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REFLECTIONS ON THE MEASUREMENT OF ORGANIZATIONAL DEMOCRACY

Conceptual, epistemological,
and methodological aspects

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1 Introduction¹

The question of industrial or organizational democracy dates back about a century, assuming different aspects and names over time. The last 20 years have even seen a new flourishing and an intensification in economic (Dow, 2003, 2018; Ellerman, 1997, 2021; Michie et al., 2017; Rangan, 2015), management (Battilana, 2018; Lavie, 2023; Wilkinson et al., 2010), and sociological (Ferrerias et al., 2022; Rangan, 2018) studies, including those related to the neo-Marxian research tradition (Jossa, 2014, 2018; Palermo, 2016; Saito, 2024; Wolff, 2012).

This chapter does not aim to review the enormous literature accumulated so far but rather focuses on the construct of Organizational Democracy (OD). Battilana (2018) provided a state-of-the-art discussion on OD and its related concepts, such as hierarchy, self-management, empowerment, and workplace democracy. Instead, this chapter has a methodological nature, attempting to propose measures to calculate a sort of Organizational Democracy Degree (hereafter, ODD), resulting from the combination of different variables that are supposed to vary from a minimum corresponding to a typical large capital-based corporation to a maximum corresponding to a small cooperative. The lack of and need for appropriate and customized tools are, in different ways, also underlined by Sean Geobey in Chapter 8 and Daniela Venanzi in Chapter 21. Hence, the topic does not concern the legitimation or viability of a more democratic degree but rather how to calculate it and how to compare different organizations in this respect. In fact, as we will see, a large cooperative could be less democratic than its capital-based specular form, that is, a firm of the same size working in the same industry but not owned by external (non-workers) owners. Furthermore, because a single capital- or labor-based firm could evolve over time toward a higher or lower ODD, it is important to acknowledge this from many different perspectives, including those of managers, unions, policymakers, and researchers.

Indeed, the main methodological obstacle to constructing this measurement framework was reducing the measurement of hierarchical degree to one (or a few) indexes that can be combined with others. In fact, expressing (more or less hierarchical) structures in parametric forms is all but

trivial, all but granted. This problem usually affects all works concerning the concept of hierarchy, which is rather complex and used in very different, simplified, and ambiguous ways. However, as we will see, with network analysis this is possible, so the road to developing a methodological framework to calculate ODD is open, because the measure of hierarchical degree is a fundamental block.

Of course, though not the aim of this work, the extant literature is in the background. What is presented here is just a proposal, hopefully useful for a debate that might suggest different solutions or changes for some of the nine criteria advanced here. The very same idea of a metric to calculate ODD might be rejected because it could be argued that there is no continuum between the two poles of a pure capital- and pure labor-based organization. Indeed, complexity science could warn us that the probable nonlinearity characterizing the variables constituting a multicriteria aggregate like ODD would create discontinuities despite the single variables could be continuous and differentiable. The debate on chaos and catastrophe (Prigogine & Stengers, 1984; Thom, 1972, 1980), and its applications to economics and management is striking in this regard (Biggiro, 2001; Eve et al., 1997; Guastello, 2002; Parker & Stacey, 1994; Priesmeyer, 1992; Richardson, 2005; Stacey, 1991, 1992, 1993, 1995). Such approaches constitute an elegant mathematical way to explain morphogenesis, that is, the birth of new organizational forms, and to show how quantitative variations can produce new forms – strong qualitative changes.

While Caio Silva in Chapter 9 focuses on connecting the view of organizations as complex adaptive systems with the specificities of cooperatives, this chapter follows a different and simpler line of reasoning with respect to the complexity of the abovementioned debate. In fact, the purpose of this chapter is to focus on, define, and express in operational and measurable ways the main aspects/variables that recur in studies on what distinguishes cooperatives from capitalistic firms. The effort, then, is to provide a methodological framework that can be used for the empirical analysis of their OD, which indeed concerns and can be applied to *any* form of organization. Fundamental problems, such as the demarcation between capitalistic and cooperative forms, will emerge from the application of correct methods to evaluate multi-criteria phenomena, which can show possible incomparability among alternative choices/organizations. Outranking algorithms are the right tools for this and have the merit of being relatively simple: surely much simpler than the mathematics of nonlinearity. Further, they do not require that the single variables be continuous and differentiable, a property that – despite the claims of neoclassical economics – is very unlikely in these types of phenomena.

Instead of taking some demarcation as hypostasis, it is argued that, by applying appropriate analytical methods, empirical studies could show possible discontinuities due to the fact that some organizational forms can be incomparable because they are too different. Moreover, a sort of “real-world morphogenesis” could emerge, driving the occurrence of specific forms and making them not equally distributed. Evidently, such morphogenesis is all but natural, being influenced by fully human choices – political, cultural, economic, juridical, and of course technological. Instead of being a flaw, this provides a great space for human agency. The hybrid forms – intermediate between KMF (capital-managed firm) and LMF (labor-managed firm) – that are so much diffusing during last decades are an evident outcome of such institutionally and economically driven morphogenesis.

The chapter is organized as follows. In the next section, following a framework proposed by Dow (2003, 2018; see also his Chapter 2), a sharp schematization contrasting the two poles of a pure KMF and LMF is provided. Then, in Section 3, nine criteria proposed to measure ODD are enunciated and grouped into three blocks according to their affinity: economic-legal, organizational-strategic, and structural-hierarchical. Furthermore, in the same section, the criteria belonging to

the first two blocks are discussed and, to some extent, formalized. In Section 4, two of the three variables strictly related to measuring an organization's hierarchical degree are discussed and formalized to a satisfying extent, while the third one – that concerning the selection mechanisms for appointing people to powerful positions – is only roughly sketched. In that same section, the “contractualist” (post-Walrasian) and alternative (evolutionary and Neo-Marxian) perspectives are briefly juxtaposed. The analysis of the structural hierarchy ends with a simplified (dichotomous) view of the combinations between its three constitutive variables. Section 5 concerns methodological problems of the ODD construct by wondering whether it can be treated as a multi-attribute aggregate (utility) function or not, and what would be the conceptual, epistemological, and methodological implications of such a – seemingly innocuous and very technical – problem. It will be argued that the crucial question is whether the various attributes are genuinely independent or have a sort of substitution rate vis-a-vis one another. In Section 6, it is shown how to apply outranking algorithms to compare different organizations – or the same organization over time – with respect to their ODD. Finally, in section seven, depending on the evolutionary dynamics of their legal-economic status, hybrid forms – middle ways between KMF and LMF, thus supposing to score intermediate ODD values – will be presented as “betrayals” of the true cooperative spirit or, alternatively, as signs of the progressive democratization of the economy depending. Further, in the same section, the role played by large firm size in depressing ODD is evidenced. In the concluding section, besides highlighting the main points, it is suggested that this methodological framework might be helpful also for classification and statistical aims.

2 A rough schematization

Before contrasting the two poles of pure KMF and LMF, it is better to define the main units involved in the structure and behavior of a large organization and provide a stylized view (Figure 10.1). According to a traditional view, a firm is the property of some legal entity that, by virtue of that property, acquires the rights to govern it, that is, to make strategic and operative choices. Property can be defined in terms of the amount of equity capital, whose owners then correspond to the owners of the firm. They get the rights to appoint the governance body, namely the Board of Directors (BoD), which is charged with outlining the overall strategies of the firm and nominating its President and CEO. The CEO – often together with board members – chooses top managers, who are the heads of corporate functions, such as finance, human resource management, research and development, etc., and the heads of divisions (if any). These latter, in turn, usually in collaboration with the human resource management function, choose middle managers and the workers who constitute the operating core, where the primary functions lie – purchases, production, and sales.²

Some clarifications and details might help. Though sometimes a board member can also cover a role in top management, usually they are distinct. Put differently, board members do not participate in operative management. Similarly, though some owners can hold a position in management, usually they do not. In short: owners, entrepreneurs, and managers are three distinct role, and indeed capitalism was born on this distinction. In relatively recent times, top or even middle managers can be rewarded even through stock options, thus becoming, ipso facto, a hybrid figure of owner-manager. Management buyouts could be seen as an extreme extension of that policy. Indeed, even workers are sometimes rewarded with stocks, thus becoming, ipso facto, a hybrid and contradictory figure of worker-owner in a corporation, as it happens in ESOPs (Employee Stock Ownership Plan)³. From a pragmatic point of view, the growing diffusion of these practices is positive, though it strongly shakes the idea of a sharp demarcation between KMF and LMF, and

thus, by posing it as a question of degree and not of a dichotomous quality, it further shows how important is having a methodological framework to measure those degrees.

Despite the tremendous power that is usually assigned to owners and board members, in a strict sense, the true realization of a product or service – the so-called operations – is a matter of top managers, middle managers, and bottom-level workers belonging to the operating core, excluding de facto owners and board members. Regardless of the degree of authority and discretionary power, top managers, middle managers, and bottom-level workers can be considered altogether as the workers of a company, as evidenced by the curly bracket of Figure 10.1. Shareholders – or other types of rights holders – are separated from management: they appoint the board members but are not part of management. This is all but new since the time of Berle & Means (1939) and their “discovery” of the separation between property and control, as it is used to say in the field of corporate governance. Even the board is not part of management *strictu sensu*, because they limit their actions to giving strategic inputs to top management and choosing the apical positions. Moreover, as relatively recent literature on corporate governance shows (Gordon & Ringe, 2015; Hill & Thomas, 2017), the power of BoDs and CEOs on top and middle managers varies a lot between the two blocks of continental Europe and Anglo-North America. As well, the power of the CEO on the BoD varies a lot, being usually much stronger in the latter than in the former block. This acknowledgment is not irrelevant with respect to our issue of the relative power allocation in the different parts of the organization.

Though a bit tautological and excluding not-for-market firms and other types of organizations, such as social enterprises (see Simon Micken & colleagues in Chapter 4 and Coline Serres in Chapter 14), Dow’s (2018: 3) definition works well: “A firm can be defined as an organized set of individual agents who participate in a common production process and sell the resulting output on a market. These agents may supply labor, capital, or other inputs. Because the contracts among the agents are usually incomplete, production activities require coordination. For firms of significant size, this involves a hierarchical authority structure in which managers decide what goods will be produced and how”. Dow emphasizes the role of the BoD, because of the peculiar tasks mentioned above: defining strategic orientation and choosing top management. In Dow’s view, the second privilege is regarded as particularly important in that it gives an “imprinting” of the following hierarchical authority structure. In Section 4, this aspect will be deepened, while now we focus on more general aspects.

Let us note that, especially in high-tech firms, the true power is largely allocated to the positions where technological knowledge resides, which is neither the BoD nor the top management, but rather middle management. In fact, when technological knowledge is fundamental, the real decision-making power is in the hands of those possess it, such as the heads of operating functions. A clear example is what is happening in banks because of the digitalization and online use of their services: ICT directors are becoming more and more essential, and often the future CEO or COO are not recruited from the responsible for credit risk assessment, as traditionally happened, but rather from the ICT responsible. All this was to argue that the emphasis on ultimate control as if there was the true and most powerful control of the company sounds unrealistic. The most appropriate picture is neither that elaborated by the various types of post-Walrasian economic theories, such as the Transaction Cost Theory (Williamson, 1975, 1981, 1985), and the Agency Cost Theory (Fama, 1980; Jensen & Meckling, 1976), but rather that proposed by the Resource Dependence Theory (Pfeffer & Salancik, 1978; Pfeffer, 1981, 1997), according to which there is not a single locus of control. The behavior of a (large) organization results from a complex dynamic of interactions between many groups of coalitions. For a deepening on this issue and the limits of pre- and

post-Walrasian neoclassical economics, see Ankarloo & Palermo (2004), Biggiero (2022), and Palermo (2016a, 2016b).

An important theoretical perspective to understand cooperatives and other alternative forms is that of Relational Economics and Organizational Governance, recently launched by Biggiero (2022) and Wieland (2018), because it assumes the ideas of both the Resource Dependence Theory and Evolutionary and Cognitive Economics (Dopfer, 2005; Dosi et al., 2000; Teece, 2009), and rejects the approaches of post-Walrasian Economics. Taking the relational perspective means taking the structuralist perspective, because it implies looking not (only) at single individuals, but also (and perhaps mostly) at the structures in which individuals are embedded. From a methodological point of view, this means taking the system and network perspective and employing relational methodologies (Biggiero, 2016a). For a deeper understanding of the conceptual implications of Relational Economics and Organizational Governance for cooperative economics and management, see Chapter 1 by Josef Wieland. For the applications of the main relational methodologies – Social Network Analysis, Boolean Networks, Agent-Based Simulation – to the study of cooperatives, see Chapter 11 by Jerome Nikolai Warren.

To some extent, in his 2003 book, Dow himself is not distant from the previous claim of Resource Dependence Theory when he defined

A firm to be a coalition of input suppliers whose production activities are coordinated by means of a common authority structure. Under this definition, it is impossible to own a firm, though one can own non-human assets used in production.

(2003: 39)

Because in a firm there are workers and they cannot be “owned” in current society, a firm cannot be owned *strictu sensu*.⁴ There can be only two fundamental rights: that to decide what should be done – that is, strategic and operative decision-making – and that of residual claims. From the first part of the definition, it follows that input suppliers should not be limited to equity capital and labor but should be extended to all relevant input suppliers, such as non-equity capital, (main) goods and services suppliers, (main groups of) customers, regulatory institutions, knowledge creation institutions, etc.: in one word, to some (if not all) stakeholders. However, in his conceptual framework, Dow does not follow this view, preferring to stay with the standard view of a KMF (a large corporate company), according to which the “ultimate control locus”, that is, who appoints the governance of the firm, namely the BoD, gets the right also to the residual claim, thus excluding all other internal and external stakeholders.

In the following discussion, I will make the same choice, because this way the contrast between the two poles is better emphasized. However, I wish to firmly underline that the correct view is the other: the surplus (or net product) is obtained through the concurrence of other forces beyond labor and capital, which should also have the right to a residual claim. To some extent, this already happens in some forms of the Toyota system as well as in many Italian consortia. Moreover, the diffusion of inter-firm board interlocks shows that, to use Dow’s jargon, the ultimate control locus may not have full control of governance, because other actors, different from the capital owners, can be appointed to the BoD and even play a crucial role (Biggiero & Magnuszewski, 2023). Further, the strategic or operative interdependence with other companies can be so strong that they might share some middle or top managers because of technological or financial interests. In an extensive and intensive study of the European Aerospace Industry and its worldwide neighbors, Biggiero and Magnuszewski (2023) showed that these are not sporadic cases, but rather they occur through

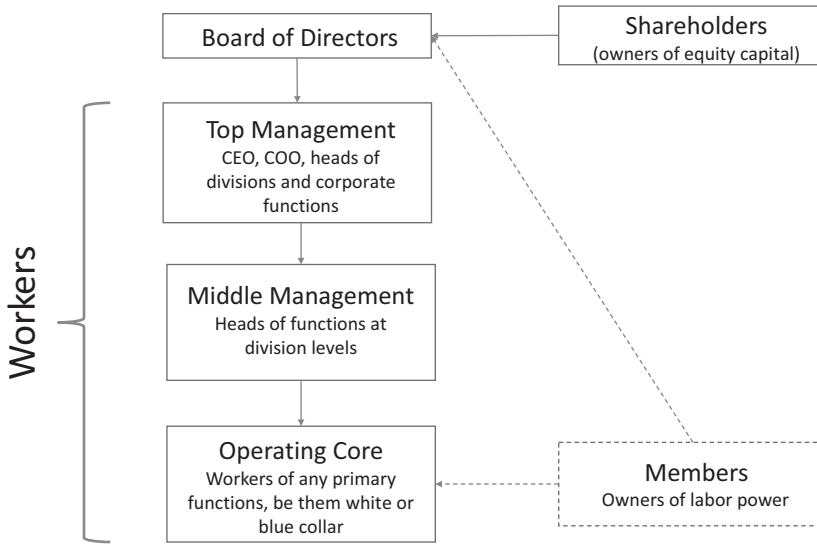


Figure 10.1 A stylized scheme of a capital – (KMF) and labor – (LMF) based corporate.

around one hundred thousand connections linking about 8,000 companies. Partners can be some of the main suppliers, buyers, institutions, or even competitors (if not direct rivals). Though some of them are also shareholders, others are not, thus showing that stakeholder presence in corporate governance is already a diffused reality, at least in some industries.

Once clarified that the (large) KMF depicted by Dow and assumed here, and stylized in the following figure, is a simplification useful for the discussion, let us outline an extreme version of its opposite: an LMF. This is much easier: it can be a (small) cooperative where members correspond to the workers and have equal decision rights. There are no other workers besides members, and, being a small group, there is no need for a BoD or a hierarchical authority structure: members are a team that makes collective choices, sharing all information. If we enlarge the cooperative's size, a set of changes will be necessary making it less "pure" for reasons that will be discussed below. One of these changes can be anticipated now: the large amount of work will necessitate a (much larger) number of decisions, which can no longer be made in a team setting. The consequence will be a structural transformation through vertical (hierarchical levels) and horizontal (specialized functions) differentiation. Furthermore, strategic and operational decisions should then be distinguished, leading to the need for a BoD implementing a hierarchical authority structure. Consequently, at least at first sight, things appear to be not so different from the KMF: members – instead of shareholders – will appoint the BoD, which in turn will trigger the hierarchical authority structure (Figure 10.1). Indeed, as we will see, this seemingly innocent difference likely pulls in many others, and this is why "size matters".

3 Contrasting the two poles in three blocks of nine attributes

In this section, the two extreme poles of a pure KM and a pure LMF are contrasted through nine criteria, which are also expressed in terms of variables in a first approximation (Table 10.1). A good mathematical and methodological question, which also has important conceptual and

Table 10.1 Criteria of ODD assessment

1	DOPC	Degree of Overlapping between Property and Control
2	DOOE	Degree of Overlapping between Owners and Employees
3	DPOS	Degree of Profit/Ownership Sharing
4	OCD	Ownership Concentration Degree
5	IOGV	Index of Organizational Goals Variety
6	IEEF	Index of Entry/Exit Freedom
7	DH	Degree of Dyadic Hierarchy
8	TH	Degree of Topological Hierarchy
9	SMDD	Selection Mechanisms for Democracy Degree

practical implications, is whether all of them are continuous variables. I will return to this issue in Section 5.

Following Dow (2003, 2018) and as outlined in the previous section, we can assume that a pure KMF corresponds to a *large* corporate capital-based firm, while a pure LMF corresponds to a *small* labor-managed firm, namely a production cooperative.

According to their affinity, the nine criteria can be grouped into three blocks:

1. The first block includes four essentially economic-legal attributes: the Degree of Overlapping between Property and Control (DOPC), the Degree of Overlapping between Owners and Employees (DOOE), Degree of Profit/Ownership Sharing (DPOS), and the Ownership Concentration Degree (OCD). In essence, the variables discussed in this block operationalize and measure the main concepts discussed by Gregory Dow in Chapter 2, David Ellerman and Tej Gonza in Chapter 6, and David Kristjanson-Gural in Chapter 7, which address problems related to legal-economic aspects.
2. The second one includes two typical organizational-strategic attributes: the Index of Organizational Goals Variety (IOGV) and the Index of Entry/Exit Freedom (IEEF). The matter of these two variables are addressed also by Josef Wieland in Chapter 1, Gregory Dow in Chapter 2, David Ellerman, and Tej Gonza in Chapter 6, David Kristjanson-Gural in Chapter 7, Sean Geobey in Chapter 8, and Tej Gonza, David Ellerman and Kosta Marco Juri in Chapter 16. The aim remains to operationalize and measure them.
3. The third block includes three criteria necessary to measure the hierarchical degree in a structural sense: the Degree of Dyadic Hierarchy (DH), the Degree of Topological Hierarchy (TH), and the Selection Mechanisms for Democracy Degree (SMDD). The concept of hierarchy is discussed in most chapters, but it is more strictly addressed in the first three sections of the Handbook. The effort here is again that of formalize and operationalize.

3.1 The block of economic-legal attributes

Criterion 1. In a pure KMF, as it can approximately be Amazon, IBM, etc., the right to define the size and composition of the control unit is proportional to the amount of equity capital provided (Michie, 2017). Conversely, in a pure LMF, there is a perfect overlap between the firm's members and board members: indeed, there is no BoD at all, because a pure LMF is supposed to be small and thus lacks a hierarchical authority structure. However, in the case of a medium or large size, even an LMF will need it, and thus likely also a BoD. According to Dow, we can equate KMF

capital owners with LMF members from the point of view of being the ultimate control group because they have the right to appoint the BoD (or to coincide with it, in the case of a pure LMF).

At the very end, this aspect indicates the *Degree of Overlapping between Property and Control* (DOPC). Likely, we could measure it by counting the number of owners/members that sit on the BoD and then dividing it by all owners/members, and by multiplying the outcome per the share BoD members made by owners. If we call the former element α , the second element β and the latter γ , then:

$$\text{DOPC} = (\alpha/\beta)\gamma$$

Hence, it is easy to see that a KMF with 1000 owners and a BoD size of ten members has a DOPC of 0.01, if all of them are owners, and 0.005 if only half of BoD members is made by owners. Conversely, an LMF with ten members who constitute the BoD would score $\text{DOPC} = 1$. Therefore, ODD varies positively with this index, which will tend to substantially depress ODD for KMF and keep it high for LMF.

Criterion 2. A simple but interesting way to look at the labor/capital relation in single organizations is by counting how many owners/workers there are. However, what happens if an LMF employs non-members too? In this case, the LMF would partially reduce its ODD, because non-members will not have the same rights as members, as evidenced by the literature on these specific cases (Dow, 2003, 2018). Not coincidentally, Marx identified wage labor as a distinctive trait of capitalism, which in our conceptual framework is represented by the KMF, where all employees are assumed to be under wage-labor contracts, whether they are top managers or shop floor workers. To approach this aspect, we can do analogously what we have done for the degree of overlapping between property and control to formulate a *Degree of Overlapping between Owners and Employees* (DOOE) as follows:

$$\text{DOOE} = \text{Number of working owners(members)/employees}$$

In a pure LMF, DOOE is 100%, meaning that only members work in the firm, while in a pure KMF, owners are not supposed to work, or the fraction of owners working in their firm is supposed to be very small, and becomes smaller as the organization's size increases. This issue addresses two important and debated questions: the role of size and the possibility of multiple ownership/membership. It can be remarked that: (1) at a very small scale, meaning that employees are fewer than 10, the diversity between KMF and LMF lowers, and this effect concerns not only DOOE, but rather it affects to some extent all the other criteria; (2) while multiple ownership is easy, multiple membership is hardly possible – and even prevented by some cooperative laws. This latter question is very much related to Dow's argument that the main demarcation between KMF and LMF is that while ownership is alienable, labor is not. This is a crucial point, recalled in the conclusive section. Here, it can be underlined that these two first criteria – DOPC and DOOE - can be seen as measures of separation – the reverse of overlapping. In fact, in the 15th century capitalism was born, and its productive forces were unchained by two acts of separation: property from control and property from individuation, that is, the *alienable* association of ownership and owner. In the very end, both are forms of alienation.

Criterion 3. The existence of some kind of profit or ownership sharing with employees can be considered an increase in participation in residual claim in the case of profit or property rights in the case of ownership. It is rather easy to calculate a *Degree of Profit Sharing* (DPS) and a *Degree of Ownership Sharing* (DOS), which will both vary from 0% to 100%. Because employees' participation in surplus or property is universally intended as a sign of egalitarianism and thus of democracy, both indexes can significantly contribute to measuring ODD. In a pure KMF, they are

supposed to be zero, while in a pure LMF, they are supposed to be 100%. In a more refined version, it is perhaps more effective, especially for large companies, to replace profit with EBITDA or cash flow. Further, because all these variables in the numerator could be negative, it would be best to take the score only if positive (or to neutralize the sign). As concerning ownership, in the first approximation, it could be taken as the value of equity capital.

$$\begin{aligned} \text{DPS} &= \text{Profit share distributed to employees/Profit} \\ \text{DOS} &= \text{Ownership share distributed to employees/Ownership} \end{aligned}$$

Criterion 4. This criterion addresses a kind of *Ownership Concentration Degree* (OCD), which could be even 100% in a single person for a pure KMF, and is supposed to be 0% in a pure LMF because all members should possess the same share. We could express OCD using the normalized HHI (Hirschman-Herfindahl Index), formalized as follows:

$$\text{OCD} = (\text{HHI}_{\text{OS}} (1/N))/(1-(1/N))$$

where $\text{HHI}_{\text{OS}} = \sum(\text{OS}_i)^2$, OS = Ownership Share (instead of market share, as in the standard use of HHI), and N is the number of owners/members. To let all single indexes contributing to the composed ODD vary in the same direction, that is increasing to increase ODD, it is necessary to use the reverse of OCD, calling it the *Ownership Fragmentation Degree* (OFD), thus indicated as

$$\text{OED} = 1 - \text{OCD}.$$

3.2 The block of organizational-strategic attributes

Criterion 5. This is one of the most elusive criteria, though it is considered one of the most important, if not *the* most important in the literature. It is stressed that, while in a KMF the priority (indeed, the unique goal in orthodox versions of standard neoclassical economics) is shareholder value maximization, in an LMF there is usually a set of qualitative and quantitative goals, such as a satisfying income level accompanied by high job stability, the accomplishment of various solidaristic principles, etc. It seems rather hard to identify a single index or even a set of indexes to express this aspect of multi-objective behavior. While keeping this aspect open to future better proposals, in a rough approximation, an *Index of Organizational Goals Variety* (IOGV) could be built, for example, as follows:

$$\text{IOGV} = 1 - (1/\text{number of goals})$$

Therefore, when the organization is seeking only one goal, then IOGV is zero, while it grows with the number of significantly different goals. Though it is not possible to deepen the issue, it is worth noting that neoclassical economics has attempted to treat even LMF in the same logic as for KMF, just replacing profit maximization with wage maximization. David Ellerman (1997, 2021), Bruno Jossa (2014, 2018), and many others have shown that this approach is de facto a denial of the essential nature and behavior of cooperatives and other types of non-profit organizations. Here, to those criticisms, an epistemological remark can be added that has methodological implications for what I will argue below in Sections 5 and 6: neoclassical economics is a mono-criterion theory. The criterion is efficiency, measured in terms of profit. This conceptual peculiarity is required by the fundamental type of reasoning employed by neoclassical economics: the optimization (maxi- or minimization) algorithm. The application of this algorithm, in fact, to accomplish the assumption of complete and comparable transitivity, requires (continuous and differentiable) mono-criterion functions. If there were more than one function, fictitious multicriteria

methods are employed, among which the expedient of building a super-utility function is one of the most used. I will return to this point in Section 5, showing how ODD could be reduced to that case or appropriately treated as a mix of truly independent criteria through the application of outranking methods.

Criterion 6. In a pure KMF, stocks can be freely traded, so that entry into or exit from ownership is totally open and not submitted to any constraint save for required capital. However, it could be contended that this is a limitation of entry/exit freedom: only capitalists possessing enough capital would hold the free trade. In a pure LMF, there is usually selective entry to or exit from membership, submitted to the acceptance of all or part of the incumbent members and often also to the subscription of some kind of agreement, possibly involving a (typically relatively small) capital availability. Thus, it seems that in both cases there are barriers to free entry/exit from ownership or membership for KMF or LMF, respectively. If that freedom is considered relevant in terms of ODD, then some kind of index to measure such barriers could be designed to take into account this aspect and quantify its contribution to the aggregate ODD. As with the previous criterion, while keeping this aspect open to future better proposals, in a rough approximation an *Index of Entry/Exit Freedom* (IEEF) could be designed as follows:

$$\text{IEEF} = (1/\text{number} \times \text{weights of barriers})$$

Therefore, if there are many and heavy barriers, then the index becomes very low and flattens the organization's ODD. Of course, the right metrics for the denominator of that index should still be found, but at least for the quantitative barriers, such as a fee or minimum capital investment to be a member, it is supposed to be not so difficult to assign a value.

Criteria 7–9. Because they require a larger space than the previous ones, the block concerning strictly structural hierarchy related to organizational coordination and the role played by selection mechanisms is discussed in the next section.

4 The measurement of structural aspects of hierarchy

In this section, the last three criteria are discussed, that is, those concerning hierarchical authority structure and role selection mechanisms. They require special focus because they are crucial in an ODD, so much so that often – even in good and recent works (Battilana, 2018) – democracy and hierarchy are taken tout court as the denial one another so that if an organization is considered hierarchical then it means that it is not democratic, and vice versa. According to this view, an expression as “democratic hierarchy” would seem an oxymoron. This is largely because, despite its relevance in the structure and dynamics of social systems and its apparent intuitive meaning, hierarchy is a rather complex concept that is not so easy to understand and express quantitatively. What is provided here is a contribution to fill this knowledge gap, besides the specific issue of ODD.

The type of hierarchy that matters for this discussion should be distinguished and analyzed in three dimensions: dyadic hierarchy (criterion 7), topological hierarchy (criterion 8), and role selection mechanisms (criterion 9). We can refer to this set as capturing the “structural aspects of hierarchy” to distinguish them from the essentially economic/legal and organizational aspects characterizing the previous two blocks of criteria. Though hierarchical authority can be exerted in many ways and have many sources, here the focus is on its final effect, formal representation, and quantitative measurement.

Criterion 7. One of the three dimensions concerns the direct relationship between two individuals: we can wonder whether they have balanced or unbalanced influence power, that is, whether

one of the two has authority over the other. In the latter case, whatever the source of the authority, it will result in a decision asymmetry between subject A who makes decisions and subject B who obeys those decisions – or is induced to follow them. Of course, it could also be a one-to-many or many-to-many situation, but the nature of what characterizes a direct relationship as superior-subordinate does not change. One-to-many or many-to-many settings can be seen, at least in a first approximation, as collections of dyadic connections. Further, the concept of “decision” can be relaxed to express a broad range of leadership styles, from strict commands to subtle persuasion or even unconscious (subliminal) manipulations, as often occurs in some organizational or social settings (i.e., marketing). Here this aspect, though important in principle and practice, can be overlooked to grasp the essence of the hierarchy issue. Indeed, the extensive literature on industrial or organizational democracy, employees’ participation, etc., rooted in many research fields such as organization and management, economics, social psychology, sociology, and political studies, concerns precisely the concepts and factors that lead to a more or less democratic power relationship between superiors and subordinates or between colleagues. For a good inter-disciplinary review on this issue, see Battilana (2018) and Wilkinson et al. (2010). Below and in the next sections, I will return to this important point concerning the background knowledge necessary for a good measurement of hierarchical degree.

Therefore, let us simplify the analysis by assuming that we know and can combine all types of influence power – whether formal or informal, intentional or unintentional, “good or bad” –to arrive at the final result of “conditioning” somebody to do what we want. We can simply represent this as $A \rightarrow B$, where \rightarrow can be interpreted to mean “deciding on” or “influencing”.

Of course, in a relationship between two people, many decisions are usually made, not just one, so we can approximate this aspect by giving a numerical weight to the link: the more decisions that are made, the heavier the link. Further, not all decisions have the same relevance, and again, we can approximate this aspect in the same way: the more important a decision, the heavier the link. Therefore, a hierarchical relationship can be strong either because there are many decisions, because those decisions are very important, or both. We could assign a vector of values ranging, let’s say, from 1 to 10 (max weight), distinguishing between the frequency and importance of relationships.⁵

Bearing in mind these elementary notions, we can represent any organization as a network of decisions, that is, a graph whose nodes are actors and links are the decisions connecting them.⁶ Hence, simplifying from the weights of decisions – thus considering only the presence or absence of a decision – we can have symmetric (undirected) graphs, where agents do not have dyadic hierarchical relationships, and directed graphs where at least one relationship is asymmetric, regardless of whether it is totally or partially asymmetric, as in the case of collaborations.

This means we have already reached a first interesting result: a preliminary concept of hierarchy at the organizational level comes from counting how many (direct and indirect) relationships are asymmetric out of the total number of relationships. This measure of hierarchical degree for directed graphs was proposed by Dave Krackhardt (1994), and it varies from 0%, when the organization is composed of all balanced (symmetric) decisions, to 100% in the opposite case. We can call it Dyadic Hierarchy (DH) to stress that it is based on dyads: single pairs of relationships. Because a symmetric relationship also implies a reciprocal relationship, this measure of hierarchy addresses, in a reverse direction, an important concept for the whole debate on cooperation: that of *reciprocity*.⁷ Cooperative principles and cooperative behaviors are almost totally overlapping with the idea that – at least limited to some aspects, such as certain types of rights like voting access, or some types of resources like economic or information exchange – agents follow or accomplish a criterion of reciprocity. The connection between cooperation and reciprocity emerges in most

social, political, and anthropological studies (Bowles & Gintis, 2013), and it becomes particularly evident in research employing methods of agent-based simulation modeling (Biggiero, 2016b, 2022; Squazzoni, 2012; see also Chapter 11 by Jerome Nikolai Warren).

It can be formalized as follows:

$$DH = DIAS/TODIL$$

where: DIAS = the number of direct and indirect asymmetric links and TODIL = number of all direct and indirect links. The largest part (if not all) of the studies on organizational democracy lies in the area covered by this dimension of hierarchy, which indeed captures the outcomes of many different elements constituting a democratic style of management and the forms of participation of workers (including managers). The work by Ahmed et al. (2019) goes exactly in the direction of building operative ways to measure those different elements. That analytical work is essential for allowing the formalization of hierarchy, and it is complicated by the fact that these different elements have both subjective and sometimes objective dimensions. In other words, for example, it is not only necessary to count how many times the manager consults her subordinates about a given choice but also to understand the perception that those subordinates have about the leadership style of their manager, because perceptions can be different from objective measures and, even more, from the superior's intentions. For example, perceptions are significantly affected by previous experiences, expectations, cultural backgrounds and contexts. Therefore, there are two metrics to be combined, each of which is already rather complicated on its own. More specifically, some objective variables, such as the number of hierarchical levels, organizational units, and the distribution of connections between them, and some mixed subjective-objective variables, such as leadership style, sense of freedom, feeling of fairness, integrity, tolerance, knowledge sharing, and others (Ahmed et al., 2019; Battilana, 2018; Weber et al., 2020)

The formalization and measurement of the hierarchical degree discussed here through the three parameters requires that the data concerning at least the objective aspects have been already collected and prepared in a relational form to be then analyzed. If those data have been also combined with the subjective dimension, then the outcome is much more significant. It might also be designed an approach that run the analysis with objective and subjective data separately, and then compared to understand if and how the "perceived hierarchy" is different from the "objective hierarchy".

Criterion 8. DH is a good measure and approximation, but it has two flaws. The first is that it is insensitive to size (and, more generally, to topology): that is, two structurally similar organizations of 10 and 10 thousand people could score the same index, even if they have only one or many ranks (hierarchical levels). Conversely, one could intuitively understand that the number of ranks should matter. Indeed, common sense – and even the wide scientific sense – of hierarchy suggests that an organization's hierarchical degree grows with the number of hierarchical levels.

The second limit concerns the position covered by an actor in each group: if she is engaged in all decisions, while the other actors are involved in only one, then their influence power is reduced to a single decision, while the central actor can influence all decisions made in the group. Hence, A can benefit from major influence power due to his or her central position. Therefore, even if all the relations in the group are reciprocal – thus, no dyadic hierarchy – the possible unequal distribution of links can generate positions of major influence power.

To grasp this aspect, we need to calculate a second type of hierarchical index, which we can call Topological Hierarchy (TH), to assess the hierarchical degree related to power concentration due to the topology of the whole structure. Besides capturing the type of hierarchy not expressed by DH, the TH index has also the advantage of applying to both directed and undirected networks.

This concept can be operationalized by using centralization indexes, which measure the degree of variance in actors' centrality.⁸ As a first approximation, we can employ the eigenvector centralization index as a good measure, so that:

$$TH = \frac{\sum [\text{normEig} - \text{normEig}(n_i)]}{\text{MaxEig}_{CE}}$$

where: normEig^* is the highest eigenvector value and $\text{normEig}(n_i)$ is the normalized eigenvector value of each node (organization member), and MaxEig_{CE} is the maximum eigenvector centralization.⁹ This index varies between 0, when the organization consists of a group of peers, as in the pure LMF, and 100% when authority is concentrated in the apical position, as in the pure KMF. Not surprisingly, a typical organizational chart corresponding to an organization having some hierarchical levels and lacking any horizontal collaboration relationships will score 100% for TH. This type of structure is called a DAG (Directed Acyclic Graph) in the jargon of network analysis, because links (i.e. decisions) are all oriented in the same direction, outgoing from one's superior to her subordinates, until reaching the bottom level where there are only subordinates who do not make decisions for anybody else. At the top, there is a position that does not receive any decision, while at the bottom level workers only receive and do not make any decision.

In Figure 10.2a, a simple case of a KMF made up of 40 people is represented as a graph: a COO (Chief Operating Officer), three Top Managers, 9 MM (Middle Managers), and 27 workers of the OC (Operating Core). This structure would score even 100% DH, because all links are asymmetric. If there were horizontal links, meant as some asymmetric relationships occurring at the same hierarchical level, then DH would still be 100%, but TH would be less than 100%. If such horizontal collaborations were true collaborations, meaning reciprocal (symmetric), then DH would be less than 100%. Note that, despite scoring 100%, the organization in Figure 10.2a is a network. This remark is due to the widespread but incorrect habit in social sciences of considering hierarchy and network as opposing concepts. On the contrary, as we have just seen, even a pure hierarchy is nothing else than a kind of network, namely, a DAG (or out-tree).

Therefore, what Herbert Simon in "The architecture of complexity" (1962) calls the *archetype of hierarchy* corresponds to Figure 10.2a, which is a stylized organizational chart of a purely hierarchical organization. Obviously, real organizations are much more complicated than this stylized version and are likely also less hierarchical, especially in high-tech firms, social enterprises, cooperatives, or public administrations, because of the need – different for each of these types of organizations – to incorporate more horizontal coordination, especially reciprocal collaborations. This would correspond to "weaken" the DAG form by adding more links than the minimum necessary to keep the network connected, thus making it less efficient.¹⁰ Furthermore, it would also imply increasing the degree of reciprocity, thus making it more cooperative (collaborative), so that both DH and TH indexes would change (decrease) accordingly, moving from the KMF to the LMF pole.

In Figure 10.2b, the case in which the 27 bottom workers (those in the Operating Core) of the pure hierarchical structure are able to work as a team is represented, that is, without delegating authority to other people and without employing hierarchical levels. In the jargon of network analysis, this would be called a clique, because everybody is connected with everybody else. They form an authentic group of peers, at least in terms of structural hierarchy. Both DH and TH would score zero: that is, no hierarchy at all. This structure corresponds to a pure LMF. Clearly, this case represents a situation of *pure self-management*: a group of peers manages itself without any

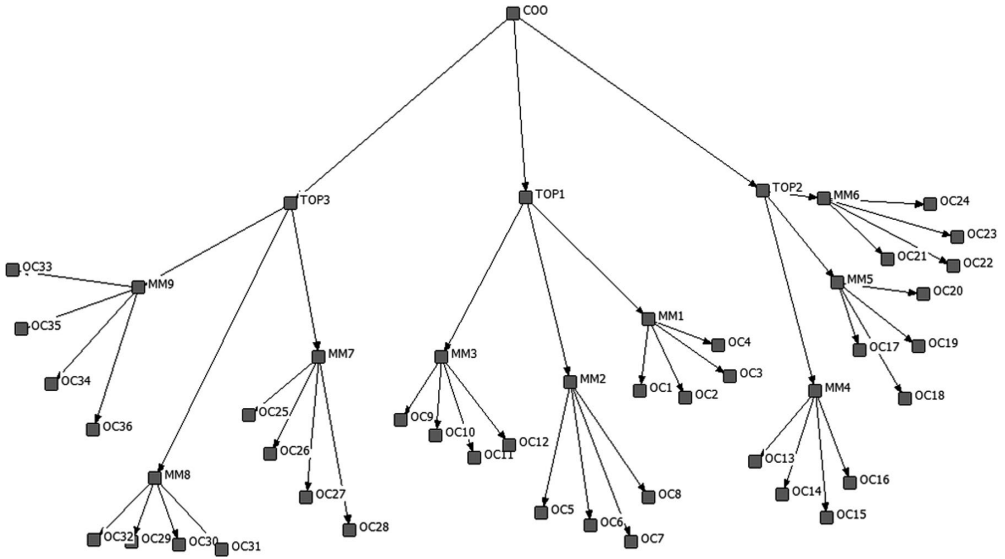


Figure 10.2a The two poles represented as graphs: a KMF represented as a (Direct Acyclic) graph

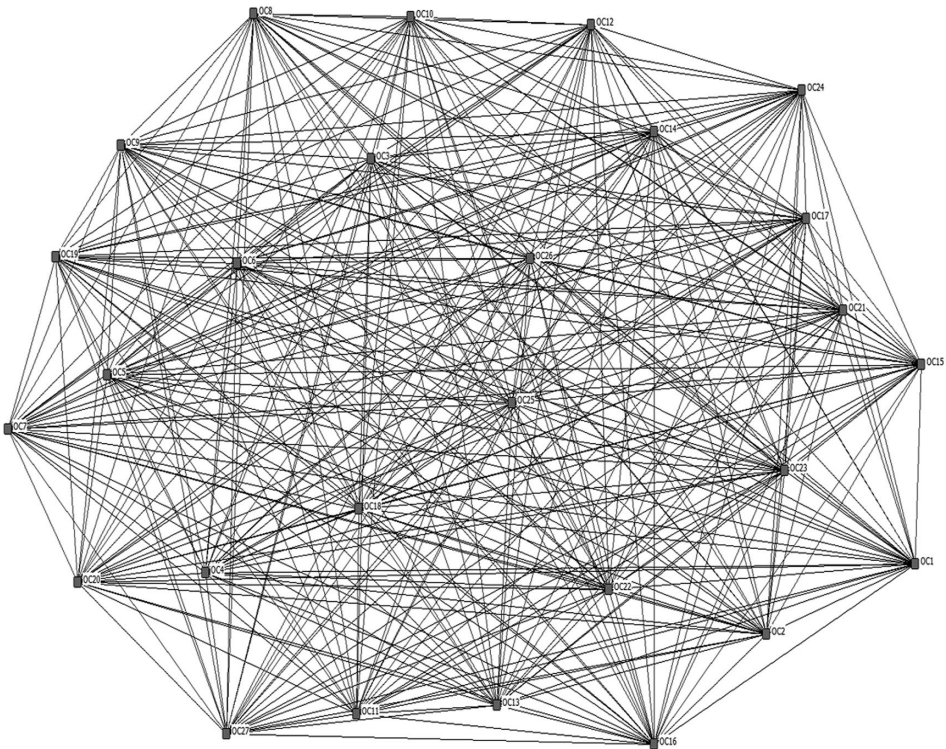


Figure 10.2b The two poles represented as graphs: an LMF represented as a (Undirected Cyclic) graph.

internal (from within) or external (from outside) hierarchical authority.¹¹ The extent to which the “self” is kept strictly in the hands of the workers depends, of course, on the legal-economic variables discussed in the first block, the number of hierarchical levels, and the selection mechanisms adopted to choose the people who will cover positions of commands, a topic discussed as the third dimension of this third block.

Criterion 9. So far, we have seen concepts and measures that can be applied to organizations once they are formed, regardless of the roles behind their formation and stability, and regardless of who and how people are selected and assigned to the power positions within the structure. This is the question concerning the Selection Mechanisms for Democracy Degree (SMDD). Different research streams concerning these issues, ranging from the sociology of organizations, political studies, management studies, and economics: see Chapter 19, where Simon Pek provides a literature review and discusses the democratic content of sortition as a selection mechanism, alternative to top-down and closer to bottom-up. Here it is worth focusing on a very simple but crucial aspect that can be easily understood (and relatively easily measured) and can be taken as the third fundamental dimension of flow hierarchy: that is, regardless of how the structure is and regardless of its relative dyadic or topological hierarchy, how are the people who will occupy the most powerful positions selected? Are they elected by subordinates or nominated by their own superiors? And regressing to the top rank – let us say, the CEO, COO, etc. – how are they chosen? Elected by the organization’s members (workers) or nominated by somebody else, such as the central government or the owners?

Simplifying and mimicking what happens at the societal level, we could argue that the elective (bottom-up) form is democratic, while the coercive (top-down) form is not democratic. The emphasis on describing the latter model as “coercive” is rooted in the neo-Marxist tradition and is justified by the need to allow the unequal exchange between the value that workers produce with their labor and the value contained in the pay they receive. The difference is the surplus value extracted by the firm’s owners through their “agents”: top and middle managers, plus professionals such as engineers, technicians, statisticians, etc. Even accepting the neo-Hobbesian thesis (Bowles, 1985) that human behavior is characterized by a selfish, unfair, and opportunistic “natural” attitude to shirking, the sense of deprivation and alienation from the results of their own effort generates a legitimate and much stronger reluctance to work. This is perhaps the main meaning of Marx’s concept of alienation, and according to the recent discovery of his late-age manuscripts, it is possible to link the thought of young and late Marx, building a continuity of the concept of alienation and its role in the rejection of wage labor. It makes the difference between the neo-Marxist and neo-liberal approaches to employees’ participation, a point addressed also by Boxall and Purcell (2010) and Wilkinson et al. (2010) in their review of this literature.

Some authors might remark that, when there is a legal contract, there is no coercion because there is free will. So, even if there were an undue appropriation of surplus value by the capitalists, if workers subscribed to that type of labor contract, then there is no coercion. However, here lies one of the differences between the neo-liberal and neo-Marxist perspectives: the latter argues that a contract subscription is not enough to configure a free will behavior because contextual-historical circumstances could put one of the two parties in a position of full power, and the other with no bargaining power. Hence, the weaker party is forced to subscribe because they have no alternative. So, it is purely fictitious to argue that workers could resign and leave for a better place. As Piketty (2013) showed, the moments in which workers’ negotiating power was appreciable have been few and lasted shortly. Further, even during those stages, the bargaining power within the companies was usually rather low and limited to some claim for a better income, not able to contend with the hierarchical authority structure and clearly not able to revert it.¹² In fact, when

brought to the field of subtle theoretical concepts, the juxtaposition between the neo-liberal and neo-Marxist perspectives appears as the choice of the former to conceive the economy as made by free and *substantially equal* agents, thus overlooking any contextual aspect, such as agents' financial and material assets (the so-called endowment of resources) and their relational capital (how many important people a person knows). In this perspective, if all agents have the same capital, then they differ only in terms of their preferences and the focus of the analysis becomes that of market exchanges, and the various approaches of post-Walrasian economics, such as transaction cost theory or agency cost theory, become correct. Such approaches are, in fact, built on the view of a market as made by a set of free contracts between individuals, so that those theories could also be called "contractualist approaches". These approaches – and more deeply Oliver Williamson (1985) – have developed a specific idea of cooperative economics, which can also be found in Chapter 3 by Thibault Mirabel. However, to understand how far from reality the hypothesis of equal endowments is, it is enough to look at the totally unequal distribution of income and wealth in every capitalistic country (Piketty, 2013). Put differently, a contractualist approach has some sense only if the parties have similar bargaining power, that is, similar resource endowments. For more theoretical (and also empirically-based) criticisms to post-Walrasian economics, see Biggiero (2022) and Palermo (2016).

As for DH and TH, even for the selection mechanisms there might be many middle ways between the two extremes of pure KMF and LMF, especially when the organizations are big: that is, some top positions are elected, and all the others nominated. For example, the top management could be elected and then, in turn, they choose (nominate) in a top-down fashion the people covering the intermediate hierarchical levels. In essence, this is what happens in a democratic government: people elect their representatives at the highest (or national-regional-local) levels, and then such representatives select and nominate top managers in several institutions. In essence, it is a mixed model. For the moment, let us focus on the two extremes and be aware that most (if not all) intermediate degrees of selection mechanisms and employees' participation can be formalized and measured using a network approach.

Indeed, it is all but easy to treat this attribute as a continuous variable. It becomes more manageable as a qualitative scale with different selection mechanisms listed through an ordinal ranking. In Sections 5 and 6, the epistemological and methodological implications of this qualitative approach will be discussed showing that outranking algorithms can also work with ordinal scales.

In this point, it is helpful to show a simplified (dichotomous) view, where we can place the two poles of pure KMF and LMF as two specific combinations of the three dimensions of structural hierarchy (Figure 10.3): a pure KMF has the highest values of dyadic and topological hierarchy and employs a coercive (top-down) selection rule, while a pure LMF has no dyadic and topological hierarchy and employs an elective (bottom-up) selection rule.

Before closing the discussion of this block and the entire section, it is worth saying just a few words about the influence of organization size on the three parameters of this third block concerning the measurement of hierarchy, while other implications will be discussed in Section 7. A team should be very small, otherwise it cannot work, because its members would spend too much time interacting with one another. As it can be seen at a simple visual inspection, the 27 people in Figure 10.2b are already too many to work efficiently and effectively, because their coordination requires about 350 relations¹³. Therefore, a pure LMF must be very small, as early cooperatives were, being closer to an artisan enterprise than an industrial one. Because of the limits imposed by the "span of control",¹⁴ as organization size grows, it is necessary to proceed with structural transformations by introducing horizontal and vertical differentiation, a process that leads to creating

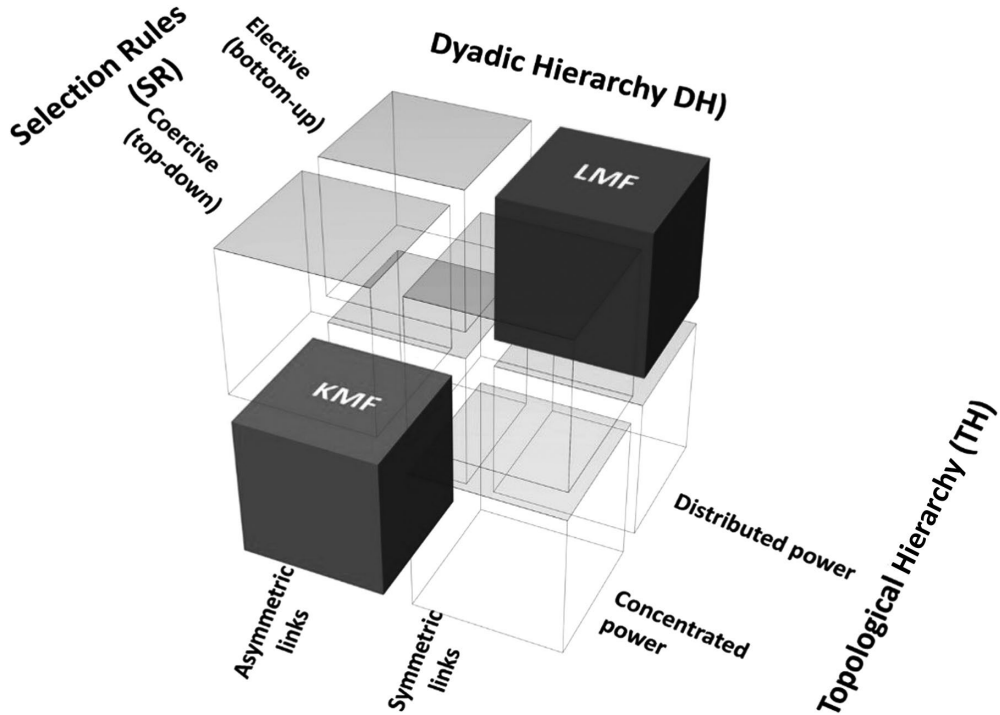


Figure 10.3 The cube of structural aspects of hierarchy in a dichotomous view.

a ramified and multi-level hierarchical authority structure. This effect pushes upward DH and TH because reciprocity lowers and power concentration rises, making the implementation of democratic selection mechanisms more and more challenging. That is why, despite all the best intentions and declarations characterizing the Mondragón statute and mission, Barandiaran and Lezaun (2017) underline that the high-power concentration in a group of about 80,000 employees tends to be very high, and the selection processes tend to confirm the same people in power positions (see also Jokín Bergara Eguren & Oier Imaz Alias in Chapter 34). This is all but surprising because the same flaws occur in many non-profit organizations and in the basic functioning of representative institutions (see also Chapter 15 by Anu Puusa).

5 Dealing with the operational assessment of organizational democracy degree

So far, nine criteria to assess ODD have been introduced and briefly discussed. They are likewise attributes of that construct, which deserves some further comment. The first concerns the exploratory nature of this analysis, which will require further refinements in defining and calculating some of the attributes. This exploratory nature will legitimate the easy use of acronyms in this work because they are just born here. Moreover, as already said, the large and growing literature on organizational participation, industrial democracy, employees' participation, employees' involvement, etc. provides concepts, measures, metrics, and empirical results necessary to substantiate

with real values the distribution (and orientation) of relationships in any given structure. Official organizational charts offer only synthetic and poor information concerning only formal main relationships, overlooking several other aspects, such as their actual content, the possible partial counterbalance in the reverse direction, the leadership style, and, most importantly, the subjective perceptions of employees. In this respect, Molina (2001) offers a discussion of the limits of formal charts and the possibility of building charts about informal links.

Once we acknowledge that there are these nine ODD attributes, we should wonder about two fundamental questions that have subtle and crucial epistemological and methodological implications: Does each attribute have the same relevance or do we think that their relevance is different? Can all (or some) of them be considered as substitutes for one another?

As for the former question, the field is open and very much dependent on the observer's social, cultural, and political orientation. Relevance can be typically considered by assigning proportional weights to each variable¹⁵ and keeping their sum at 100%. So, a criterion considered very important, e.g., the degree of separation between property and control, could be weighted 50%. Future studies could help in knowing which attribute is more difficult to vary in a continuum or whether real-world thresholds are coming from practice. Future studies could also help in knowing which attributes are more influential or perceived by workers as more democratic or acceptable. In fact, it is all but granted that what might be better according to scientific logic is also what workers would prefer. Likely, an approach in terms of block influence could reduce complexity by considering which, between the economic-legal, the organizational, and the structural block, could be considered prevalent or more conditioned by the others. Many considerations could be made, but they are beyond the scope of this work.

The second question – whether these attributes are in a substitution relation to one another - is much more complicated and has many more implications. If the answer is positive, then it means that a low value in one criterion could be compensated by a high value in another. For example, it might be that a high ownership sharing, as in many ESOP cases, can compensate a high concentration of hierarchical power. As for the previous question, it does not seem that there is any study on this subject, though it has a lot of managerial and policy implications.

The subtle and crucial methodological implication is that, if the answer is positive, then the nine criteria would be considered not totally independent because one could be replaced (transformed) into one or more of the others. In this perspective, ODD would be a function of those variables, like $y = f(x_1, x_2, \dots, x_n)$, and thus, we could write the following expression:

$$\text{ODD: } f(\text{DOPC; DOOE; DPOS; OCD; IOGV; IEEF; DH; TH; SMDD}) \quad [1]$$

Consequently, if such variables were continuous and differentiable, then ODD would be continuous and differentiable too, with many interesting mathematical properties. In this perspective, the ratios would represent substitution factors, similar to the capital-labor substitution rate in the typical production function of neoclassical economics. Indeed, [1] would substantially correspond to a super-utility function, where utility would be defined in terms of democracy degree. Further, the compensatory logic dissolves the multicriteriality, because substitution rates allow reducing the variety to just one single composite variable: an aggregate criterion.

Conversely, if the answer were negative, that is, if all (or some of) the nine criteria were considered genuinely – logically – independent, then there cannot be any substitution relation between them, and the previous expression should be changed in the following way:

$$\text{ODD} \equiv \{\text{DOPC; DOOE; DPOS; OCD; IOGV; IEEF; DH; TH; SMDD}\} \quad [2]$$

This is not a function, and thus, it cannot be differentiated nor optimized. It corresponds approximately to writing:

$$Y = \{f(x_1), f(x_2), \dots, f(x_n)\} \quad [3]$$

which is not a function either, but its elements might be considered as functions, if its empirical analysis were confirming it. Indeed, [2] is more correct because it does not imply that any of the elements is necessarily a function. It would be enough for it to be any kind of correspondence. From the mathematical analysis view of the world,¹⁶ in fact, we are naturally oriented to see any correspondence between two sets of elements as if it were a continuous and differentiable relation, while things can be different. A logical or empirical correspondence irreducible to a continuous and differentiable function becomes rather unfamiliar. As we can see, from a methodological issue we jump into an epistemological issue concerning the mathematization and modeling of social (and natural) sciences. Until the relatively recent and tumultuous rise of discrete and computational mathematics, the mathematization of reality took the form of analysis (Israel, 1996). Within the social sciences, this occurred especially in economics (Scott, 2018), where reductionism and modeling meant applying mathematical analysis (Biggiero, 2016a, b).

The hypothesis that all the nine criteria necessary to measuring ODD are *logically and empirically independent* of one another should be submitted to further scrutiny, because it is reasonable to think that, at least between the three blocks, there might be uni- or bi-directional influences. For example, it is difficult to believe that an organization born with a pure KMF first block could then implement a pure LMF third block, and vice versa. Put differently, if economic-legal power is highly concentrated, it will shape the authority structure in a very hierarchical way. Analogously, an organization born with a pure LMF authority structure will unlikely design a high concentration of economic-legal power, as it seems, at first sight, the case of Mondragón. Though it is reasonable to believe that, at least to some extent, some variables influence others, the substitution hypothesis – that is, the positive answer underlying [1] – seems too strong and unrealistic, at least until future research efforts will tell us more. Moreover, some of those relations are likely reciprocal and self-reinforcing: the more one grows, the more the other does, in a loop. If this were the case, then instead of substitutes or complements, (some of) those variables might be mutually reinforcing. Therefore, in the next section, the opposite hypothesis will be taken, though it should be refined in the future.

6 Comparing organizational democracy degree across organizations

Once the ODD of a given organization is measured, it becomes more interesting to know whether it is increasing or decreasing over time, or if it is lower or higher than that of other organizations. So, if [1] held, then the comparison is very easy: just multiply the various values by their weights and then sum up. Conversely, if [2] held, then we jump into the field of multicriteria decision-aid and get a method that does not employ any kind of substitution logic. A very good method is that of outranking algorithms proposed by the French School of Operations Research (Bouyssou, 2001; Bouyssou et al., 2000; Roy, 1996; Vincke, 1992). Such methods are perfectly consistent with a view of socio-economic phenomena in terms of satisfying behavior and bounded rationality (Simon, 1978, 1979, 1983).

Another interesting property of outranking algorithms is that they can work well with just ordinal-qualitative evaluations, not necessarily with cardinal values. This is very helpful, especially for criteria that are difficult to express quantitatively, such as the case of selection mechanisms. For example, it is possible to employ a qualitative scale ranging from “very low” hierarchy

for the pure LMF, in which all hierarchical positions are elected from the bottom, up to the “very high” for the pure KML where all positions are imposed from the top.

The method aims to construct an outranking relation among the alternatives and choose the outranking ones, which represent the satisfying solutions. Starting from a matrix like that of Table 10.2, the next steps should then be:

- Build a concordance matrix, which measures the degree to which the ODD of the a_i organization is preferred to that of a_j in a direct comparison, according to the different criteria.
- Formulate a concordance test according to the weights of the criteria.
- Build a discordance matrix, which identifies organizations that, analogously (but inversely) to the concordance matrix, are not comparable in a direct comparison, according to the different criteria.
- Formulate a discordance test according to the weights of the criteria.
- Build, through the joint application of concordance and discordance tests, the outranking matrix.
- Identify outranking and outranked organizations in terms of their ODD.

Biggiero and Laise (2003a, b; 2007; Biggiero et al., 2005) have discussed this method theoretically and empirically with real-world applications to various fields, including Management & Organization Science, Finance, and Technology Policy. A very close application (2003) to the present issue involved a comparison of the main organizational configurations, inspired by Mintzberg’s (1979) approach: i) mechanistic bureaucracy, ii) professional bureaucracy, iii) multi-divisional form, and iv) adhocracy.¹⁷ In that case, five criteria represented various ways to measure fitness with the environment and efficiency.

For the purposes of comparing the ODD of different organizations, Table 10.2 follows the same approach: in rows are the organizations to be compared in terms of ODD, and in the columns are the nine different criteria. The last row shows the weights assigned to each criterion, but here the weights play a different role than in [1].¹⁸ The ORG1 ... ORGn listed in Table 10.2 can represent the same organization at different times or different organizations. In other words, if unions, managers, or stakeholders wish to understand whether their organization, after implementing some agreed policies of employees’ involvement or empowerment, has really increased its ODD, they would have the right tool to check it. This tool, by varying the weights and thresholds, allows them to confront their different views in quantitative ways. In fact, the value of each criterion, jointly with its weights and the thresholds adopted in the concordance and discordance tests will identify which organizations will meet an acceptable level of ODD defined by the “analyst”, who might be a researcher, manager, trade union delegate, policymaker, or any other social actor interested in measuring ODD.

Table 10.2 A methodological framework

	<i>Criteria</i>								
	<i>DOPC</i>	<i>DOOE</i>	<i>DPOS</i>	<i>OCD</i>	<i>IOGV</i>	<i>IEEF</i>	<i>DH</i>	<i>TH</i>	<i>SMDD</i>
ORG1									
ORG2									
ORG3									
...									
Weights									

7 Hybrid forms, and some crucial questions

Hybrid forms. So far, the analysis has been deliberately extremized by focusing on pure KMF and LMF forms. Now, before closing the chapter, something should be said about what could be in the middle because the real world usually occurs in shades of gray. In fact, as mentioned above, while legal peculiarities in the past built “constructive” (intentional) boundaries between the two poles, the suppression or weakening of such peculiarities makes those “artificial” boundaries vanish (Adams & Deakin, 2017). For example, though there are discussions about their real contestability, there are now in Italy and in China even cooperative companies listed on the stock exchange. Certainly, there is nothing more distant and inconsistent than this with the 1844 “Rochdale Principles” on which the Rochdale Society of Equitable Pioneers established the basis for the development and growth of the modern cooperative movement. And it is rather jarring even with the current ICA principles. Hybrid forms nullify de facto the attempts of most theorists - especially the neo-Marxist ones (see Chapter 7 by David Kristjanson-Gural) - to establish a strong demarcation between capitalist and non-capitalist firms, the former supposed to be exploitative and coercive (thus, anti-democratic) and the latter truly democratic.

Giant cooperatives such as Mondragòn (Spain) and Huawei (China), which are very different in many respects, are indeed true hybrids between KMF and LMF. While Mondragòn can be conceived as a network of cooperatives that, taken as single firms, are not giants themselves, what about Huawei, which is a centralized company with \$130 billion and 200,000 employees and is a joint-stock enterprise owned 98.86% by its employees? The good news is that provided these companies give the proper data to run the analysis, the application of outranking methods could shed light on the ODD of these hybrid giants. The bad news is that getting such data is illusory at the moment because, despite the “Rochdale spirit” big (and even small) organizations, be they KMF or LMF, tend to be totally opaque concerning the collectivity and usually even with respect to their own community of members. For example, that 98.86% that theoretically belongs to Huawei employees is held by a “Huawei Investment & Holding Company Trade Union Committee” with rather opaque selection mechanisms. Furthermore, employees do not hold anything beyond a contract that gives them the right to access profit sharing. Notably, the methodological framework proposed in this paper allows for considering all these formal aspects in the ODD assessment – see the first block of (economic-legal) criteria.

The size/efficiency question. These cases lead us directly to another crucial issue: that of size, and then to the related issue of efficiency. There is a clear and strong relationship between structural hierarchy and size on one side, and size and efficiency on the other.¹⁹ To be efficient – and/or to gain market power – a firm’s size grows, which, in turn, requires the coordination of internal activities through horizontal and vertical division of labor, thus increasing the hierarchical authority structure. In short, dyadic and topological hierarchy will inevitably tend to increase, and the selection mechanisms to become more complicated and less democratic. Now, in Section 4, we have seen that, in principle, it is possible to be hierarchical and highly democratic at the same time, but in practice, as size grows, this becomes increasingly difficult. For example, regardless of efforts to keep the organization collaborative (that is, with high reciprocity and consequently having low dyadic hierarchy) and to adopt democratic selection mechanisms, at least topological hierarchy will rise. Therefore, we should be aware of this perverse effect and question whether the efficiency-size rationale is worth the corresponding loss of ODD. Put simply, we can say that *large size and efficiency undermine ODD, while small size and redundancy increase it.*

In the second section of this chapter, when the pure forms were depicted, the size aspect was stressed by identifying a *large* KMF and a *small* LMF. Now that choice becomes clearer: size

leads to an increase in the third block of parameters, those related to the hierarchical structure, so that LMFs growing in size, *ceteris paribus* with respect to the other two blocks of criteria, tend to lower their ODD and thus reduce their distance from KMFs of the same size. Put differently, it might be that, even if Huawei were featured as a KMF in the first block of criteria, it would likely score a very similar ODD to Microsoft or IBM, champions of KMF. Notably, there should be an asymmetric effect of size on KMF and LMF, because it is likely that a *small* KMF has a very high hierarchical degree, while it is very unlikely that a *large* LMF has a very low hierarchical degree. In fact, it is worth reminding that the typical star-like structure of a small firm where a boss has five to ten subordinates is a very strong hierarchy.

The discontinuity question. Outranking algorithms allow to us to highlight possible discontinuities between the two poles, which arise from the observer's choices in assigning the weights and building tests. In fact, an important implication of this approach is that there is no guarantee of full comparability between the organizations and, more importantly, there might not be any continuum between the two poles. This is somehow contended by some recent authors, especially (but not only) in the field of finance (see Chapters 16 and 21). For example, while Dow's view is that there is no real qualitative difference between a KMF and a LMF, these methods show that, under appropriate values and weights of the criteria, there *might* be a sharp discontinuity. This would mean that some types of organization are truly different objects, not just the same object with some parametric change²⁰.

Indeed, the empirical application of the ODD construct discussed here might show that real organizations cluster around a limited number of combinations of the nine criteria, thus suggesting that, besides the conceptual and methodological choices of a given observer, the concrete interactions between the ODD elements allow only a limited – and perhaps well defined – types of combinations. Indeed, real-world implementations of “impure” KMF and LMF have shown so far the prevalence of certain forms over others. One could rightly contend that laws and often state subsidies have oriented such clustering around specific instantiations of forms. Well, the “drift” of juridical forms regarding cooperatives – and more generally, corporate governance and juridical forms (Gordon & Ringe, 2015) – that are occurring in some countries, such as Italy, France, and China, are producing an interesting openness and weakening of legal barriers.

The inalienability argument. Many of the criteria discussed here, especially those in the first block, can be easily related to the debates that have shaped the history of ICA from its origins, well-represented by the British, French, German, and then Soviet Union positions on what should distinguish a cooperative from a capitalistic (or, more broadly, non-cooperative) organization. Because of space constraints, it is possible to focus only on the inalienability argument, which is supposed to be the argument *par excellence* for finding a possible demarcation between KMF and LMF. As for the other topics, a review of Dow (2003), Ellerman (2021), Jossa (2014), Wolff (2012), and Zamagni (2017) in light of the nine criteria discussed here could make evident the connections that are not only conceptual but also political.

The labor inalienability argument runs this way:

“The most important asymmetry between capital and labor is the fact that capital is alienable whereas labor is not. Simply put, ownership of nonhuman productive assets can be transferred from one person or group to another, while this is not true for endowments of time, skill, and experience.”

(Dow, 2018: 9; see also Chapter 1)

It has at least three major implications: (1) on closer sight, it does not make a full demarcation between KMF and LMF, because some KMF ownership shares could be constrained and

linked to their owners, while LMF membership can be graduated, meaning not all workers should be members. Indeed, the first two criteria – the Degree of Overlapping between Property and Control and the Degree of Overlapping between Owners and Employees – grasp exactly this aspect and show that inalienability can be graduated as well. This is precisely what is implied in Chapter 16 by Tej Gonza and colleagues when they outline the transition toward a cooperative economy through a *progressive transformation* of capitalistic firms into cooperative firms by means of ESOPs, which intervene exactly in the two above-mentioned variables.²¹ Therefore, the supposedly strong demarcation becomes weaker and fuzzier; (2) moving towards an LMF-based economy, capital circulation and financial availability will decrease, thus likely causing slower growth. Whether this effect is good or bad should be regarded as a matter of discussion, as the supporters of de-growth argue (Eastwood & Heron 2024; Saito, 2024); (3) alienation of a worker from her product (and other forms of capital-induced alienation) is a pillar concept in Marx’s view and especially in modern Marxism (Musto, 2012), which emphasizes that alienation is responsible not only for low productivity but also for several social and political negative consequences. Therefore, a substantial reduction of alienation could be considered a positive “side effect” of turning part of KMF into LMF.

The question of classification and data collection. The situation of data collection about cooperatives at world level is rather unsatisfying, mostly due to classification differences between different institutions and authors, which in turn come from different cooperative laws across countries. Now, it might be possible that the methodological framework advanced here be useful to offer a different approach to both problems of classification and data collection. In fact, instead of running after the Sisyphean effort to make compatible the different systems of classification, the attention might be shift on calculating the nine criteria proposed here and then let the classification emerge from the statistical clusters that are formed. This approach would also have the advantage to adopt a system that can be applied to non-cooperative firms as well, thus allowing comparability studies rather easily.

8 Conclusions

This chapter has taken a methodological approach because this is one of the dimensions in which the challenge of searching for alternative forms to capitalistic firms needs conceptual efforts. In fact, new “objects” often require new methods, and this seems the case. More specifically, a multicriteria methodological framework to calculate the ODD of *any* kind of organization has been proposed. Nine criteria grouped in three blocks of economic-legal, organizational-strategic, and structural-hierarchical aspects have been discussed and contrasted between a pure KMF and LMF form. Further, the epistemological and methodological implications of two main ways to approach the combination of the nine criteria have been discussed: the usual approach of multi-attribute utility function vs. an alternative approach in which the criteria are logically and empirically independent of each other. Following the latter approach, the criteria have been operationalized in a grid by applying outranking algorithms to compare different organizations or the same organization over time. It has also been underlined that, this way, the optimization requirements typical of neoclassical economics are avoided, while a bounded rationality approach typical of cognitive and evolutionary economics is allowed. Two other important implications are that no substitution rate holds between the criteria and that by applying weights and thresholds, it is possible to follow a typical behaviorist epistemology based on the satisfaction of aspiration levels, namely an ODD minimum score. Hence, no continuum between the two opposite poles of perfectly coercive or perfectly democratic organizations should be assumed. Conversely, weights (and thresholds

too, if any) become a matter of scientific and public discussion. Outranking methods are, in fact, well-suited also for group assessments and decision-making.

An empirically relevant consequence of this methodological approach is that it opens the way to compare many different organizational or juridical forms that are all considered democratic, though due to very different factors. For example, it will be possible to answer questions like: Is an ESOP as democratic as a cooperative? Or as a social enterprise? Or as a capitalistic firm adopting co-determination with union delegates participating in the BoD? And the many other cross-comparisons that can be made between capitalistic firms, ESOPs, cooperatives, social enterprises, mutualistic firms, etc. In the same vein, within each type of organization or juridical form, it will be possible to evaluate ODD according to variations of some criteria. Therefore, it will be possible to answer questions like: Is a given ESOP with only 15% employee ownership share but small and with a less hierarchical degree more or less democratic than another ESOP with a 50% ownership share but much bigger and with a higher hierarchical degree? And so on. In short, this ODD operationalization can be applied to any organization in a cross-sectional or longitudinal perspective.

Another outcome of the analysis is that democracy and hierarchy should not be seen in strict opposition: depending on other OD elements, we could have a relatively democratic hierarchical organization and a relatively non-democratic nonhierarchical organization. Put differently, keeping structural hierarchy at a low level does not guarantee to have a democratic organization, and vice versa, a high level of hierarchy does not imply that the organization be very lowly democratic. Further, structural hierarchy does not mean to have many hierarchical levels, tout court, because the degree of reciprocity (collaboration) in single pairs of relationships matters a lot, as do the selection mechanisms adopted to fill powerful positions. Moreover, we have seen that, by depressing ODD through the third block variables, size operates as a sort of “equalizer” between KMF and LMF of the same (large) size. The difference is that, while in the former case, nobody would likely complain about having a low ODD, in the latter case it would open a breach in the cooperative spirit. This understanding should stimulate reflections and actions in two directions: (i) wondering whether, in all cases of large size, that scale is unavoidable or if it could be replaced by an inter-firm network “Mondragón-like”, which seems very close to that of the “collaborative corporation” advanced by David Kristjanson-Gural in Chapter 7, and somehow addressed also by Camargo Andres Felipe and Michel Ehrenhard in Chapter 17; (ii) working hard to “neutralize” the size effect by keeping the nine parameters as democratic as possible. This is, of course, the most challenging purpose, because it implies intervening in the real power distribution in organizations, an issue always hard to face, regardless of being capitalistic or non-capitalistic forms.

The future evolution of theory and the emergence of concrete organizational forms will help to understand the conceptual and methodological connections between the nine criteria through the possible uneven clustering of such forms around specific types. Indeed, laws on cooperatives have substantially driven that evolution. Therefore, the recent evolution of laws on cooperatives, social enterprises, and other non-capitalistic forms of organization is showing a marked tendency to remove any legal barriers to building any kind of hybrid forms. On one side, this can be seen as a betrayal of the holy cooperative principles of Rochdale and a weakening of current ICA principles. On the other hand, the relaxation of legal barriers offers the opportunity to let social and economic forces drive morphogenesis free from “artificial” (legal) constraints or enhancements.

The reality of the legal-economic system of many countries was that, during the last decades, of creating a number of hybrid forms, arriving to generate “monsters”, such as Huawei or corporate cooperatives listed on the stock exchange. An effective assessment framework as that described here cannot, of course, interfere directly with that trend, but it could be that a reasonably precise

ODD measure could create a new awareness of the democratic “content” of each form, and thus, it could orient policymakers and, most importantly, cooperative institutions to operate for a better selection of the forms more corresponding to the cooperative spirit.

Limitation and development. As stated at the beginning of this work, this is just a first attempt that needs to be refined and deepened, and perhaps also integrated with more criteria, though an excessive proliferation should be prevented to make the index effective and empirically manageable. In this perspective, it is useful to remark that the new indexes coming from the extant and growing scientific literature on measuring employees’ participation or leadership style should not enter directly into ODD, thus preventing the side effect of inflating it with many new factors. On the contrary, the great richness of information that can be drawn from them is conveyed to better assess the values of the three variables of structural hierarchy: selection mechanisms, power concentration (topological hierarchy), and the degree of reciprocity (dyadic hierarchy). This is very important because what can be taken from organization charts is very limited: confined only to formal relations and too synthetic – lacking direction and weights (relevance).

Besides the operational refinements that can be done to define and formalize the nine criteria, there are two main limitations. One is that the ODD discussed here is bounded at the organizational level because it does not consider the inter-organizational (that is, meso-) and the society/economy (that is, macro-) level. In other words, one can wonder whether external stakeholders, such as groups of suppliers or buyers or various kinds of institutions might be considered. Some might argue (see for example David Kristjanson-Gural in Chapter 7) that some stakeholders have the right to claim the residual (surplus). This idea is even more important in the perspective of social innovations and sustainability, which involve several actors at any (even international) level (see also Carmen Guzman, Francisco Santos, and Lidia Valiente in Chapter 28, and Meredith Degyansky in Chapter 29). This limitation to a single organization’s level can, however, be overcome in the future, by developing an analogous methodological framework aimed at calculating an extended ODD concerning the interaction of each organization with the meso- and macro-level.

The second limitation concerns mostly the criteria/parameters of the third block, because they have been designed by taking objective measures as inputs, such as number of subordinates per each position, number of ranks, etc. However, most studies rooted in management and organization science, and substantially all those rooted in applied psychology, consider only perceived OD and perceived employees’ participation or leadership style. For example, the subjective perceptions of those same “input” variables, such as employees’ participation or leadership style, and their effects on other variables like job satisfaction, organizational attachment, and identification, and even on a perceived OD. Far from my view is the idea that perceptions are irrelevant or might be overlooked, because what people do is largely (often only) influenced by their perceptions and not so much by the real facts. Therefore, perceptions matter. Here it has been proposed to combine the subjective with the objective values to build dyadic and topological hierarchy leaving for future research the hard question of how to accomplish this outcome.

Notes

- 1 I wish to thank Jerome Nikolai Warren for the valuable comments given on the first draft of this work.
- 2 Though old, Mintzberg’s (1979) distinctions of the operating core, where primary functions are performed, and the other four macro-areas are still very useful and informative.
- 3 On this issue see Dow (2003, 2018), Ellerman (1997, 2021), Tischer & Hoffmire, and Chapter 2 by Gregory Dow, Chapter 6 by David Ellerman and Tej Gonza, and Chapter 16 by Tej Gonza, David Ellerman and Kosta Marco Juri. It is worth noting that worker buyouts are the analogous case of the management buyout (see Chapter 16 by Tej Gonza, David Ellerman, and Kosta Marco Juri).

- 4 It is worth noting that, from a Marxian perspective, this is not true because the labor force can be bought like any other commodity. According to Marx and Marxist sociologists, the distinctive trait of capitalism is the separation of labor and labor force and the commodification of the latter. This separation allows mainstream economics and the supporters of neoliberalism to hide under the guise of exchange freedom regulated by job laws, what is essentially modern slavery. Further, that separation is one of the ways in which alienation occurs. I will come back to this point in the last and the conclusive sections.
- 5 Clearly, it is possible that B, in turn, also makes decisions affecting A, so that the asymmetry is reduced, eliminated, or even reversed. We can represent this as $A \leftrightarrow B$, meaning that there is a collaboration between them. The net flow could be even or odd, thus addressing a final balanced (symmetric) or unbalanced (asymmetric) collaboration.
- 6 Actually, this was Simon's view already in the fifties (1957), though expressed with a different jargon.
- 7 In fact, in the technical jargon of network analysis, the Krackhardt index differs from the calculation of the reciprocity degree because reciprocity, meant as the share of symmetric links, is calculated based on the geodesics instead of the original graph.
- 8 Social Network Analysis considers various indexes of centrality at the node level and their corresponding centralization at the network level. One index – degree centrality and centralization – is based on direct links, while the others (betweenness, closeness, reach, eigenvector, and Katz centrality and centralization) are based on the paths (sequences of nodes) involved by each node. They can be differentiated for directed and undirected graphs, and binary or weighted graphs, and the corresponding combinations. See one of the many available handbooks for the mathematical details: Borgatti et al. (2013), Hanneman and Riddle (2005), Newman (2010). To deepen the application of network analysis to the study of cooperatives, see Chapter 11.
- 9 To be more precise, here it is used *Out_Eig*; that is, both eigenvector centrality and centralization are calculated on the out-edges. The reason derives from the idea (discussed above) of looking at organizations as decision networks, where links connecting people are decisions; thus, they have a direction expressing the superior-subordinate (hierarchical) relationship. This logic applies either to direct or indirect relationships alongside a chain (or tree) of sequential decisions.
- 10 In his network analysis of hierarchy, Krackhardt does not consider power concentration, that is, what we call topological hierarchy here. He added to DH – what he calls hierarchy degree – three further indexes: the connectivity degree, the least upper boundedness degree, and the efficiency degree. Here it is not possible to go into more detail, but it is enough to say that, especially in the approximation of all indexes proposed in this first approach to ODD, those three indexes are not necessary.
- 11 This should be called “heterarchy”.
- 12 Bowles and Gintis (1993) agree with this criticism by presenting it in terms of “long” vs. “short side” power, but they share many other aspects of neoclassical economics in its contractualist versions. Therefore, Palermo (2016a) is right to call their view as a “criticism from within” Post-Walrasian Economics. More crucial aspects are those of information asymmetry and the lack of time, financial resources, and skills to run an effective and efficient search for better alternatives on the side of workers. The role of search costs is one of the main points of distance between mainstream economics on one side and Evolutionary and Cognitive Economics on the other side (see Biggiero, 2022).
- 13 The number of links in a collaboration team is $n(n-1)/2$.
- 14 As is well known, this expression indicates the number of subordinates that a superior can effectively coordinate. There are about seven factors that positively or negatively affect it, such as task complexity, skill level, etc. See any standard handbook of organization theory/design, such as Jones (2013).
- 15 Criterion, attribute, or variable are synonyms.
- 16 Here, the word “analysis” refers to the branch of mathematics dealing with continuous functions, limits, and related theories, such as differentiation, integration, measure, infinite sequences, series, and analytic functions.
- 17 Another application concerned the three broad governance mechanisms discussed in the post-Walrasian perspective: network, hierarchy, and market. Besides the implications for that debate, the most important aspects of that paper lie in the criticism of the usual multicriteria decision methods, such as multiattribute utility theory, goal programming, Pareto-efficiency, and DEA (Data Envelopment Analysis).
- 18 Here, the weights do not play the role of enabling substitution rates between criteria, but rather that of enabling concordance and discordance tests. Somehow, they work in the opposite direction: to prevent improper comparisons between organizations that differ too much.

- 19 Some more ideas about this and the “advantage of redundancy”, meant as the opposite of efficiency, can be found in Biggiero (2019). This is indeed a very important point because it can be demonstrated that redundancy is positively related to reciprocity, which, as we have seen, positively affects ODD through the DH index. So, redundancy supports democracy, while efficiency does not.
- 20 It is worth recalling what mentioned in the opening section about complexity science: the research streams on chaos and catastrophe (Prigogine & Stengers, 1984; Thom, 1972, 1980) has demonstrated that many third-order functions, even if with only one variable, might shows points of discontinuities. Therefore, even in the case of pure parametric changes, discontinuities might appear. See the following debate and the applications to economics and management: Biggiero (2001), Eve et al. (1997), Guastello (2002), Parker & Stacey (1994), Priesmeyer (1992), Richardson (2005), and Stacey (1991, 1992, 1993, 1995).
- 21 What Dow calls inalienability, Gonza et al. (Chapter 16) call non-transferability of property rights.

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