Research Article

Effective Organization is a System of Four-Dimensional Evolutionary Coordination

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This paper develops a theoretical lens of evolutionary intelligence ("EI") that establishes a generalizable systems framework of both effective human organization and strategic resilience. Grounded in practice, EI was serendipitously conceived in hindsight via the microhistory research method. Evolutionary coordination mechanisms are increasingly needed, yet no theory of organization or strategy has incorporated the multidimensional competition complexity that evolution requires. EI is developed to fill this gap via a four-by-four concentric typology of independent dimensions of organization that continuously interact, conflict, and integrate with each other in a multicyclic evolutionary process narrative. The well-known DIKW pyramid is effectively extended into a fully evolutionary strategy framework, where actions generating raw data are progressively transformed into information, then knowledge, and then finally into the new concept of organizational wisdom. The core theory contribution of this paper is to present a compelling four-dimensional multicyclic process narrative that can credibly internalize all core evolutionary mechanisms within a single organization. Previous evolutionary theory lenses applied to both Organization & Management ("Organization") and Strategic Management ("Strategy") rely on at least some core Darwinian evolutionary mechanisms being outside of the organization – particularly the strategic competition for resources. As a result, they can only attempt to explain evolution at the industry or higher level of population analysis. By contrast, if evolution itself can be "organized" entirely within a single organization as EI describes, then that would arguably imply a radical redefinition of "effective organization" as a management concept.

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 doi.org/10.32388/LD2NPT

1. Introduction: Can Evolution be Organized?

H. Aldrich et al. [1], Durand [2], and Manral [3] have arguably produced the most comprehensive literature reviews on the explicit integration of biological evolutionary theory with the Organization and Strategy literatures. However, unlike EI, no theoretical lens in their reviews or original theorizing incorporates all Darwinian evolutionary lifecycle mechanisms within a single organization or proposes how this could even be possible. Evolution is nearly always assumed to occur at the industry level or higher, which makes competing organizations the default unit of analysis, not competing strategies within a single organization [4][5][6].

Bundles of routines and processes or resource "competences"/capabilities within organizations are sometimes implied as the units of evolutionary analysis [see, e.g., [1], p. 30, [2], pp. 69-72, [3], pp. 267-270]. But resources and routines, by definition, do not actively compete for survival to cause an organization to evolve. They are just passively leveraged as scarcities to make the organization as a whole more or less competitive. In short, only strategies ultimately compete, and scarce resources are what they compete for.

H. Aldrich et al. [1], Durand [2], and Manral [3], along with those they cite, fixate almost universally on the oversimplified "variation, selection, retention" ("VSR") model of evolution, which explicitly embraces thoroughly invalidated theories of evolution too. For example, "selection" conveniently embraces Lamarckian top-down management directives and Herbert Spencer's teleological "evolutionism". As a result, the VSR model completely omits the costly necessity for continuous, disruptive strategic competition and death *within* an organization if fundamental evolution – rather than superficial adaptation – is ever going to occur *within* that organization.

Also, unlike EI, their usage of "variation" conveniently ignores the core evolutionary lifecycle distinction between genotype and phenotype variation. This is likely because it was also ignored by Darwin (but not modern epigenetic evolution), since the natural biological process of transforming genotype variations into competing phenotypes is mostly deterministic. It is much more difficult for "variation" to transform "naturally" within an organization. An organization's intangible "genotype variations" from "recombinations" and "mutations" (i.e., as new ideas and innovations in EI) must deliberately be nurtured and mature without dictatorial intervention (i.e., as incubations and collaborative initiatives in EI). Sufficient maturation is necessary so that they can compete as independent tangible "phenotype variations" against incumbent business strategies. Unlike in biology, the evolutionary lifecycle processes analogous to nurturing and maturation are anything but deterministic in organizations.

Finally, both H. Aldrich et al. [1] and Durand [2] repeatedly fail to pinpoint which units of analysis are actually competing for scarce resources, and thus what population is evolving when discussing VSR and "retention" in particular. Manral [3] at least acknowledges that strategy must be dynamic too, not just capabilities. However, he leaves the reader in the same state of confusion by making an artificial distinction between competition amongst firms and competition amongst "the population of strategic actions taken by all firms in the population" (p. 245). He never proposes any means by which strategies can openly compete *within* a single organization, and he explicitly excludes from this competition all potential strategic actions not yet taken. By contrast, as discussed below, EI makes it abundantly clear that it is always an untamed, naturally diverse population of all potential strategic alternatives that must continuously compete for scarce resources within a single organization. Again, this is so that an organization can truly *evolve*, not just superficially adapt within the narrower range of its existing capabilities.

The core theory contribution of this paper is therefore to offer EI as an alternative evolutionary systems framework and theoretical lens for effective long-term Organization and Strategy. It is "effective" because it can credibly internalize all core evolutionary mechanisms within a single organization via four distinct dimensions of coordination. The microhistory research method [per [7]] is applied, since that is implicitly how the framework was originally conceived. The EI framework and its four-dimensional ("4D") coordination typology are then described as the results of applying this method.

To help ground the framework firmly within management practice from where it was conceived, all four gaps of the Balanced Scorecard ("BSC") Strategy framework are also visually exposed and explained by the EI framework. These are the same four gaps that the most universal functional organizational structure is designed to manage in practice. Also highlighted is how the dynamic and practical EI process narrative represents a radical transformation of the static and unusable DIKW pyramid. Interestingly, the four DIKW components also map directly to the four core lifecycle mechanisms of evolutionary theory and EI. That means a total of five independent and multidisciplinary frameworks, theories and practices – EI, BSC, DIKW, the functional organization structure, and evolutionary theory – all integrate together via the same four fundamental dimensions of organization and coordination. In addition, EI's linchpin enabling capability of *organizational wisdom* is discussed as the critical missing link in fully internalizing all core evolutionary lifecycle mechanisms.

We also get a glimpse into the extreme generalizability of EI in a final discussion of how it can be applied to any level of analysis, from the individual up to the entirety of global society. This ancillary discussion

was added primarily to highlight the potential scope of future research opportunities and to complete the introduction of the framework.

In summary, it is strongly argued that any effective organization with high strategic resilience must internalize all core evolutionary lifecycle mechanisms within a four-dimensional multicyclic system. This is where competing perspectives, directives, alternatives, and priorities over scarce resources are coordinated. Perhaps most important, the independent and diverse competing priorities must be continuously integrated via organizational wisdom in order to respond proactively to an often-disruptive sociotechnical economy. In other words, any truly evolutionary organization seeking long-term survival and prosperity must internally mirror the much larger evolutionary systems of multidimensional competition and integration in which all organizations operate.

2. Methods

Microhistory, as thoroughly described by Hargadon and Wadhwani [7] is the primary method of theorizing applied in this paper. More specifically, my lived experience has been reflexively extended from the microspatial and microtemporal individual level to the more macrospatial organization level and macrotemporal evolutionary level in order to develop the EI framework. This development process occurred over a period of at least two decades, and it is based (in hindsight) on at least seven microhistorical extensions from my unusually diverse lived work experience and educational background.

The first four microhistorical extensions are from my three decades of very distinct senior management roles. Each role maps to a quadrant of EI, discussed in detail below, and each quadrant tends to leverage a distinct database structure and coordination complexity. As a serial CFO, my work revolved around ERP systems leveraging normalized, row-linked transactional tables to facilitate the automation of 1:1 activities and workflows (the “Automation Intelligence” quadrant of EI). As a serial CIO, my work revolved around denormalized, column-based aggregation tables to facilitate the generation of information from raw data via 1:n data integrations (the “Business Intelligence” quadrant of EI). As a General Manager and serial team leader, my work revolved around unstructured data, knowledge, and roles that must be coordinated in n:n fashion to generate new knowledge from all available information and individuals (the “Collective Intelligence” quadrant of EI). And as an FP&A lead application developer for over 25 years, my work revolved around cell-based multidimensional cubes that integrate and aggregate data across n:n:n and higher dimensions to facilitate decisions (the “Decision Intelligence” quadrant of EI). More than any

other role, this last one ingrained into me the critical ability to see the world and all its human variables through the lens of increasingly complex multidimensional integration and coordination. This is how four distinct career roles provided the microhistorical foundation and impetus for all four quadrants of EI coordination complexity *and* all four dimensions of organization.

The fifth microhistorical extension from my lived experience is simply being old enough to have a living memory of the very beginnings of the PC, Web1, Web2, and Web3 eras. For example, I can acutely remember walking from client to office to client in downtown Toronto on my first career job at Peat Marwick Thorne (now KPMG), just after the beginning of the PC era. I lugged around a large audit bag filled with heavy files and working papers, along with another large bag holding my company-issued Macintosh box computer with a tiny 9-inch screen. All the while, I felt immensely empowered by my new "mobility" in having this massive "second brain" that I could now carry along with me. It was similar to the feeling projected by the protagonist in the era-defining Macintosh 1984 super bowl commercial [8]. As hinted at above and elaborated upon in forthcoming research, each ICT, AI, and Web era is definitively associated with a very distinct leap forward in humanity's multidimensional connectivity and coordination capabilities. For those who lived through these eras, especially the collective and personal excitement of the technological leap that launched each era, those memories of disruptive change on a global scale are indelible. These pivotal historical experiences further inspired my insight into the increasingly multidimensional coordination complexity of human organization, since each era also maps directly to a quadrant of EI.

The sixth microhistorical extension from my lived experience includes over 25 years of direct and indirect M&A involvement in the technology industry, buying multiple software companies every quarter. Our obsessive M&A focus was on vertical market software companies with long-term survival and recurring revenue prospects – so much so that the goal was always, "a holding period of forever" – as the founder often stated, quoting Warren Buffett. During my tenure, no acquisitions failed, and only one out of about a thousand was ever resold (and that was under duress), so the goal was achieved. Unfortunately, the business model of acquiring extremely niche yet industry-dominant software companies facing very low customer attrition – and hence very slow or almost nonexistent evolutionary pressures – is not generalizable. However, its success is doubtless what helped to catalyze and inform my quest to understand how organizations could escape the seeming inevitability of evolutionary maladaptation and failure per organizational ecology theory.

The seventh microhistorical extension from my lived experience is related to education – not so much more recently, but rather to my undergraduate B.Sc. degree nearly 40 years ago specializing in Zoology and (nearly) majoring in both Economics and English Literature. That multidisciplinary education, along with a core focus on evolutionary biology within Zoology, has ironically had perhaps the greatest impact of all due to EI's roots in evolutionary theory.

One vivid memory was spending the entire summer as a meagerly paid research student collecting data underwater on the differential mating strategies and maturation pathways of bluegill sunfish for hours on end every day, swimming in a wetsuit between coastal mating sites, starting at the crack of dawn. We documented the behavior of some male fish who sexually developed much faster than normal parental males. They spawn as juvenile "sneakers", then later as "satellites" via female mimicry. This distinct "cuckolder" variation of males is driven by epigenetics, and the ratio of parental males to cuckolder males is environmentally driven to maintain higher levels of diversification for evolutionary resilience. That experience helped to inform EI's added emphasis on "diversification" as a distinct (i.e., epigenetic, post-genetic deviation) component of evolutionary variation. This is due to its role in increasing the competitive phenotypic diversification of existing genetic deviations (i.e., as prototyped "incubations" and then maturing "collaborations" in EI terminology).

Another vivid memory from my evolutionary biology education was the smell of formaldehyde after dissecting animals for weeks on end in a comparative anatomy course. However, an even more vivid memory from that course was taking the professor's anxiety-inducing "bell-ringer exams". We had seconds at each exam station to identify each pinned bone, muscle, blood vessel, etc. in animals like horses, armadillos, turtles, and other strange creatures, almost all of which were never even dissected in the lab! That is when the extensibility and power of evolutionary logic became indelibly clear to me. Despite being separated by millennia, the fascinating evolutionary connections between such disparate animals were surprisingly easy to see – especially in light of the initial shock of seeing all those strange and unfamiliar animals that we were being tested on.

In addition to microhistory, the interdisciplinary research method is clearly also being applied to integrate Organization and Strategy with the mechanisms of evolutionary theory. The latter has a long and well-established history of interdisciplinary generalizability [9][10][11][12][13]. As a result, the primary epistemological perspective being applied here is radical structuralism due to the paper's fundamental structural challenges to both Organization and Strategy.

3. Results and Analysis

The EI framework is introduced as the result of reflexively and serendipitously applying the microhistory method to extend my unique lived experience to the enduring context of all human organization. Definitions, along with EI's four dimensions of coordination, are introduced. Next, linkages between EI and four other frameworks and theories are established and analyzed. The subsequent Discussion section then focuses on how EI internalizes all four core (and eight total) evolutionary coordination mechanisms within a single organization, as well as on why this coordination is so difficult. The linchpin enabling capability of organizational wisdom is also discussed, along with why EI represents a radical transformation and upgrade of the DIKW pyramid. Finally, as a further stimulus for future research and to complete the introduction of the framework, EI is proposed as a versatile theoretical lens for generalized intelligence evolution.

3.1. Introducing the EI Framework

The process narrative that EI diagrams in Figure 1 is purely a descriptive organization framework or lens, not theory per se on its own. As a consequence, the concepts within it should generally all be understood as commonly defined. Moreover, all connections between the process nodes should generally be self-evident to any management practitioner working within each of the four EI quadrants. That is because this process narrative was developed over a period of two decades for personal practitioner use and curiosity only, without any intention to apply it theoretically until more recently. In effect, it is the serendipitous end result of an unwitting application of the microhistory research method.

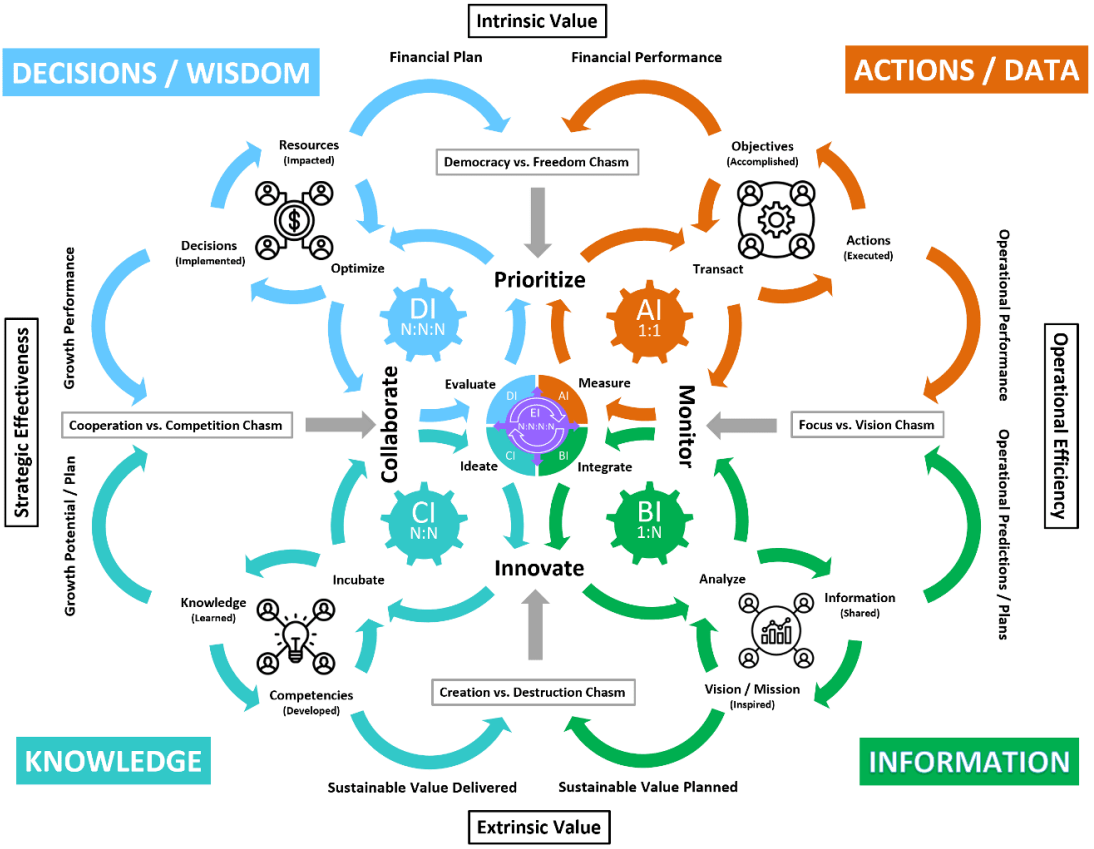

Figure 1. The EI Framework

EI is introduced here as a robust process framework and theoretical bridge between the myopic Organization and Strategy perspectives and the broader systems theory perspective to describe and explain coordination in an evolutionary context. As such, EI can also describe organizational coordination at societal-scale. In fact, EI can potentially be applied to any level of analysis without any boundary conditions, from the single individual (or multiagent system) to all of humanity. Such extreme generalizability implies significant versatility and future applicability.

3.2. Definitions

Some key concepts related to the EI framework should be introduced first, not so much to redefine these common terms, but rather to reframe them from a single organization perspective to a systems perspective.

EI more specifically defines *organization* as "a system of four-dimensional coordination", and it is "effective" insofar as it is "evolutionary in response to a changing environment". *Organizational*

democracy (“OD”), defined by EI in short form as “collective control” (derived etymologically from “people-ruled”), logically just implies “collective strategic coordination”. That is because *coordinate* etymologically just means “co(llectively)-order”, as in “collectively prioritize”. So OD implies a consistently coherent prioritized integration between and across all relevant organization dimensions. This is logically equivalent to the ultimate multidimensional goal of “integrative unity” that Mary Parker Follett so frequently spoke of [see, e.g., [14], p. 192].

Likewise, *control* is defined by EI as “majority decision authority over prioritization”, which must logically be either collective or dictatorial in nature. Therefore, all forms of Board representation, post-decision approval, or participatory influence without direct control over prioritization authority are explicitly excluded from the definition of OD discussed herein. This includes industrial democracy, workplace democracy, unions, co-determination, etc., since none of these permit sharing, let alone collective control, of prioritization authority. Related to control is *organizational freedom*, which is defined as “dictatorial control over one’s *tactical* actions” to emphasize its explicit scope. Notice how it diametrically contrasts with the collective control of democracy over *strategy*, which is simply “a plan to create value”, both intrinsic and extrinsic to an organization [15].

To bring these last two concepts together, *tactical* actions fulfill existing role responsibilities *within* teams, which, in turn, are driven by the *strategic* plan and its resource allocations *between* teams. Therefore, democracy is fundamentally a strategic control concept, and freedom is a tactical control concept. This is a key distinction in the EI framework, particularly at the Prioritize apex node, where the strategic Decisions quadrant diverges from the tactical Actions quadrant. In traditional Organization theories, strategy is always controlled dictatorially by shareholder agents called *management*. However, in an evolutionary system, strategy is controlled and evolves collectively via multidimensional coordination, which is what EI visualizes.

Another key term used often below is *directive*, defined herein as “a purpose or desirable direction – not necessarily a final destination – against which alternatives are evaluated and prioritized.” This term is very distinct from *criterion*, which is more of an input filter applied to alternatives *before* the Evaluate EI process node. It is also distinct from *objective*, which is more of a final destination output filter or resource constraint applied within the Optimize EI process node *after* the evaluation and prioritization of alternatives.

Finally, a *stakeholder* is broadly defined herein not as a categorization of individuals like in traditional Organization theories, but as “a specific role *within* individuals that is the direct or indirect recipient of

the net benefits (or costs) from organization". Tying back to the prior definition, all net benefits are directed, deliberately or by default, towards stakeholders. Since every human being comprises multiple stakeholder roles, all those roles and how they are personally weighted constitute each individual's unique personal *profile of directives*. Individuals are likewise considered unique due to their free will, unique lifetimes of experience, education, ethnic or cultural identities, etc. These attributes, among others, define their independent *perspectives,* even if they might hypothetically share the exact same profile of directives.

3.3. The Four Dimensions of Organization and Coordination

As for the organization dimensions repeatedly alluded to above, there are always four, as described in Table 1, and they correspond exactly to the 4X4 typology that underlies the framework. This typology is easier to see in Figure 2, which more clearly abstracts EI's multidimensional typology away from the underlying process narrative discussed in Figure 1. Note how all the dimensions connect and mutually integrate in reality, so every process node in the framework (as pinpointed by the 20 large dots in Figure 2) straddles at least two organization dimensions. The four critical "coordination nodes", which are the filled dots in Figure 2 discussed below, actually straddle three dimensions.

Dimension ID	Dimension Name	Answers Key Question	Strategic or Tactical	Dimension Synonyms (4 Ps)	Dimension Deliverables (4 Ps)
				----- Visualized as P1 to P4 in Figure 2 -----	
E	Employees / Effort or Evaluators	Who?	Tactical as Employees / Effort or Strategic as Evaluators	People (when Tactical) or Perspectives (when Strategic)	Performance
D	Directives	Why? (i.e., for Whom?)	Tactical (for Actions) or Strategic (for Decisions)	Purpose(s)	Prosperity
A	Alternatives	What?	Strategic	Preferences	Products
R	Resources	How (much)?	Strategic	Property	Platform (i.e., capital, land, and ICT for coord.)

Table 1. The Four Dimensions of Organization and Coordination (4 Ps)

The four radial dimensions are mnemonically known as the "4 Ps": 1) People/Perspectives, 2) Purpose(s), 3) Preferences, and 4) Property, from the outside in. The slightly more specific equivalent names and one

letter IDs for these organization dimensions are Employees/Effort /Evaluators (E), Directives (D), Alternatives (A), and Resources (R), respectively. An easy way to remember them is to think about the dimensional question that each of them is asking while coordinating with the other dimensions, in the same respective order: "Who?" (E), "Why?" (D), "What?" (A), and "How?" (R). Since each dimension can have different names and both generic and dimensional meanings, their names will be followed by their dimension IDs (E, D, A, or R) in parentheses (if not otherwise clarified) when any EI dimension is invoked going forward.

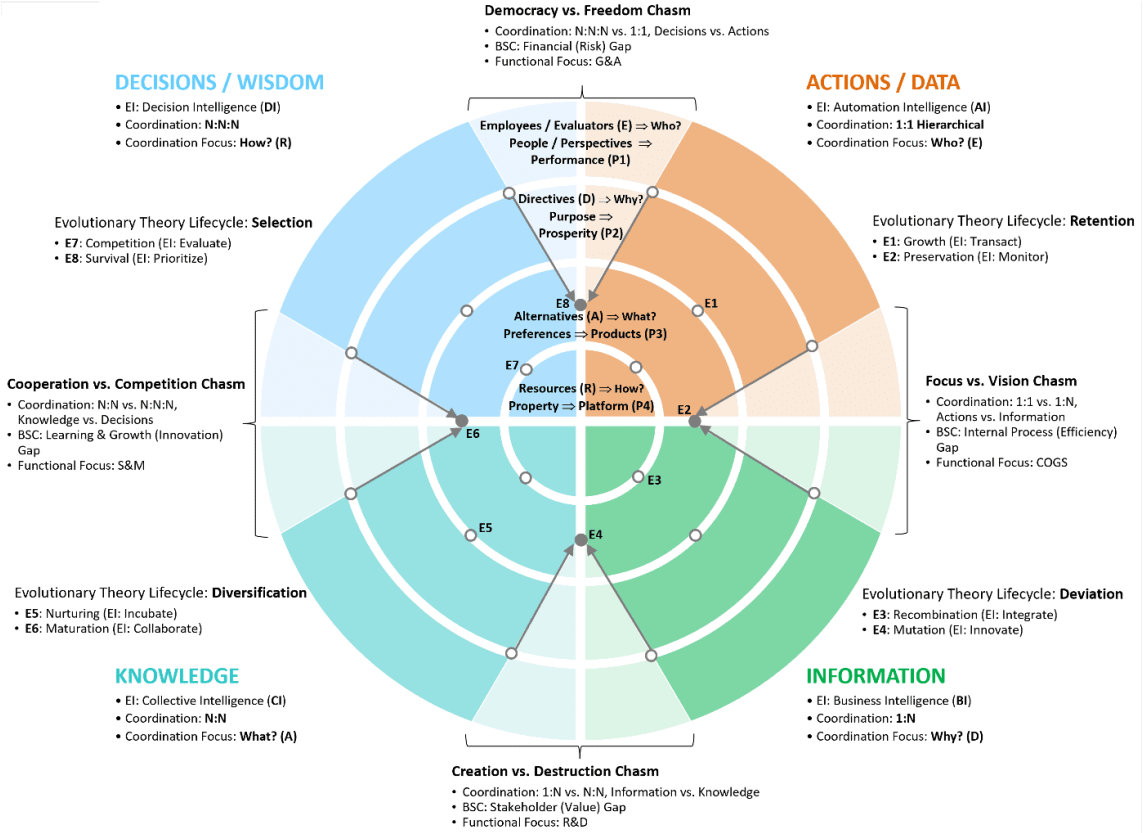

Figure 2. The 4X4 Typology Underlying EI and How it Integrates with Four Other Theories and Frameworks. *Note how each dot corresponds to one of the 20 process nodes of EI in Figure 1. The four filled dots correspond to the four critical coordination nodes, clockwise starting from the right: Monitor, Innovate, Collaborate, and Prioritize. The four chasms likewise correspond to the four gaps of the Balanced Scorecard (BSC) and the four functional foci of management. The four DIKW categories are noted in each quadrant, as are the four core (and eight total) evolutionary lifecycle mechanisms.*

doi.org/10.32388/LD2NPT

Practitioners and scholars of Organization and Strategy are naturally more familiar with the four physically observable dimensional outputs of an organization than they are with the abstract dimensions that deliver those outputs. So that is yet another way to remember the distinctions between the four dimensions, once again via a mnemonic "4 Ps" format: the people/perspectives (E) dimension delivers *performance* (by employees, as the "Who?"); purposes (D) deliver *prosperity* (for stakeholders, as the "Why?"); preferences (A) deliver *products* (per the strategic plan, as the "What?"); and property (R) delivers the *platform* (for production and coordination, as the "How?"). For modern organizations, "platform" would include all the tangible and intangible productive resources (including land, if applicable) that an organization uses to add value from contributed capital or debt, as well as all the ICT necessary for coordination (i.e., organization intelligence).

At a high level, the four radial dimensions are easier to see in Figure 2 via the four concentric circles. However, even in Figure 1, they are quite distinct via 1) the four team icons, signifying people (E) + purpose(s) (D) driving prosperity (D, on this circle's inner side) and performance (E, on this circle's outer side); 2) the four gear icons, signifying motivational preferences (A) + purpose(s) (D) driving production (A, on this circle's inner side) and prosperity (D, on this circle's outer side); and finally, 3) the central production and ICT coordination platform (i.e., the capital resources, R) as the hub of the process narrative driving production (A, on the hub's outer side). The ICT hub is also where transaction data, information, knowledge, and decisions (i.e., the four forms of human preferences, A) are captured and extracted via the four process nodes called Measure, Integrate, Ideate, and Evaluate, respectively.

Likewise, the four radian quadrants map (clockwise from the top) to the same four E, D, A, and R dimensions, with each quadrant's process nodes focusing on the same respective question and the same respective "P" out of the "4 Ps". What distinguishes the radian quadrants, however, is how they categorize the multidimensional coordination complexity required in each quadrant, from 1:1:1:1 in the first quadrant to at least 1:n:n:n in the fourth quadrant, where the dimensions are always notated in reverse R:A:D:E order. Either a "1", "n", or "N" value is specified for each dimension to indicate the number of independent nodes coordinating in that dimension. A "1" indicates dictatorial coordination for that dimension, and a little "n" roughly indicates organization (or team) scale collective coordination (e.g., all "n" employees (E) or all "n" strategic alternatives (A)). By contrast, a big "N" roughly indicates societal-scale collective coordination for that dimension (e.g., potentially all "N" citizens or profiles of directives (D) in an economy). Since coordination complexity naturally progresses in the E to R direction, prefixed dictatorial

dimensions with a “1” are generally dropped for the sake of notational simplicity. So, 1:n (D:E) is the same as 1:1:1:n (R:A:D:E), and N:N is the same as 1:1:N:N, always in the same R:A:D:E order.

At one extreme is 1:1:1:1 traditional hierarchical coordination, which is non-dimensional (i.e., zero-dimensional), since individual managers, not entire dimensions, are coordinating via command-and-control over their staff within the same E dimension. Likewise, 1:n or 1D coordination, like all “dimensional coordination”, is counterintuitively still “multidimensional” in the sense that all n employees in the E dimension are coordinated by at least one directive (or rules-driven dictator) in the D dimension. Only when all members of a dimension (n or N) are coordinated by or with another dimension is another “D” added, i.e., from 1D up to 4D. Full four-dimensional (“4D”) societal-scale coordination (N:N:N:N) will be addressed in a forthcoming paper, since that involves a significant future ICT component and is not necessary to achieve the key goal of 3D coordination that drives both OD and evolution addressed in this paper.

But how can we be confident that full coordination within an organization can always be captured by four, and only four, independent dimensions? Well, we could fish for more by asking the other “W” questions of “Where?”, “When?”, and “Which?”. However, all these answers are subordinate to each of the dimension questions as tactical components or dependent attributes of them, so they are not independent dimensions of strategic coordination.

We can also try to map the four dimensions to a recent OD literature review by Battilana et al. [16]. The authors coincidentally concluded that OD is “a multidimensional concept” with “three primary dimensions of organizational democracy” that need to be coordinated by the individuals who comprise the organization: “greater decision rights, democratic culture, and employee ownership”. These four dimensions (beginning with the prerequisite people (E) dimension) correspond exactly to the four E, A, D, and R dimensions of the EI framework, respectively. In particular, “decision rights” are defined by the authors as incorporating collective preferences over alternatives (A), and “democratic culture” is defined as the diversity of “norms and values that support democracy in organizations”. The latter is an unambiguous reference by Battilana et al. [16] to the purpose(s)/directives (D) dimension of EI. And, of course, “employee ownership” maps to the R dimension.

We also have strong support for a four-dimensional framework from the sage words of Mary Parker Follett, who was arguably the first scholar to theorize deeply about OD as an integrative process of multidimensional coordination. She stated, “The chief job of business is to find a method for integrating the interests of these three classes.” The classes that she lists are, “1) workers…2) consumers, and 3)

investors", the second of which she then broadly merges with all other "personnel relations" beyond workers, since the term "stakeholder" was not in common usage in 1932 [[14], p. 93]. Given that "interests" is a synonym for preferences/alternatives (A), the four dimensions of coordination that she lists correspond exactly, once again, to the same E, D, A and R dimensions of the EI framework. Even more stunning, in her final published essay, Follett numerically lists her "four fundamental principles of organization". Each principle begins with the word "coordination" and each sequentially refers to the same E, D, A and R dimensions of the EI framework that need to be coordinated, according to how she defines and thoroughly describes those dimensions in the subsequent pages [[14], pp. 297-305].

There is also strong support for the four-dimensional framework from the practice side after extensive attempts to reform the profit-maximizing corporation. As Luyckx et al. [17] lament in their review of such attempts, "What makes such selective approaches to reform potentially ineffective is that purpose, participation and ownership of the profit-maximizing corporation seem to be interlinked and configured into a coherent, stable whole that resists reform." In essence, they are explicitly confirming that one cannot fundamentally reform any organization of employees (E) without simultaneously reforming the coordination of the three interlinked organizational dimensions of purpose(s) (D), preferences (A), and resources (R). That is because any one of these dimensions that is not collectively coordinated within the organization, such as ownership control over resources (R), will effectively have dictatorial control over the organization. This is what causes a corporation to be beyond piecemeal reform.

As additional support from the financial practice side, it is likely not coincidental that the most universally comparable financial statements used by investors tend to specify four basic categories of operating costs, even if they are not always broken out separately (e.g., due to CEOs often being heavily involved in key account sales): COGS, R&D (when materially significant), S&M, and G&A. The EI framework actually integrates this 4D functional organizational structure, as explained below and visualized in Figure 2.

Therefore, a four-dimensional R:A:D:E coordination view of organization appears to be both dimensionally complete and well supported by both literature and practice.

However, a 4D framework should also be subjectively, not just objectively, compelling. To demonstrate how intuitive the four dimensions of organization are, simply imagine enthusiastically exhorting a group of friends (or even children), "Let's organize!", without saying anything more. After some perplexed silence, their next questions in sequential order would logically have to be paraphrased as follows: 1) "Why?" or "For whom?" or "For what purposes?" (D); and then 2) "What alternatives (A) could we pursue

to achieve those purposes (D)?"; and, finally, 3) "How much resources (R) should we invest in each of those alternative ideas (A)?". At each progressive dimensional stage (D, A, and R) beyond the universal starting point of a group of people (E), increasing multidimensional integration is required to achieve collectively coherent coordination. That is all that organization really is, and it is always the same four independent and intuitively obvious dimensions being coordinated, either collectively or dictatorially.

Finally, there is also a very simple and intuitive argument based on Occam's razor. Why would we need a less parsimonious framework when only four dimensions of organization are required to construct a fully cyclical evolutionary process narrative for organization intelligence?

3.4. Linking EI to the Balanced Scorecard, Functional Organizational Structures, and Evolutionary Theory

One can see from the high-level view in Figure 2 that the outermost people (E) layer of the EI framework corresponds directly to the well-establish Balanced Scorecard ("BSC") and its performance "gaps". This is the most widely adopted management strategy framework in history [18][19]. The four dimensions of the EI framework make it visually obvious why there have always been four (and only four) major strategy levers that any organization can manipulate within these gaps to add value. It is in managing these gaps effectively between the four intelligence quadrants where the people (E) dimension ultimately drives performance (i.e., organizational effectiveness). That is why there tends to be four distinct functional organizational structures (and operating expense categories) specializing in one of these four gaps related to the products or services of a business: 1) COGS to track production costs in gap #1 between the AI and BI quadrants, 2) R&D to track the costs of innovating new products in gap #2, 3) S&M to track the costs of selling and marketing the products in gap #3, and 4) G&A to track the general costs of organizational administration in gap #4 (at the top).

Figure 2 also shows exactly how and where the four core (and eight total, labeled E1 through E8) evolutionary lifecycle mechanisms are deeply integrated within the overall process narrative. Interestingly, Mary Parker Follett also emphasized the need for a management theory based on the Darwinian theory of biological evolution over 100 years ago. She did not propose a process narrative or full theoretical framework like EI. However, she made the explicit connection between evolution and organization by describing the core evolutionary mechanisms and how conflicts need to coordinate across the four dimensions of organization to form an "integrative unity" *within* a single organization; she also emphasized how this "evolution of a collective will" [[20], p. 274] must not be linear, but rather

"continuous", "reciprocal", "emergent", and "circular" – again, exactly like EI [14, pp. 188, 198-201, 268, 297-304, 21, pp. 72-74].

One salient feature of EI is how it clearly distinguishes between genotype "deviation" nodes (i.e., biology's recombination + mutation = EI's Integrate + Innovate in Figure 1) and phenotype "diversification" nodes (i.e., biology's nurturing + maturation = EI's Incubate + Collaborate). This distinction is critical, since natural selection acts on phenotypes (the observable expressions of genes), not on genotypes. To conflate all four of these process nodes simply under the higher-level evolutionary mechanism of "variation" entirely omits the relevance of both the natal/infancy (Incubate) stage and the adolescent (Collaborate) stage of the evolutionary lifecycle. These two stages enable a new genotype (via EI's Integrate and Innovate nodes) to be nurtured in protected isolation (via EI's Incubate node), and then to reach a sufficient stage of maturation and phenotype expression (via EI's Collaborate node). Only then can a new product or prospective start-up business compete independently and fairly on equal terms.

The "maturation" lifecycle process in evolution is defined here as a combination of cooperative rivalry and progressively increasing competition. Eventually, the maturing new phenotype must stand on its own in a naturally harsh external environment, where there are ultimately violent competitions for survival. This maps to the paradoxical "Cooperation vs. Competition Chasm" of EI's Collaborate coordination node, as discussed in more detail below.

In biological evolution, bypassing these two major lifecycle stages of nurturing and maturation generally poses no significant explanatory issues. That is because full phenotype expression is mostly deterministic and not subject to nonrandom differential selection pressures before maturity. By contrast, organizations behave much more like laboratories cultivating genetically modified organisms (i.e., new products and start-ups). As a general rule, selection pressures against spontaneous new organizational "genotypes" are often discriminatory and severe before they can even be incubated, let alone mature enough to achieve "full phenotype expression".

As this laboratory simile emphasizes, a breakdown in evolution occurs when the naturally integrative flow of evolutionary coordination is thwarted somewhere along its nonlinear pathway. According to Figure 2, the most vulnerable failure points are clearly at the inter-quadrant performance gaps, where coordination is most prone to conflict. These are the four critical "chasms" and their related coordination nodes: Monitor, Innovate, Collaborate, and Prioritize. The four chasms are not just where the actual vs. planned performance gaps of Figure 1 are reactively integrated and improved. These are where conflicting perspectives (E), directives (D), alternatives (A), and ultimately resource (R) allocation

priorities, respectively, are coordinated to achieve Follett's "integrative unity". At each of these four nodes, influence vectors from three different EI process sources and across three different dimensions (E, D, and A) between two different intelligence quadrants need to be coordinated. This implies a very difficult three-dimensional ("3D") coordination requirement at each coordination node.

3.5. Linking EI to DIKW via its 4X4 Coordination Typology

Stepping back, at a higher level, one can immediately see that the underlying purpose of the EI process narrative in Figures 1 and 2 is to describe the detailed, evolutionary transformation of Actions (which generate raw Data) into Information, and then into Knowledge, and finally into Decisions impacting Actions once again. For example, per the BI quadrant's process narrative, after transactional Data is integrated, it is explored in innovative ways along with divergent new ideas (from the CI quadrant) to discover new information; and then all of that structured and unstructured information is leveraged together to extract and share as much relevant Information as possible via the Analyze node. Moreover, in each quadrant, Figure 1 drills down at least a couple of more process levels:

1. Actions executed accomplish financial Objectives and drive both Financial Performance and Operational Performance;
2. Information shared drives Operational Predictions / Plans (automated via predictive analytics) and inspires the organizational Vision / Mission to generate specific Sustainable Value deliverables desired by stakeholders;
3. Knowledge learned enhances the organization's Growth Potential / Plan and develops Competencies to deliver that Sustainable Value; and
4. Implementing Decisions drives Growth Performance and continually impacts the Resources upon which the Financial Plan is updated.

All of these descriptive processes should be self-evident to any management practitioner responsible for coordinating within any of these quadrants or chasms. In other words, these node connections are just descriptive of common practice, not theory. It only becomes theoretically interesting once these isolated strings of nodes are puzzled together to describe an entire evolutionary system.

As one can see, this process narrative connects quite obviously with the well-established and common-sense DIKW pyramid [22][23]. Of course, EI is the only framework that includes a non-linear, evolutionary, or multidimensional depiction of these DIKW categories via a multicyclic process narrative [see, e.g., the

DIKW literature reviews by [24][25]. Therefore, it needs to be at a far higher level of granularity and descriptive complexity, particularly with respect to how the four intelligence quadrants all integrate together via increasing multidimensional coordination.

In the first Automation Intelligence ("AI") quadrant of EI, organization intelligence is focused on efficiency and scale, with coordination of tactical activity happening 1:1 between individuals (or machines) and their productive efforts. AI, as it is defined here, fully encompasses and embraces the popular concept of "artificial intelligence", but in this quadrant it only automates 1:1 coordination.

In the second Business Intelligence ("BI") quadrant, organization intelligence is operationally focused on integrating disparate data from the AI quadrant to convert it into centralized, structured information (an n Þ 1 process) and then distributing that centralized information to n individuals. Hence its 1:n coordination complexity.

In the third Collective Intelligence ("CI") quadrant, organization intelligence is focused on knowledge sharing and divergently directed innovation. This is an n:n coordination process between n diverse and independent employees (E, the "Who?" question) and their n independent profiles of personal directives (D, the "Why?" question), where they each pursue the "What?" (A) question. Strategically, the objective here is to generate ideas and then nurture the innovations via incubation and collaboration in n:n fashion so that they can mature into fully-fledged organizational alternatives (A).

Once this happens, the alternatives (A) can competitively coordinate against one another in the fourth Decision Intelligence ("DI") quadrant to definitively answer the "How (much)?" question. This is where organization intelligence is focused on transforming collaborative information and knowledge into decision priorities. Those relative priorities from evaluators (E) are then used to derive a collectively coordinated and optimized funding allocation to the highest value alternatives (A) based on the organization's available resources (R).

In a democratic organization, DI would be a fully 3D strategic coordination process, where preferences across n-scale alternatives (A) by n-scale independent evaluators (E) with n-scale unique profiles of personal directives (D) must be competitively coordinated. This implies a 1:n:n:n network of coordination complexity across the four R:A:D:E organization dimensions. The initial "1" indicates that all resources (R) are still effectively controlled by a single, dictatorial legal entity or "shareholder role", which is an important point of distinction that drives shareholder primacy.

There is also an important distinction between strategic coordination (the focus of this paper) and tactical coordination. The latter only requires two-dimensional 1:1:n:n coordination at most, since only effort/employees (E) must sometimes coordinate with directives (D). That could happen, for example, when an *intrinsic* value like profit conflicts with an *extrinsic* value like customer satisfaction, and employees (E) have been empowered to override short-term profit maximization on certain tactical decisions. Strategic allocations of resources (R) cannot, by definition, be impacted by tactical decisions, since all strategic alternatives (A) have already been established, with tactical budgets and roles already assigned to achieve them.

4. Discussion

EI is an alternative evolutionary systems framework and theoretical lens for effective long-term Organization and Strategy that can credibly internalize all core evolutionary lifecycle mechanisms within a single organization via four distinct dimensions of coordination. Other frameworks and theories cannot do so, since they fail to leverage OD's 3D coordination and linchpin process of organizational wisdom. Instead, they generally omit two out of the three dimensions of coordination that provide the critically necessary evolutionary mechanisms related to variation, competition, and conflict integration. Of the eight total evolutionary lifecycle mechanisms pinpointed as E1 through E8 in Figure 2, four of them – Transact (E1), Integrate (E3), Incubate (E5), and Evaluate (E7) – are relatively routine processes in most organizations. Therefore, these will not be discussed here, even though dictatorial overrides of coordination in these processes could also trigger evolutionary failure. However, the other four processes are the coordination nodes in the four critical EI "chasms" of Figure 2: Monitor (E2), Innovate (E4), Collaborate (E6), and Prioritize (E8). This is where conflicting perspectives (E), directives (D), alternatives (A), and ultimately resource (R) allocation priorities, respectively, must be coordinated to achieve OD and organizational evolution. Therefore, that is where the discussion will be focused to answer the core research question, "Can evolution be organized?"

4.1. The Focus vs. Vision Chasm #1

After the first clockwise quadrant, between the Data (AI) and Information (BI) quadrants of Figures 1 and 2, there is a Focus vs. Vision Chasm. This is where the Monitor coordination node must simultaneously process the tension between granular historical and current actions (and raw data) from the AI quadrant and more predictive, integrated, and visionary information from the BI quadrant to manage this chasm

effectively and sustainably. Here, Monitor implies not just observation, but diligent intervention and course correction in response to operational variables.

Since this first chasm #1 is dedicated to day-to-day Operational Efficiency (defined loosely as “doing things right”), performance accountability is based primarily on maximizing output while minimizing costs. This is just like the associated Balanced Scorecard gap in Figure 2. However, higher performance requires 1) a deep understanding of the cost tradeoffs and efficiency variances in past actions or effort (E), 2) a constant rebalancing and rescheduling of fixed resources (R) between different strategic alternatives (A), and 3) a consistently coherent vision and integration of competing directives (D) via role-based responsibilities. This coordination is necessary so that real-time adjustments and tactical course corrections can be executed quickly and effectively.

The biggest conflicting tensions are between the E and D dimensions, since those dimensions are the coordination foci of the AI and BI quadrants, respectively. That is because the final, collective prioritization of strategic alternatives (A) and the strategic allocation of resources (R) have already been competitively decided in the DI quadrant. So only indirect tensions related to alternatives (A) and resources (R) need to be passively coordinated. *Passive coordination* implies that only the prioritization of passive (tactical) dimension members can change when coordinating with already prioritized (strategic) members. By contrast, *competitive coordination* implies that the relative prioritization of all members in all competing dimensions can be reciprocally influenced and changed.

To do the necessary 3D coordination in this first chasm is analogous to driving in the wilderness while looking through the windows of all four sides of a vehicle at once – except it would be more like looking through the back window with the equivalent of a microscope, through the front window with and without binoculars, and through the side windows and mirrors with neither, all without getting stuck in the weeds or lost in the forest. A practitioner-oriented discussion of the coordination difficulty in managing within this first chasm is the popular book, “Good to Great” [[26], first published in 2001]. The three Venn diagram circles of the author’s “Hedgehog Concept” visually describe the 3D coordination sweet spot at the intersection of 1) “What drives your economic engine” (the effort (E) dimension), 2) “What are you deeply passionate about?” (the directives (D) dimension), and 3) “What can you be the best in the world at?” (the alternatives (A) dimension).

Although this Hedgehog Concept may be very effective in getting from “Good to Great”, it is not very helpful in staying there, since this is not actually evolutionary coordination. The D and A dimensions are

designed to be relatively fixed once this sweet spot is initially identified. Therefore, members within these two dimensions are not competing and being dynamically coordinated, as evolution requires.

The same author, along with his coauthor Porras, partially attempt to address this evolutionary requirement in another very popular book, "Built to Last" [27], first published in 1994], by invoking the now famous mantra, "preserve the core / stimulate progress". In fact, the same three coordination dimensions are implicitly invoked once again via their other famous mantras: "good enough never is" + "home grown management" = the E dimension; "cultlike cultures" + "big hairy audacious goals (BHAGs)" = the D dimension; and "the genius of the AND" + "try a lot of stuff and keep what works" = the A dimension. The latter two mantras refer to the conflicting alternatives (A) that are supposed to be pursued simultaneously, but the authors provide no evolutionary means for those conflicting ideas to be nurtured, to compete independently as strategic alternatives (A), and thus to coordinate effectively within the same organization.

Also, the directives (D) dimension is strongly fixed by design to amplify obsessive, goal-oriented motivation, so it is not dynamically coordinating in this book's implied model either. Finally, the employees (E) dimension is artificially restricted – and hence the strategic perspectives of employees (E) are too – by excluding any managers (as chasm coordinators) who are not "home grown". So, once again, only one dimension at most – this time the alternatives (A) dimension – is being competitively coordinated in this book's implied model, and that would only occur in subsequent chasms, as discussed below.

4.2. The Creation vs. Destruction Chasm #2

Between the Information (BI) and Knowledge (CI) quadrants of Figures 1 and 2 is the Creation vs. Destruction Chasm. This is where the Innovate coordination node must simultaneously process the tension between structured integrated information from the BI quadrant and unstructured divergent knowledge from the CI quadrant. It is the foundation of any organization's (or industry's) evolution, or tragic lack thereof. That is because evolution necessarily requires costly destruction (i.e., non-survival) via competition before any new creations (i.e., strategic alternatives (A)) can displace what is obsolete, even though the latter may temporarily still dominate. As a result, many great innovative discoveries in large organizations never make it to the next Incubate process node, where new "mutations" (in evolutionary terms) are nurtured so that they can openly compete for resources (R) against existing strategic alternatives (A). It has long been widely recognized that there is tremendous difficulty in

internalizing this competitive strategic tension within a single organization – especially in a timely manner – as many authors have emphasized, including in classics such as Schumpeter [28] and Christensen [29].

Since this chasm #2 is dedicated to Extrinsic Value creation per Figure 1, performance accountability is based primarily on delivering stakeholder value (especially customer satisfaction and value per the Balanced Scorecard gap of Figure 2). However, higher performance requires that 1) the Extrinsic Value directives (D) of stakeholders be allowed to compete on equal terms with the overriding directive (D) of shareholder primacy (i.e., maximizing Intrinsic Value per Figure 1); and 2) new strategic alternatives (A) that are uncertain and divergent be allowed to compete on equal terms with existing ones that are considered "safe and predictable". This continuously competitive coordination is necessary so that an organization can adapt and evolve over the long term via strategic course changes.

The biggest conflicting tensions are between the D and A dimensions, since those dimensions are the coordination foci of the BI and CI quadrants, respectively. That is because the strategic allocation of resources (R) has already been decided in the DI quadrant. Also, the competing strategic competencies – and hence the competing perspectives of employees (E) related to the competing strategic alternatives (A) – have not been hired or fully developed yet. Therefore, only tactical tensions between employees (E) tend to be competitively coordinated here in traditional hierarchical organizations, thereby thwarting evolutionary progress.

4.3. The Cooperation vs. Competition Chasm #3

Continuing clockwise, between the Knowledge (CI) and Decision (DI) quadrants of Figures 1 and 2, there is the Cooperation vs. Competition Chasm, along with its Collaborate coordination node. This is the first of two chasms that are critical to achieving organizational wisdom and OD's higher level of multidimensional coordination. On the one hand, unifying, interactive knowledge is an extremely valuable form of *cooperative collaboration* leading to the Ideate process node of the CI quadrant. On the other hand, diverse, independent decisions are the most valuable form of *competitive collaboration* for the subsequent Evaluate process node of the DI quadrant. CI thrives on shared knowledge and interactive ideation to facilitate a more resilient organization, which is both intuitively obvious and supported by much research [30][31][32][33][34][35][36][37][38]. By contrast, DI's "wisdom of crowds" effect [39][40][41] relies entirely on maximizing statistical independence and natural, competitive diversity for its powerful collective decision-making power. What makes this contrast more problematic is that knowledge-

intensive coordination (2D CI) leads to a natural *demand* for the more complex (3D) democratic organization of DI [42].

Since the CI vs. DI objectives imply diametrically opposite forms of collaboration, the ideation and evaluation processes should be strictly separated to avoid subverting valuable integrative ideas (in CI) or destroying valuable independence and diversity (in DI). This could happen due to anchoring effects, coercion, or other groupthink biases, or due to pre-emptive evaluations shutting down promising new ideation pathways prematurely [31][32][43]. In both cases, openly sharing – or, worse, promoting – one's evaluations is the root problem, which should technically be easy to avoid compared to the temptation to do so [see, e.g., [44]].

Keep in mind that diversity is an attribute derived from both evaluators (E) and their directives (D). Evaluators (E) can have very narrow to very significant diversity in their experience, knowledge, education, expertise, relationships, ethnicity/culture, etc. Likewise, the personal profiles of directives (D) of evaluators (E) can be very narrow to very significant in their level of diversity, often surprisingly independent of their inherent diversity as individuals.

Since this chasm #3 is dedicated to Strategic Effectiveness per Figure 1 (defined loosely as "doing the right things"), performance accountability is based primarily on delivering growth in both revenue and the relevant competencies (i.e., learning) to drive growth potential. This is just like the associated Balanced Scorecard gap in Figure 2. However, higher performance requires that 1) new strategic alternatives (A) that are uncertain and divergent be allowed to compete on equal terms with existing ones that are "safe and predictable" (just like in chasm #2); and 2) all knowledgeable evaluators (E) – as the shareholder agents of the resources (R) dimension – be allowed to compete on equal (knowledge and reputation-based) terms against each other's conflicting perspectives (E) in collectively prioritizing the organization's strategic alternatives (A). Again, this consistently competitive coordination is necessary so that an organization can adapt and evolve over the long term via strategic course changes.

The biggest conflicting tensions are technically between the A and R dimensions in chasm #3, since those dimensions are the coordination foci of the CI and DI quadrants, respectively. However, because resource (R) members (i.e., shareholders) tend to be passive investors, they require a knowledgeable agent to make strategic decisions for them. The universal tradition has been to rely on an employee dictator (CEO) who has dictatorial hierarchical control over the shareholders' management agents, who in turn are legally required to serve only the shareholder primacy directive (D). That means there is only one-dimensional strategic coordination happening when hierarchies are present. Ultimately, only one

employee (E), who must always obey one overriding directive (D), coordinates (i.e., prioritizes) all strategic alternatives (A). As a result, all the evolutionary mechanisms related to variation, competitive evaluation, and conflict integration within this chasm #3 are thwarted.

By contrast, if employees (E) collectively drive the strategic coordination process, then each of them would bring a naturally diverse profile of directives (D) to each of their varied perspectives (E) to coordinate all potential strategic alternatives (A). The result would be the full 3D competitive coordination necessary for OD and organizational wisdom. However, if those employees (E) are not the owners of the organization, then there would still be a fundamental conflict between the resources (R) dimension and those 3D-coordinated strategic decisions. As a consequence, organizational evolution would likely still be stymied, if not completely thwarted.

This fact, along with how shareholder primacy laws mandate the legal supremacy of the R dimension over all other coordinating dimensions, imply that the entire institution of management does not appear to be compatible with an evolutionary system of organization. This fundamental incompatibility deeply embedded within multidimensional coordination by passive ownership primacy becomes even clearer in chasm #4.

4.4. The Democracy vs. Freedom Chasm #4

At the apex Prioritize coordination node, there is again a diametrically conflicting tension, similar to the Collaborate coordination node. It is called the Democracy vs. Freedom Chasm per Figures 1 and 2. This time the tension is between strategic control via collective democracy (the outbound arrow towards Decisions) and tactical control via individual freedom (the outbound arrow towards Actions). The former would be resolved via a deductively rigorous (algorithmic) integration of diverse, independent, and conflicting strategic priorities of evaluators (E) to achieve organizational wisdom. By contrast, the latter would be resolved via the inductively elastic tactical choices and responsibility-driven actions of individual employees (also E). The latter is based on what Follett calls “the law of the situation” or “demand of the situation” (i.e., integrating all valid directives (D)) when “the situation is always evolving” [[14], pp. 66, 275]. This very ironic tension (or chasm) between democracy and freedom has actually been documented empirically, in what Barros [45] summarizes as “the contradictory nature of emancipation in regard to its individual and collective ideals.”

In other words, when an individual makes a tactical choice between competing directives (D, such as profit vs. customer satisfaction) in an evolving situation, that is not organizational democracy or

coordination. That is *organizational freedom*. Only the initial granting of that role freedom and responsibility involves coordination. One might technically call it internalized n:1 coordination given that it is one evaluator (E) integrating multiple directives (D), but a simpler word for that is just *choice*. By contrast, when there is only one directive (D), such as profit maximization, choice is no longer an option. That means strategic coordination is also not applicable, and only 1:1 tactical coordination in the AI quadrant applies. At most, that just implies an optimization problem, which ties to the Optimize process node of the DI quadrant.

This logic also explains why organizational diversity ironically tends to be deliberately avoided, even in alternative "ethical" organizations [46]. Incorporating more directives (D) or perspectives (E) makes rationally coherent coordination more multidimensional, and hence much more difficult. Coordination may even become exponentially intractable.

Since this chasm #4 is dedicated to Intrinsic Value per Figure 1, performance accountability is based primarily on delivering risk-adjusted discounted cash flows (commonly referred to as profit maximization). This is just like the associated Balanced Scorecard gap in Figure 2. However, higher performance requires that 1) all knowledgeable evaluators (E) – as the shareholder agents of the resources (R) dimension – be allowed to compete on equal (knowledge and reputation-based) terms against each other's conflicting perspectives (E) in collectively prioritizing the organization's strategic alternatives (A) (just like in chasm #3); 2) all employees (E) should be free from dictatorial control in order to maximize their intrinsic motivation to generate Intrinsic Value, and 3) all evaluators (also E) should likewise be free to allow their independent profiles of directives (D) to compete freely and on equal terms to generate sustainable Extrinsic Value too.

In short, sustainably competitive, higher performance requires both democracy and freedom, respectively. That is because, together, they generate a highly productive, sustainably competitive tension between each other, in the same way that Extrinsic Value and Intrinsic Value do. They compete with each other, yet *need* each other, to survive and thrive via evolutionary coordination.

The biggest conflicting tensions are technically between the R and E dimensions in chasm #4, since those dimensions are the coordination foci of the DI and AI quadrants, respectively. However, because resource (R) members (i.e., shareholders) tend to be passive investors, they require knowledgeable agents as evaluators (E) to make strategic decisions for them, as already explained. Likewise, employees (E) are always the coordination focus of the AI quadrant, but the only way they can make decisions as independent evaluators (E) is if they are permitted to do so with their personal profiles of directives (D)

intact. Therefore, it is actually the E and D dimensions that are effectively the coordination foci of chasm #4. And for strategic decisions related to the DI quadrant (but not for tactical decisions related to the AI quadrant), it is the alternatives (A) dimension that is actually being finalized (likely algorithmically) in the Prioritize node so that resources (R) can be optimally allocated to them in the next Optimize node. That means the Prioritize node is, at a minimum, a 3D competitive coordination process in the EI framework, similar to the Collaborate node.

By contrast, the Monitor and Innovate coordination nodes still involve the same three dimensions of coordination (E, D, and A), but the A dimension is already prioritized / "ordered" and therefore not in competitive coordination conflict in those two chasms. As a result, the Monitor and Innovate nodes focus on tactical coordination only. In other words, the A and R dimensions are in competitive conflict with the other dimensions only during strategic coordination. This is why the right side of the EI process narrative (the AI and BI quadrants) could arguably be called the "tactical hemisphere", where only the E and D dimensions must generally coordinate competitively; and the left side (the CI and DI quadrants) could arguably be called the "strategic hemisphere", where all dimensions must ultimately coordinate competitively. This distinction is important, since tactical coordination can be solved with existing management practices, such as n:n self-management. However, strategic coordination requires n:n:n OD that does not yet exist.

As hinted at during the discussion of the prior chasm, the coordination problem at the Prioritize node is even more severe than at the Collaborate node. This is where resources (R) must be strategically allocated to alternatives (A). Therefore, this is the chasm where shareholders (via the Board or dictatorial management override) would have the opportunity *and* legal right to intervene to block any 3D-coordinated allocations that increase Extrinsic Value at the expense of Intrinsic Value. So, in effect, Prioritize would by default be a 4D competitive coordination node, not just 3D, at least in all public companies.

However, passive investors have no legal capacity, time, knowledge, or expertise to participate in the 3D coordination process, and the only directive (D) that they can collectively and knowledgeably pursue is increasing Intrinsic Value. That implies 4D coordination *within* an organization is simply not compatible with evolutionary coordination. As will be discussed in forthcoming research, 4D coordination is a very powerful societal-scale concept, but it is not a viable intra-organization concept.

It should now become clear that the only way to avoid an irreconcilable 4D coordination conflict at the Prioritize node is if the tactical employees (E) are equivalent to the strategic evaluators (also E). This is

what the EI framework explicitly assumes, since both refer, by definition, to the E dimension. However, this also implies that there are no hidden "super-evaluators" (like the Board) to override them. It is simply not possible to reconcile the singular shareholder primacy directive (D) driving the resources (R) dimension with any semblance of the democracy or freedom required to achieve diverse and competitive 3D coordination at this Prioritize node. Moreover, beyond the employees (E), there are no other sufficiently knowledgeable evaluators (E) even available to make strategic decisions.

As a result, there are really only two alternatives for an otherwise evolutionary organization to avoid this irreconcilable 4D conflict: 1) shareholders must surrender their legal entitlement to shareholder primacy, or 2) only employees can be shareholders (e.g., via ESOPs in the U.S.). Either solution would have the effect of reducing the 4D coordination problem to 3D by making the E dimension a permanently equivalent legal proxy for the R dimension.

Once again, without this 3D competitive coordination of EI, only one-dimensional strategic coordination is logically possible when traditional management hierarchies are present to serve as dedicated shareholder agents of the resources (R) dimension. That means one employee dictator (E), who must always serve only one overriding shareholder primacy directive (D), prioritizes all strategic alternatives (A). As a result, not only are OD and organizational wisdom within this chasm #4 severely thwarted by such management hierarchies, but so are all variation and competition evolutionary mechanisms.

In the long run, passive shareholders must ultimately make a choice between evolution or shareholder primacy. They cannot have both. One leads to survival, and the other to inevitable maladaptation and death.

4.5. The New Concept of Organizational Wisdom

So far, the new concept of organizational wisdom has not been explicitly defined, yet it is still intuitively easy to understand. Interestingly, both Surowiecki [40] and Galton [41] also never explain in their famous publications where all that seemingly magical "wisdom of crowds" effect comes from mathematically. Despite Galton effectively being the inventor of the standard deviation concept, both he and Surowiecki imprecisely attribute the effect primarily to the median voter ("vox populi") cancelling out outlier "noise". But the real explanation is quite simple. It is from the statistical error in the average always being smaller than the average error, which is a basic concept of statistics. However, this error reduction is based on two critical assumptions: that the N evaluations are 1) independent and 2) identically distributed (in diversity) ("IID") vs. the population that the evaluations represent. When these two IID conditions

hold, the variance of a mean (V) is simply the variance (v) divided by N (or N-1 if it is a sample). In short, V = v/N, where N is the size of the "crowd" that makes the error in the average (or standard deviation of the mean) proportionately smaller, and thus the wisdom wiser.

To make it easy to remember via a mnemonic acronym, "WISDOM" is based on the Wild & Independent Standard Deviation Of the Mean. "Wild" implies "naturally diverse inclusion", but it also emphasizes the critical importance of equitably protecting (via EI's Incubate and Collaborate nodes) all that natural, fragile diversity "in the wild" from coercive control or "taming" influences. So, in that sense, "crowd", similar to "mob", has an unfortunate connotation that opposes the fundamental requirements of WISDOM. As such, either "collective wisdom" or "organizational wisdom" is probably more accurate – though admittedly less catchy than Surowiecki's deliberate inversion of the famous "Madness of Crowds" book from 1841.

Connecting these processes more directly to the EI framework, CI is fundamentally a quadrant for N:N (or n:n) coordination to generate and refine (but not yet coordinate) alternatives (A) based on evaluators (E) integrating multiple directives (D). And then all three of these dimensions (A, D, E) would be competitively coordinated in the DI quadrant via the Evaluate and Prioritize processes, implicitly with increasing statistical accuracy as the number of IID evaluators (E) increase. Hence the potentially massive increase in decision-making power – via WISDOM – of organizational democracy when combined with diversity, as Page [39] likewise emphasizes repeatedly.

4.6. OD Requires 3D Coordination: Prediction Markets as a Test Case

Similar multidimensional logic from the EI framework can be applied to assess any claimed OD solution. Several more recent of these claims are based on prediction markets and tournaments [[36], pp. 164-183, [47]]. In short, if there are less than three independent dimensions of organization being coordinated, then it cannot be OD. For both prediction markets and tournaments, there is only one alternative (A) being evaluated at a time and only one directive (D) is applicable (i.e., minimizing the predicted-actual difference). The only "coordination" that is happening is an averaging across the varying perspectives of evaluators (E). So, at most, only one-dimensional coordination is happening, and it is arguably just another 1:1 (non-dimensional) free market pricing system from the perspective of its participants (when predictions drive bets).

Also, in order for predictions to be objectively meaningful, outcomes cannot be based on decisions driven by those predictions. That is a circular logic fallacy, as Sunstein [48] explicitly argues. A similar problem

arises when trying to predict a future value when there is no objective measure of that value, and no measurable value whatsoever for all the competing alternatives (A) never funded. Unfortunately, this problem tends to be the rule for all strategic and long-term organizational decisions, thereby making prediction markets and tournaments, along with similar solutions, unusable as a coordination substitute for top-down strategic management.

4.7. A Radical Upgrade of the DIKW Pyramid

EI clearly represents a radical transformation and upgrade of the DIKW pyramid. This pyramid misleadingly displays how a mass of raw data at the base successively ascends or transforms into smaller subsets of information, knowledge, and then wisdom via some mysterious filtering or percolation process [as roundly criticized by [49]]. By contrast, the EI framework shows how those four DIKW components comprise a fully evolutionary, multicyclic process narrative. Also, instead of the vaguely understood and unusable concept of *personal wisdom* as the pinnacle DIKW objective, *organizational wisdom* is introduced as the new core concept to replace it. Ironically, wisdom is elevated to far greater importance within EI than it ever was at the top of the DIKW pyramid.

The replacement concept of organizational wisdom is not only objectively defined, but it is also the invaluable linchpin of the entire evolutionary process. It is what leads to all new strategic resource allocations and tactical actions, thereby generating new raw data to begin the fully evolutionary DIKW cycle all over again. It is also the core concept that would allow EI to fundamentally challenge both Organization and Strategy theories in the future. Organizational wisdom is thus not the end goal, or even the means to an end, but rather the primary means to continue the evolutionary cycle of organization.

4.8. EI as a Generalized Lens of Intelligence Evolution

The EI framework actually has a third metadimension, in addition to the radial and radian metadimensions shown in Figures 1 and 2. This metadimension is mostly of interdisciplinary interest to those outside of this paper's focus, but it is important to complete the introduction of the framework to provide a more generalized impetus for future EI research beyond just Organization and Strategy. After all, a true systems perspective like EI must be able to extend beyond the boundary of any single organization by "fram[ing] the world as a *hierarchy* of nested systems", especially if we are ever going to tackle the wicked strategy problems of society [50].

The additional metadimension of EI is the socioeconomic level of analysis, which ranges from the Individual to Global Society per Table 2. The EI framework was actually designed to have no boundary conditions regarding its level of analysis. Even as individuals, we can develop ourselves, and therefore self-evolve our intelligence over our lifetimes, within this exact same EI framework. The diverse and independent sources, methods, and models of information, knowledge, and decision making (respectively) are effectively equivalent to an organizational collective of diverse and independent individuals within each one of us. Building a robust and resiliently evolving society will depend just as much on developing robust and resilient global citizens, who should strive to be as diverse and independent as society itself.

And of course, just as individual intelligence can and should self-evolve via the EI framework, so will artificial intelligence likely evolve to achieve 3D and 4D coordination capability, as will be discussed in forthcoming research. Currently, generative AI represents only a 2D coordination capability. EI is thus a generalized framework or lens for all intelligence evolution, without any identifiable boundary conditions.

#	Level	Coordination Focus (4 Es)	Coordination Dimension Focus	Coordination Complexity Evolution	Key Individuals (or Personal Resources) in the 4 EI Quadrant Roles at Each Level (excl. EI platform specialists)
1	Individual (+ EI Agent) Level	**Education**: Individual Growth and Resilience	**E**: Evaluators / Employees / Effort **Who?**	From 1:1 to 1:1*N	AI: Continuous Personal Learning, Growth, and Self-Actualization Experiences BI: All Sources of Independent Thinking, Research, Analysis, and Inspiration CI: All Methods of Independent Imagination, Discovery, Innovation, and Development DI: All Models of Independent Evaluation, Prioritization, Optimization, and Impact
2	Community, Team, or Local Gov.'t Level	**Ethics**: Rules & Roles for Organizational Tasks	**D**: Directives **Why?**	From 1:1 to 1:n or n:1:n	AI: Public Workers (Approved Executive Roles for Community Tasks) BI: Journalists and Activists (Community Information and Accountability Roles) CI: All Members, Equally (Legislative Agenda and Decision Parameter Roles) DI: All Members, Expertise/Reputation-Weighted (Judicial & Decision-Making Roles)
3	Organization or Regional Gov't. Level	**Economy**: Organizational or Regional Strategy	**A**: Alternatives **What?**	From 1:1 in Orgs. & 1:N in Politics to n:n:n or N:N:N (respectively)	AI: All Org. Members, Each with Full Control over their Tactical Roles BI: All Org. Members, Each with their Role-Based Information Focus CI: All Org. Members, Equally Driving the Ideation Agenda and Decision Parameters DI: All Org. Members, Expertise/Reputation-Weighted by Alternative & Evaluator
4	Global Society Level	**Environment**: Natural & Public Resources + Private Resources at N:N:N:N Stage	**R**: Resources **How (much)?**	From 1:1 in Orgs. & 1:N in Politics to N:N:N:N without political intermediaries	AI: Public Workers (Executive Roles for Investment, Taxation, Protection, etc.) BI: Journalists & Scholars (Socioeconomic & Environmental Accountability Roles) CI: All Global Citizens, Equally (Legislative & Decision-Agenda/Parameter Roles) DI: All Global Citizens, Expertise-Weighted (Judicial & Decision-Making Roles)

Table 2. The Four Socioeconomic Levels (4 Ls) of EI

Also, just as the two metadimensions of EI in Figure 2 contain all four dimension member types (E, D, A, and R), so too does this third metadimension per the third column of Table 2. In effect, a 4X4X4 typology is the result based on the same four dimensions of organization. In addition, there is a consistent historical progression across the four dimension members, with E always being chronologically first and

R chronologically last in the sequential order of coordination complexity across human history. Thus, there is an additional macrotemporal extension of EI via the microhistory method that will likely be explored further in future research.

Moreover, each level of analysis corresponds to the same progression in coordination focus as the original two metadimensions. For example, level 2 applies to communities and teams, which tend to focus most on cultural bonds and shared purpose(s)/directives (D) to coordinate their activities. There is also an obvious and similar increase in scale complexity across the four dimension members, with Global Society N ultimately focused on coordinating the preservation and allocation of public resources (R) beyond any single organization's boundary. So, in a way, this third "level of analysis" metadimension of EI could prove important to Organization and Strategy too, given the recent pressure on all organizations to pursue a dual/hybrid purpose to manage these public resources (R) effectively and efficiently on behalf of all stakeholders.

Finally, we can see from the last column of Table 2 that specific professions would be pivotal to maintaining the integrity of societal-scale EI. For example, independent journalists and scholars would provide the critical information and accountability roles in the BI quadrant of EI related to social, technical, environmental, and economic matters. Without a strong, diverse, and independent information foundation for society, any subsequent democratization within the CI and DI quadrants would likely generate much less social value. This line of thinking leads further into a litany of future research pathways. One example of this might be integrating concepts like propaganda and manufactured consent into the EI framework to describe how they are used to seize social control over the directives (D) dimension in the BI quadrant. This control could be used to facilitate fascism, imperialistic foreign policies, or powerful special interest groups.

5. Conclusion

It is at the four coordination nodes of EI where contradictory and diverse imperatives must somehow integrate and unite via competitive coordination across multidimensional chasms of continuous tension. It is this diverse and integrative coordination that drives the four core evolutionary lifecycle mechanisms of Retention, Deviation, Diversification, and Selection, which directly map to these four chasms in Figure 2. This is also visually highlighted in Figure 1 by the three converging inbound and two diverging outbound process flow arrows connecting with each coordination node. EI is able to process all of the

necessary 3D coordination within each chasm, since none of the dimensions are ever under dictatorial control.

As a result, we now understand exactly how evolution can be organized within a single organization via 3D coordination. Moreover, we can visualize the entire multidimensional process narrative – including all the necessary evolutionary lifecycle mechanisms – via the theoretical lens of EI. Future research therefore points squarely at further developing the new concept of organizational wisdom as the linchpin enabling capability to solve this 3D coordination problem.

By contrast, in traditional management-driven organizational hierarchies, two out of the three dimensions that need to be coordinated at each coordination node are effectively under dictatorial control. This largely explains why organizational evolution has been so difficult to mimic, since 3D competitive coordination must be done collectively, by definition. Dictatorial control (instead of collective control via OD) is typically relied upon to bypass the necessary and more difficult coordination of multidimensional variation, competitive selection, and conflict integration at the four coordination nodes. A lack of organizational resilience is the inevitable result. This then leads progressively towards evolutionary maladaptation, and then ultimately to adverse natural selection, thereby sealing an organization's predictable fate.

The multidimensional nature of coordination and organization is undeniably a unifying lens within both Organization and Strategy. Mary Parker Follett diligently and thoroughly laid the theoretical foundation for this lens. Whenever she defined or spoke of the core concepts underlying "organization" and "management", she expounded repeatedly, and in detail, about the goal of "integrative unity" via an "interpenetration of values" and a "uniting of diversity" across *four dimensions of coordination* (E, D, A, and R); she also emphasized the evolutionary parallels, such as the "continuous cycle of progressively evolving unities" and the "reciprocal influencing" that this requires [see, e.g., [14], pp. 35, 93, 180-181, 192-202, 297-305]. Unfortunately, her groundbreaking ideas on this topic, like on other topics she addressed, have effectively been ignored for a century. Reintroducing them now via the EI framework ironically makes Organization and Strategy much clearer and more hopeful.

As Wilkinson [[51], p. 132] succinctly states, "[T]he purpose of organizations is to coordinate human activity." Follett agrees: "[W]hat we call co-ordination is certainly the crux of almost every problem the organization engineer or the business manager has to deal with" [[14], p. 192]. Coordination is indeed *the* most fundamental problem of both organization and management. It has been directly in front of us all this time. Organization scholars cannot stop talking about it. After Follett, however, we just never seemed

to ask what independent dimensions of organization need to be integrated together into a collectively coherent and evolving unity to achieve “effective organization”. In other words, what exactly is being *co-ordered* when we use the word *co-ordinate?* And how can we *do the right things* for strategic effectiveness in order to survive and evolve over the long term, instead of just *doing things right* for profitable efficiency?

If we had asked these basic questions earlier, the multidimensional coordination answer underlying the EI framework would likely have become much more obvious. Follett understood the importance of such basic questions well: “[T]aking co-ordination as the central point of organization, we say to ourselves: What is the quality of that which we are going to unite? That is the initial step – to look first of all to that which is to be co-ordinated” [14, p. 198].

Statements and Declarations

Funding

No specific funding was received for this work.

Potential Competing Interests

The author declares no conflicts of interest regarding the publication of this paper.

Author Contributions

DS was the sole author and is responsible for all aspects of the manuscript.

Use of Generative AI

The author did not use AI-assisted technologies in the writing, editing, or data analysis of this manuscript.

References

1. a, b, c, d *Aldrich H, Ruef M, Lippmann S (2020). Organizations Evolving. 3rd ed. Cheltenham Northampton, M ass: Edward Elgar publishing.*
2. a, b, c, d *Durand R, editor (2006). Organizational Evolution and Strategic Management. London Thousand O aks, Calif: SAGE.*

3. a, b, c, d Manral L (2025). Dynamic Strategy: An Evolutionary Theory Approach. Cham: Springer Nature Switzerland. doi:doi:10.1007/978-3-032-00228-0.
4. ^ Abatecola G (2014). "Research in Organizational Evolution. What Comes Next?" Eur Manag J. **32**:434–443.
5. ^ Burgelman RA, Snihur Y, Thomas LDW (2023). Strategy-Making and Organizational Evolution: A Managerial Agency Perspective. 1st ed. Cambridge University Press. doi:doi:10.1017/9781108987684.
6. ^ Chen X, Wu X, Wang X (2023). "Organizational Ecology Theory: Review Past for Directing the Future Development." doi:doi:10.21203/rs.3.rs-2730086/v1.
7. a, b Hargadon AB, Wadhwani RD (2023). "Theorizing with Microhistory." Acad Manage Rev. **48**:681–696.
8. ^ Scott R (1984). "1984 MAC Commercial." YouTube. https://www.youtube.com/watch?v=ErwS24cBZPc.
9. ^ Aldrich HE, Hodgson GM, Hull DL, et al (2008). "In Defence of Generalized Darwinism." J Evol Econ. **18**:577–596.
10. ^ Jacobides MG (2006). "The Architecture and Design of Organizational Capabilities." Ind Corp Change. **15**:151–171.
11. ^ Maclean M, Harvey C, Clegg SR (2017). "Organization Theory in Business and Management History: Present Status and Future Prospects." Bus Hist Rev. **91**:457–481.
12. ^ Nofal AM, Nicolaou N, Symeonidou N, et al (2018). "Biology and Management: A Review, Critique, and Research Agenda." J Manag. **44**:7–31.
13. ^ van de Ven AH, Poole MS (1995). "Explaining Development and Change in Organizations." Acad Manage Rev. **20**:510–540.
14. a, b, c, d, e, f, g, h Metcalf HC, Urwick LF, editors (1940). Dynamic Administration: The Collected Papers of Mary Parker Follett. Harper & Row. https://books.google.com/books?id=s1-KvgAACAAJ.
15. ^ What Is Strategy? It's a Lot Simpler Than You Think (2022). https://www.youtube.com/watch?v=o7Ik1OB4TaE.
16. a, b Battilana J, Fuerstein M, Lee M (2018). "New Prospects for Organizational Democracy? How the Joint Pursuit of Social and Financial Goals Challenges Traditional Organizational Designs." In: Rangan S, editor. Capitalism Beyond Mutuality? Perspectives Integrating Philosophy and Social Science. Oxford: Oxford University Press, pp. 256–288.
17. ^ Luyckx J, Schneider A, Kourula A (2024). "Learning from Alternatives: Analyzing Alternative Ways of Organizing as Starting Points for Improving the Corporation." In: Meyer RE, Leixnering S, Veldman J, editors. Research in the Sociology of Organizations. Emerald Publishing Limited, pp. 209–231.

18. ^Kumar J, Prince N, Baker HK (2022). "Balanced Scorecard: A Systematic Literature Review and Future Research Issues." FIIB Bus Rev. **11**:147–161.
19. ^Lawrie G, Cobbold I. "Evolution of the Balanced Scorecard into an Effective Strategic Performance Management Tool."
20. ^Follett MP (1918). The New State. Longmans London.
21. ^Follett MP (1924). Creative Experience. New York, NY, US: Longmans, Green and Co.
22. ^Blesik T, Bick M, Kummer T-F (2022). "A Conceptualisation of Crowd Knowledge." Inf Syst Front. **24**:1647–1665.
23. ^Rowley J (2007). "The Wisdom Hierarchy: Representations of the DIKW Hierarchy." J Inf Sci. **33**:163–180.
24. ^Bratianu C, Bejinaru R (2023). "From Knowledge to Wisdom: Looking Beyond the Knowledge Hierarchy." Knowledge. **3**:196–214.
25. ^Frické M (2019). "The Knowledge Pyramid: The DIKW Hierarchy." Knowl Organ. **46**:33–46.
26. ^Collins JC (2009). Good to Great: Why Some Companies Make the Leap... and Others Don't. New York, NY: Collins.
27. ^Collins JC, Porras JI (2009). Built to Last: Successful Habits of Visionary Companies. 24th ed. New York: Collins.
28. ^Schumpeter JA (2008). Capitalism, Socialism and Democracy. New York: Harper Perennial Modern Thought.
29. ^Christensen C (2024). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Boston, Massachusetts: Harvard Business Review Press.
30. ^Bonabeau E (2009). "Decisions 2.0: The Power of Collective Intelligence." MIT Sloan Manag Rev. **50**:45.
31. ^a, ^bEsser JK (1998). "Alive and Well After 25 Years: A Review of Groupthink Research." Organ Behav Hum Decis Process. **73**:116–141.
32. ^a, ^bGrönlund K, Herne K, Setälä M (2015). "Does Enclave Deliberation Polarize Opinions?" Polit Behav. **37**:995–1020.
33. ^Malone TW (2019). Superminds: The Surprising Power of People and Computers Thinking. Boston: Little and Brown.
34. ^Mulgan G (2018). Big Mind: How Collective Intelligence Can Change Our World. Princeton: Princeton University Press.

35. ^Sawyer RK (2008). Group Genius: The Creative Power of Collaboration. 1st paperback ed. New York: Basic Books.

36. a, bStadler C, Hautz J, Matzler K, et al (2023). Open Strategy: Mastering Disruption from Outside the C-Suite. 1st MIT Press paperback ed. Cambridge, Massachusetts London, England: The MIT Press.

37. ^Suran S, Pattanaik V, Draheim D (2021). "Frameworks for Collective Intelligence: A Systematic Literature R eview." ACM Comput Surv. **53**:1–36.

38. ^Tindale RS, Winget JR (2019). "Group Decision-Making." Oxford Research Encyclopedia of Psychology. doi: doi:10.1093/acrefore/9780190236557.013.262.

39. a, bPage SE (2017). The Diversity Bonus: How Great Teams Pay Off in the Knowledge Economy. Princeton: P rinceton University Press.

40. a, bSurowiecki J (2005). The Wisdom of Crowds. New York, NY: Anchor Books.

41. a, bGalton F (1907). "Vox Populi." Nature. **75**:450–451.

42. ^Grandori A (2016). "Knowledge-Intensive Work And The (Re) emergence Of Democratic Governance." Aca d Manag Perspect. **30**:167–181.

43. ^Bäck EA, Esaiasson P, Gilljam M, et al (2011). "Post-decision Consolidation in Large Group Decision-makin g." Scand J Psychol. **52**:320–328.

44. ^Mojzisch A, Schulz-Hardt S (2010). "Knowing Others' Preferences Degrades the Quality of Group Decision s." J Pers Soc Psychol. **98**:794–808.

45. ^Barros M (2010). "Emancipatory Management: The Contradiction Between Practice and Discourse." J Man ag Inq. **19**:166–184.

46. ^Bendl R, Fleischmann A, Schmidt A (2024). "The (In) Visibility of Diversity in Alternative Organizations." J Bus Ethics. **196**(2):273–289. doi:doi:10.1007/s10551-024-05683-2.

47. ^Ray R (2006). "Prediction Markets and the Financial 'Wisdom of Crowds'." J Behav Finance. **7**:2–4.

48. ^Sunstein CR (2006). "Deliberating Groups versus Prediction Markets (or Hayek's Challenge to Habermas)." Episteme. **3**:192–213.

49. ^Weinberger D (2010). "The Problem with the Data-Information-Knowledge-Wisdom Hierarchy." Harvard Business Review. https://hbr.org/2010/02/data-is-to-info-as-info-is-not.

50. ^Grewatsch S, Kennedy S, Bansal PT (2023). "Tackling Wicked Problems in Strategic Management with Syst ems Thinking." Strateg Organ. **21**:721–732.

51. ^*Wilkinson A, editor (2010). The Oxford Handbook of Participation in Organizations. Oxford: Oxford Univ. P ress.*

Declarations

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.