knowledge is expected to exist in textual form or to be tacitly held by the operatives, technical language understood in the context is seen sufficient, and external means (databases, shelves) for storing the information/knowledge are considered adequate.

COMMON GROUND OF VALUES, FACTS AND PRESUMPTIONS

The starting point of persuasion in classical rhetoric is that there is a common ground between the orator and the audience, consisting of common values, mutually known facts, and commonly held presumptions. Indeed, the orator is advised of the importance of communion with the audience (Perelman and Olbrechts-Tyteca, 1969).

Lean construction is extensively using methods for reinforcing common values, providing facts for everybody and thus enlarging the common ground. The above-mentioned methods of visual management seem often to be geared towards this. Especially, the practice of the Big Room seems to be a paramount means towards creating a broad and solid common ground. Also, the phase planning and the weekly planning sessions of the Last Planner System of production control (Ballard, 2000) seem to function to the same effect.

Instead, conventional production management, structured as a command and control hierarchy, seems not geared of widening and strengthening the common ground.

DELIBERATION

In matters related to design and planning, there needs to be “the customer’s voice” but actually there are a multitude of voices, and each wants to persuade in the discussion on what should be done. In this discussion, the importance of using the whole palette of the rhetorical arsenal accentuates, for example all the categories of influencing: *logos*, *ethos* and *pathos*. It is also opportune to quote Perelman and Olbrechts-Tyteca (1969) regarding one easily overlooked issue, order⁷:

“For order is also one of the conditions that determine amplitude; it is the selection of matters that will be taken into consideration by the participants. Attention to order ensures not only that individual reflection shall not stray into wrong paths, but also – and this is the most interesting point – that fruitful paths shall not be prematurely abandoned. In other words, order ensures that particular premises are given sufficient presence for them to serve as starting points for reflection.”

In the following, two methods for deliberation used in Lean Construction are analyzed: the method of A3 and Choosing by Advantages.

In his book “The Toyota Way”, Liker (2005) presents the “A3 Report” as an example of an efficient communication tool (under Principle 13: Make decisions slowly by consensus, thoroughly consider all options; implement decisions rapidly). The question is about an A3-sized structured document for problem solving, proposing action or project status reporting. The A3 method has rapidly diffused and proved effective. What is the explanation?

From a rhetorical viewpoint, the question is about standardized order: A3 provides a standardized method and documentation for problem solving, proposals and review

⁷ It is worth noting that Set Based Design endeavours to allow more time for the development and comparison of alternative solutions, in full alignment with the quoted statement by Perelman: “fruitful paths shall not be prematurely abandoned”. A closer analysis of this connection is left for future research.

reports, analogously to the standardized order of presenting a case at a law court. Due to this standardization, people with different viewpoints are able to contribute and collaborate.

Choosing by Advantages (CBA) is a system (Suhr, 1999) that directly considers (relative) advantages of alternatives and makes comparisons based on these advantages – rather than trying to present the advantages numerically along one axis (usually costs) (Arroyo, Tommelein and Ballard, 2014). It is now in common use in lean projects.

Classical rhetoric was seen by Aristotle as a way of presenting arguments to facilitate judgment. The method of Choosing by Advantages, in trying to simplify and display the crucial criteria for decisions, seems aligned with the Aristotelian goals for rhetoric. Indeed, Arroyo, Ballard and Tommelein (2014) argue that CBA provides the right framework to ask questions and find arguments to influence decisions. Especially, all options should be analyzed using *logos* (the facts and differences among the alternatives), *ethos* (the opinion of the relevant specialists about the impact of the advantage) and *pathos* (the sense of how this advantage will affect others). The authors thus state that the alternatives should be judged based on how they work, how they are perceived by expert judgment, and how they appeal to the users.

In conventional production management, the tendency is to assign problem solving to experts, who come up with a solution, documented through a memo. The selection among alternatives is carried either intuitively or using a method that converts the merits of each alternative into a single number. Although the mobilization of the knowledge of a wider group is in principle possible in both cases, there are hardly ways of doing it in a systematic and transparent way.

INVENTING

In the productive context, inventing can be interpreted as creation of new ideas for design and planning and problem solving. Classical rhetoric suggested finding ideas from “places”, *topoi*, regarding which the ancient rhetorical treatises gave extensive lists.

In lean construction, there is especially one method in use that is aligned to inventing: Target Value Design (Zimina, Ballard and Pasquire, 2012). In this method, a setting is created for a continuous, collaborative inventing of new improvement ideas. Arguably, the frequently and regularly updated cost information, providing visibility to the extent of improvements already achieved and to be achieved, feeds to the common ground of values held and facts known by parties involved in Target Value Design. Thus, although somewhat similar methods to *topoi* (such as TRIZ) currently exist, it is rather the basic rhetorical ideas related to common ground that seem to be used in lean.

In conventional production management, the expectation of creativity seems to be directed either to the early stages of design or planning, or it is secured by external experts, like in the case of value engineering.

CONCLUSIONS

The analyses made indicate that many aspects of lean, which as such have seemed odd and perhaps peripheral, can be explained through knowledge associated to the discipline of rhetoric. There is no evidence to claim that rhetorical ideas would have

been deliberately used; rather it seems that in a search of working methods, solutions, which implicitly contain rhetorical ideas, have proven their superiority. In turn, conventional production management is characterized by an almost total absence of rhetorical mechanisms.

These initial findings are novel and important for the sake of theoretical explanation of lean; once again, it is found that lean subscribes to very different concepts and principles in comparison to conventional production management. The argument that in lean, a number of simple rhetorical mechanisms are widely used, will probably be helpful in the explanation and implementation of lean in the industry.

Moreover, the findings open up a new front for empirical research for assessing and determining the rhetorical phenomena in lean. Especially, it will be interesting to investigate and compare the use of rhetorical mechanisms in lean and conventional construction and determine their impact in terms of achieved outcomes.

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