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LOGIC, AUTHORITY, AND MANAGERIAL COMPLEXITY: INTEGRATING BOCHENSKI'S PHILOSOPHY OF AUTHORITY WITH GRAICIUNAS' MANAGEMENT RELATIONSHIP THEORY. SOME INSIGHTS FOR ORGANISATIONAL THEORY

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Abstract

This paper integrates the philosophical framework of authority developed by Józef Maria Bochenski with the managerial complexity model devised by V. A. Graiciunas. Bochenski's conceptual distinction between epistemic and deontic authority, illustrated through his triadic scheme and five-pronged delegation model, provides a normative and logical lens for assessing authority. Graiciunas' span-of-control formula quantifies the exponential growth of managerial relationships as the number of subordinates increases. By juxtaposing these perspectives, this study aims to adumbrate the essentials for an integrated framework that unites normative legitimacy checks with quantitative complexity analysis, producing a robust tool for organisational design.

Keywords: *Authority, epistemic, deontic, administrative. Span of management and control. Logic, organisational and management theories, leadership.*

1. Introduction and historical context

Authority remains a cornerstone of organised human activity, from the governance of

states to the internal operations of corporations, universities, and military units. On the other hand, we also rely on authority in the business of knowledge production (science and humanities), relying on the expertise of those who have developed a solid body of knowledge in a certain domain.

Yet, despite its centrality, the term "authority" is often invoked without sufficient conceptual clarity.

When organisational theory is understood as a broad field of interdisciplinary studies, it is natural that anyone attempting to grasp it as a domain of theoretical reflection will first look to its methodological premises and foundations, to the key concepts and their contexts of use. These are most often sought in the widest conceptualisations of reality. Philosophy—whatever its branch—undertakes exactly such tasks as these. Moreover, philosophy provides not only methodological approaches but also analytical tools. Philosophical perspectives are being rediscovered and increasingly applied in the discourses of contemporary organisational theory (cf. Peltonen 2006: 1; Clegg and Cooper 2006: 19; Bochenski 2024: 96).

Let us begin by asking if the concept of "authority" is self-evident or does it require problematisation and clarification? What is authority? A personal trait? A cultivated competence? Something formally conferred by appointment to a position within an organisation? Or perhaps a property of an institution or organisation itself? Is authority equivalent to expertise? Or to competence? Or rather to status and position in a social or organisational hierarchy? Can the authority of an expert working within an organisation be equated or compared with that of the organisation's leader? Or is authority primarily a relation? Which of several authorities should one rely upon, whose claims should be trusted, whose directives should one obey? What characteristics are typical of authority? Is it of one type only? Or, for instance, will the authority of a university professor and of a military officer—each within their own domain—be of different kinds, with significant consequences for the application of the concept in both theoretical and practical contexts?

These are important questions not only for any conscious participant in modern society—an "information society" or "society of experts"—but also for organisational theory and managerial practices. In other words, we are faced with the problematic nature of defining the concept of "authority."

Authority structures form the invisible architecture of organisations, from corporate boardrooms to universities enterprise all the way to military chain of command. Authority determines who decides, who acts, and on what basis. Yet in organisational theories and management sciences, authority is often treated as a functional variable—its theoretical underpinnings left underexplored. In philosophy, authority is a recurrent theme in epistemology, ethics, and political theory, but seldom applied systematically to organisational and managerial contexts.

This paper brings together two very different approaches to authority. Józef Maria Bochenski's 'What is Authority?' (1974) offers a rigorous philosophical-linguistic analysis, distinguishing between epistemic authority—the authority of knowing— and deontic

authority—the authority of commanding. His framework addresses domain specificity, legitimacy and delegation in ways that can sharpen management theory.

V. A. Graiciunas (1937), by way of contrast, analysed the structural complexity of managerial relationships through a mathematical model that calculates the exponential growth of such relationships as the number of subordinates increases. His work is widely known in management literature, especially in discussions of 'span of control,' yet it lacks the qualitative apparatus necessary to assess the legitimacy or type of authority.

Thus, both novelty and possible pragmatic deliverables of this paper lie in juxtaposing Bochenski's qualitative analysis with Graiciunas' quantitative model—an integration to the best of our knowledge not found in existing literature. This comparison reveals how the conceptual clarity of Bochenski's philosophy could serve as a filter and structuring principle for Graiciunas' span-of-control framework.

2. Literature Review: Authority in Management and Organisational Theory

Max Weber's tripartite typology of authority—traditional, charismatic, and legal-rational—remains foundational in sociology and organisational theory. Weber's concern was with legitimacy and the basis of obedience, not with the logical structure of authority relations per se. Further, Michel Foucault's concept of power/knowledge expands the analysis by showing how authority and knowledge production are interlinked, but offers little in terms of formal categorisation applicable to organisational structure. Herbert Simon's theory of bounded rationality introduces cognitive limits that affect decision-making and delegation, intersecting with, but not replacing, authority analysis.

Bochenski's epistemic/deontic distinction is relatively seldom used or at least ascribed to the author when such credit is actually due. Exceptions include applications in contemporary argumentation theories, esp. by Douglas Walton and Marcin Koszowy, who examine how appeals to authority function in discourse, and contemporary philosophical accounts of expertise and authority (Markus Seidel, Christian Quast, James C. Watson). However, these analyses have not been systematically imported into organisational design or management science.

Graiciunas' formula, by contrast, has been widely cited and critiqued. L. Urwick and others extended the span-of-control discussion but retained the quantitative emphasis. While refinements account for technological changes in communication, the core limitation remains: no differentiation of authority types.

In philosophical discourse, studies of authority and related fields, such as expertise, justified believes, and the argumentation from authority, grow in scope and scale. Arguably yet, among relatively contemporary philosophers, Bochenski's 'What is Authority?' remains one of the most precise logical analyses of authority, particularly due to his introduction of the seminal demarcation line between epistemic authority—authority grounded

in knowledge and expertise—and deontic authority—authority grounded in the right to command.

In the field of management science, Graiciunas' examination of the problem of managerial capacity from a quantitative standpoint, and formulation of a mathematical model to calculate the complexity of relationships between a manager and their subordinates also remains relevant.

While Bochenski's framework addresses the legitimacy and logical structure of authority, Graiciunas' formula measures the structural limits of managerial capacity. This paper argues that integrating these two perspectives yields a comprehensive approach to understanding, evaluating and structuring authority in organisations.

3. Bochenski's Framework of Authority

"Authority is a triadic relation between an authoritative person, a subject, and a domain. One may be an authority in chemistry but not in politics, or hold command in the army without expertise in engineering."

This foundational insight from Bochenski reframes authority as context-bound and non-transferable outside its domain—a principle with clear implications for how organisations define and assign authority.

Bochenski defines authority as a triadic relation consisting of an authoritative person (A), a subject (S), and a domain (D).

This triadic model underscores that authority is always specific: the same individual may possess authority in one domain but not in another.

For example, a surgeon holds authority in matters of surgery but not in matters of legal procedure.

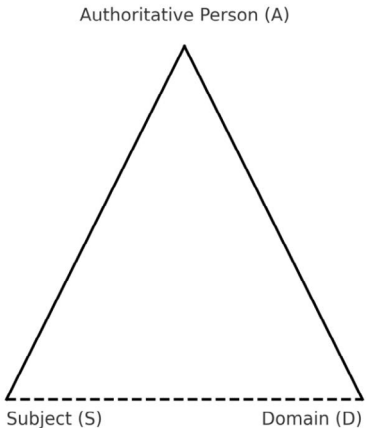

Figure 1: Bochenski's Triadic Scheme of Authority.

When authority is delegated, Bochenski extends the triadic model into a five-place relation: the delegating authority (A), the delegate (B), the subject (S), the main domain (R), and the delegated sub-domain (F).

This extension ensures that delegation is precise and bounded, preventing the delegate from assuming powers beyond those intended.

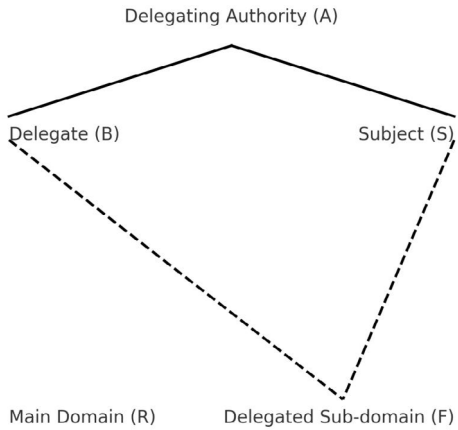

Figure 2: Bochenski's Five-Pronged Delegation Scheme.

4. Graiciunas' Span-of-Control Model

V. A. Graiciunas (1937) approached managerial capacity as a quantitative problem, identifying that the number of potential relationships a manager must oversee increases far more rapidly than the number of subordinates might suggest. He distinguished three types of relationships:

1. **Direct Single Relationships** – between the manager and each subordinate individually.
2. **Cross Relationships** – between subordinates themselves, which the manager must still monitor.
3. **Direct Group Relationships** – between the manager and combinations of subordinates acting together.

The total number of these relationships can be calculated using the formula:

$$N = n[(2^{(n-1)}) + (n - 1)]$$

where n is the number of subordinates. The formula reveals an exponential growth pattern, highlighting the limits of managerial attention and control.

Table 2: Worked Examples of Graiciunas' Formula

Number of Subordinates (n)	Total Relationships (N)	Implication
3	18	Manageable span in most contexts
5	100	Manageable span in most contexts
8	1080	Requires delegation or support structures
10	5210	High risk of managerial overload

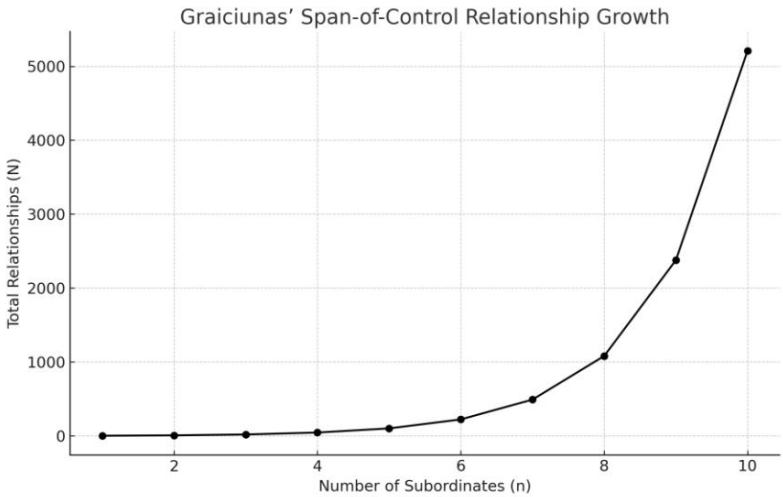

Figure 3: Exponential Growth in Managerial Relationships per Graiciunas' Formula.

5. Integrating Bochenski and Graiciunas

The integration of Bochenski's qualitative distinctions and Graiciunas' quantitative model allows for a two-stage analysis of authority structures.

Firstly, using Bochenski's framework, all authority relationships are classified as either epistemic or deontic.

Only deontic relationships—those involving the right to command—are then assessed using Graiciunas' formula to determine potential managerial overload.

This selective application ensures that the complexity measure is applied where it is most relevant. For example, in a hospital setting, a chief surgeon may hold epistemic authority over surgical technique but deontic authority over operating room schedules.

Graiciunas' model would apply to the latter, where command relationships create managerial workload.

6. Comparative Analysis

Bochenski's and Graiciunas' models differ in method, scope, and purpose, yet they complement each other. Bochenski addresses legitimacy and the logical structure of authority, preventing overreach and ensuring clarity. Graiciunas addresses operational feasibility by revealing the limits of managerial span of control.

Table 3. Bochenski and Graiciunas: a comparison

Aspect	Bochenski	Graiciunas
Methodology	Philosophical and logical language analysis	Mathematical modelling of managerial relationships
Model	Triadic & five-pronged delegation scheme	Span-of-control formula (Number of subordinates)
Delegation	Only deontic authority is delegable	No distinction between authority types
Strength	Prevents misuse via domain specificity	Reveals exponential workload growth
Limitation	Does not quantify workload	No legitimacy check

7. Critical Evaluation and Implications for Organisational Design

The juxtaposition of Bochenski's and Graiciunas' models reveals both the strengths and the blind spots of each. Bochenski's work offers a rigorous conceptual apparatus that clarifies the nature, scope, and legitimacy of authority, yet it does not offer a method to quantify managerial workload or optimise span of control. Graiciunas, conversely, provides a mathematically elegant model for measuring relationship complexity, but treats all manager-subordinate interactions as if they were identical in qualitative terms.

A synthesis of the two approaches allows for an enriched theory in which qualitative distinctions of authority guide the quantitative modelling of relationships. For example, an organisation could apply Bochenski's distinctions to identify which relationships truly require managerial oversight and then use Graiciunas' formula to determine feasible spans of control.

One criticism of Bochenski is that his logical precision, while valuable in theory, risks abstraction when applied to the messy realities of organisational politics and interpersonal dynamics. Graiciunas' model, meanwhile, is vulnerable to technological disruption; digital

communication platforms have altered the cost and nature of relationships, potentially invalidating some of his numerical assumptions.

Implications for Organisational and Managerial Theory

Integrating Bochenski's framework into management science offers several benefits: it enables clearer definitions of managerial authority, safeguards against domain errors in delegation, and provides a filter to determine when managerial involvement is genuinely necessary. This could inform leadership development, governance policies, and organisational design.

Further, the integration of these perspectives suggests that the effectiveness of a given span of control cannot be assessed solely by numerical formulas. A manager's ability to sustain wider spans depends on the type and legitimacy of the authority exercised. For instance, a leader with strong epistemic or charismatic authority may successfully coordinate larger teams because subordinates accept guidance without excessive verification or resistance. Conversely, reliance on weak or contested deontic authority could render even small spans ineffective due to compliance problems.

Optimising Organisational Design

This implies that span-of-control decisions should not be approached as purely structural questions but as interdependent with legitimacy dynamics. Embedding Bochenski's authority analysis into Graiciūnas' framework offers managers a diagnostic tool: before expanding a span, leaders must evaluate not only coordination costs but also the nature of their authority. In practice, this could guide organisational restructuring and leadership training, ensuring that structural changes are matched by attention to authority legitimacy and communication channels.

Implications for Leadership Development

In leadership education, the juxtaposition encourages a shift from teaching the span of control as a static number to framing it as a contingent variable. Training programmes can thus cultivate reflexive awareness: managers must ask not only "how many subordinates can I handle?" but also "what kind of authority do I possess, and how does it affect my capacity to lead effectively?" This represents an important methodological innovation in management thought.

Scholarly Contribution

To the best of current knowledge, this is the first systematic juxtaposition of Bochenski and Graiciūnas. It shows that cross-fertilisation between philosophy of authority and

classical management science opens up new ways of addressing enduring problems of organisational design. While Graiciūnas provided the formula for quantitative strain, Bochenski offers the criteria for qualitative sustainability. Together, they provide a multidimensional approach that enriches both management theory and practice.

By overlaying Graiciunas' span-of-control calculations only on those relationships validated as necessary and legitimate by Bochenski's criteria, organisations can design leaner, more efficient hierarchies. This has potential cost-saving implications and could improve decision-making quality by reducing cognitive overload among managers.

The integrated model has significant implications for organisational design. It enables leaders to focus their managerial attention on relationships that genuinely require command oversight, while delegating or decentralising less critical tasks.

This approach is applicable to diverse sectors—from corporate governance to military command—helping to balance efficiency and legitimacy.

In hybrid and remote work environments, where digital communication can multiply perceived relationships, the integration of legitimacy filters and complexity limits becomes even more critical.

Organisations can avoid overload by carefully mapping authority domains and ensuring that managerial spans remain within sustainable bounds.

Summary and conclusions

This paper has shown that cross-disciplinary dialogue between philosophical frameworks and management science is both possible and necessary. The integration of Józef M. Bochenski's conceptual model of authority with V. A. Graiciunas' span-of-control theory creates a novel and multidimensional approach to organisational design. The article allows the inference to be made that:

a) The comparative analysis demonstrated that conversations between seemingly unrelated fields—like logic and administrative science—are not only feasible but also intellectually fruitful and practically desirable. Bochenski's analytic distinctions inject philosophical precision into often vague management concepts, while Graiciunas' formula introduces quantitative awareness into the design of authority structures.

b) In the given case, it may be suggested that Bochenski's framework can significantly enrich management and organisational theories by offering a qualitative, logic-based lens. Specifically, his distinction between *epistemic* (knowledge-based) and *deontic* (command-based) authority offers a normative filter that can legitimise the often opaque authority structures in contemporary organisations. The model advocates that deontic/administrative authority should also be epistemically justified—meaning, administrators should ideally also be epistemic authorities in their

domains, thus enhancing legitimacy and efficiency, and through this diminishinga burden on both the administrators and tthe subjects of their authority.

c) This has direct consequences for organisational setup: the managerial burden could be diminished if subordinates perceive their leaders not just as formal authorities but also as epistemic ones. In this dual-role framework, employees (understood in a broad, boundary-spanning sense) may exhibit greater trust and compliance, reducing friction and resistance. As a result, the overall structure of the organisation is optimised, aligning legitimacy with capacity.

d) Finally, the integration of these two paradigms leads to a refined managerial model where qualitative legitimacy precedes quantitative feasibility, enhancing both the ethical and functional sustainability of organisational hierarchies. In today's hybrid and digital-first work environments—where authority and communication are constantly redefined—this synthesis offers timely insights and actionable frameworks for optimising leadership, structure, and delegation.

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