

Systems Thinking and Integrated Thinking for Integrated Reporting

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Abstract: Industries and institutions are under pressure to do no harm in their processes of value creation, capture and delivery whilst actively limiting the harm their operations cause. As a consequence, and in the quest for more accountable, sustainable and humane behaviour, industries and institutions are being increasingly called upon to report on their operations in an integrated manner. Integrated reports combine information on the financial and non-financial aspects of firm performance with the purpose of showing how an organisation creates, preserves or erodes value over time. Such a report is usually of interest to providers of financial capital wishing to understand the wider impacts of the organisation, but are now becoming a document of interest to all types of stakeholders, including community members, customers, potential funders, academic institutions, suppliers and business partners. The integrated report is an outcome of several interrelated activities in a firm, including governance, strategic management, stakeholder engagement and risk management, to name a few. A variety of studies have indicated that whilst the construction of a comprehensive integrated report is a complex undertaking, skills related to systems thinking and integrated thinking can aid in the process. The aim of this paper is to demonstrate this connection between integrated reporting and systems thinking. Through the application of systems thinking it is proposed that the ability to perceive the interconnectedness of an organisation's activities and resources and to be able to employ higher-level reasoning with regard to them, is enhanced. This can contribute to more effective governance and management of organisations, and by extension, to more realistic, comprehensive and informed integrated reports.

Keywords: Integrated Reporting, systems thinking, integrated thinking, holism, sustainability, Sustainable Development Goals

1. Introduction

Organisational sustainability has often been perceived as the ability of the organisation to survive and thrive (Singh and Mthuli, 2021). However, the concept of 'sustainability' is now clearly focused on the organisation's ability to operate and meet its present needs whilst not negatively affecting the needs of future generations (Wilkinson, Hill and Gollan, 2001). The world and its sub-systems have been adversely affected by the consequences of human and industrial actions. Consequently, industries and institutions are under immense pressure not to harm their value creation, capture, and delivery processes whilst actively limiting the harm their operations cause to stakeholders, the communities they are a part of, and the planet. Particularly in the last twenty years or so, the organisational world has become increasingly bombarded by the message of ensuring sustainable operations. Central to this notion is the move away from the organisation as responsible for shareholder rents alone to embrace a greater responsibility towards a more extensive set of stakeholders, including the natural environment. This emphasis on people and the planet does not dull the fact that profit is still crucially important for a business to remain viable.

In the quest for more accountable, sustainable and humane behaviour, industries and institutions are increasingly called to report on their operations in an integrated manner through reports that detail their economic, social, and environmental impacts. The aim of this paper is to demonstrate the connection between integrated reporting and systems thinking. This is a conceptual paper based on a review of the literature, and explores the potential of a systems view of business activity to provide insights into the relevance and importance of integrated reporting.

2. Systems thinking

The idea and rationale for thinking in systems and its foundational concepts of unity, holism and interconnectedness can be found in a myriad of religious texts and ancient philosophies, including those pertaining to Sufi Islam, Hinduism, Buddhism, Taoism, and ancient Greek philosophy (Reynolds and Holwell, 2010). The ancient works of two of the most well-known Greek philosophers - Aristotle and Plato - show systems thinking in their understanding of biology, political science, and even marine science (Jackson, 2016). However, Austrian biologist Karl Ludwig von Bertalanffy is often considered the father of Systems Thinking due to General Systems Theory, which he developed more than fifty years ago. The continued application and success of

Systems Thinking in a wide variety of areas, including those related to public policy, healthcare, education, management, food management and cyber security - to name a few - provides compelling evidence of its relevance even today (Gharajedaghi, 1999; Reynolds and Holwell, 2010; Young and Leveson, 2013; Peters, 2014; Carvalho, 2015; Jackson, 2016; Shaked *et al.*, 2017; Manuele, 2019; York *et al.*, 2019). Monat and Gannon (2015, p. 24) assert that systems thinking can be defined as “1) a perspective that recognises systems as collections of components that are all interrelated and necessary, and whose inter-relationships are at least as important as the components themselves; 2) a language centred on the Iceberg Model, unintended consequences, causal loops, emergence, and system dynamics, and 3) a collection of tools comprising systemigrams, archetypes, causal loops with feedback and delays, stock and flow diagrams, behaviour-over-time graphs, main chain infrastructures, system dynamics/counter modelling, interpretive structural modelling, and systemic root cause analysis.”

3. Integrated reporting

Historically, annual reports provide information of material interest, particularly in relation to the financial performance of the organisation. Having analysed the integrated reports of major airlines, hotels and cruise ships and noting the neglect of climate -related and COVID-19-related risks, Abhayawansa and Adams (2021) concluded that the definition of materiality should be revised so that it incorporates financial materiality as only one component of a broader definition focused on long-term value creation and the achievement of the Sustainable Development Goals (SDGs). Furthermore, they recognised the value of a materiality matrix and systems thinking in the proper management and mitigation of COVID-19 related risks. Integrated reports now combine financial and non-financial information of firm performance to detail how an organisation creates, preserves or erodes value over time. Such a report is usually of interest to providers of financial capital wishing to understand the broader impacts of the organisation. However, it is now becoming a document of interest to all groups of stakeholders, including community members, customers, potential funders, academic institutions, suppliers and business partners.

In 2020, the International Integrated Reporting Council (IIRC), reported that “the concept of integrated reporting has been embedded by over 2,500 companies in more than 70 countries. Over 40 stock exchanges refer to it in their guidance”. (IIRC, no date) The VRF (Value Reporting Foundation, 2021b, pp. 5–6) basics of integrated reporting are summarised in Table 1.

Table 1: Purpose, Mechanics and System of Integrated Reporting

Why	Through the organisation’s activities, relationships and interactions, the value creation, preservation and erosion is: 1. inextricably linked to other stakeholders, society and the natural environment 2. reliant on 6 capitals, which are not all or equally applicable, these being financial, manufactured, intellectual, human, social and relationship, natural 3. influenced by external environment; purpose, mission and/or vision; business model; governance; risks and opportunities; strategy and resource allocation plans; performance; outlook captured in the Content Elements
What	The <IR> Framework sets content expectations through the eight Content Elements, which also include organisational overview and basis of preparation and presentation
How	Seven Guiding Principles inform how the <IR> should be prepared and presented: strategic focus and future orientation; connectivity of information; stakeholder relationships; materiality; conciseness; reliability and completeness; consistency and comparability.

According to Eccles, Krzus, and Ribot (2015), the meaning of Integrated Reporting has undergone four overlapping phases. These are experimentation, expert commentary, codification and institutionalism, commencing in 2002, 2005 and 2011 (the latter two phases). Table 2 presents a timeline of the development of reporting initiatives.

Table 2: A chronology of the development of integrated reporting

Time	Milestones	Trigger Event	Link / Reference
2009	Commencement of International Integrated Reporting Council’s (IIRC) journey	Meeting of academics, companies, investors, regulators, standard setters and other stakeholders with HRH The Prince of Wales, to “drive integrated reporting forward”.	(IIRC, no date)

Time	Milestones	Trigger Event	Link / Reference
2010	IIRC established	"a response to the global financial crisis"	(IIRC, no date)
2013	<IR> Framework published	Following the publication of the Initial Discussion Paper (September 2011), launching of IIRC pilot programme (October 2011) and the Consultation Draft of <IR> Framework (April 2013) in December 2013. Aims to achieve "IIRC's long term vision is a world in which integrated thinking is embedded within mainstream business practice in the public and private sectors, facilitated by Integrated Reporting (<IR>) as the corporate reporting norm"(p.2). Outlines 'Guiding Principles' and 'Content Elements'.	(IIRC, 2013)
2014	Corporate Reporting Dialogue (CRD) convened	Brought together the CDP, Climate Disclosure Standards Board (CDSB), Financial Accounting Standards Board (FASB), Global Reporting Initiative (GRI), International Accounting Standards Board (IASB), International Integrated Reporting Council (IIRC), International Organization for Standardization (ISO), and Sustainability Accounting Standards Board (SASB), for "efforts to drive a cohesive and holistic reporting system that reflects enterprise value creation".	(IIRC, no date)
2016	IIRC supports development of Task Force for Climate-related Financial Disclosure (TCFD) and works with CDP, CDSB, GRI and SASB through the Better Alignment Project.	IIRC highlights alignment with SDG 12 (sustainable consumption) and supports SDG 17 through collaboration "to demonstrate the alignment between our standards and frameworks".	(IIRC, no date)
2017	IIRC launches a new Integrated Thinking and Strategy Group under the umbrella of the <IR> Business Network	"Traditional business management, based on financial analysis, has not kept pace with the seismic shifts taking place over the last thirty years"	(Value Reporting Foundation, no date)
2020	IIRC introduces the 'spring' model for integrated thinking	'State of play' report published in January sets out new model for implementing integrated thinking, by the interconnectivity of the multiple capitals used and effected, tying strings to form a spring (p. 1). Takes note that the value focus has changed from "Shareholder" in 1970s, to "Shared" in 2000s, to "System" today. (p.13)	(IIRC, 2019)
2020	CDP, CDSB, GRI, IIRC and the SASB formally commit to working together and engage with key actors	A shared vision of the elements necessary for more comprehensive corporate reporting and a joint statement of intent to drive towards this goal, including a commitment to engage with International Organization of Securities Commissions (IOSCO), the IFRS, the European Commission, and the World Economic Forum's International Business Council, is made on 11 September. Sustainability disclosure is more complex than financial reporting due to inter alia multiple users and dynamic materiality, creating confusion. Commitment to "help resolve this confusion and to show a commitment to work together towards a comprehensive corporate reporting system". (2020, p.2).	(Impact Management Project, World Economic Forum and Deloitte, no date)

Time	Milestones	Trigger Event	Link / Reference
2021	Revised International <IR> Framework published to replace 2013 version	January 2021 version supersedes December 2013 version and applies to reporting periods commencing on 1 st January 2022. The global coalition that is the IIRC, “shares the view that communication about value creation, preservation or erosion is the next step in the evolution of corporate reporting”. (p.1)	(IIRC, 2021)
2021	IIRC and Sustainability Accounting Standards Board (SASB) merge on 9 June, to form Value Reporting Foundation (VRF).	VRF to provide three key resources: Integrated Thinking Principles, Integrated Reporting Framework and SASB Standards “to develop a shared understanding of enterprise value”. Also states it is “committed to the delivery of a more coherent corporate reporting system by working closely with the International Financial Reporting Standards (IFRS) Foundation and other leading framework providers and standard-setters around the world”.	(Value reporting Foundation, no date)
2021	The business case is presented for multi-capital integration applying integrated thinking via a virtuous loop	“Integrated thinking should be seen as a continuous journey, one that evolves over time, one that continues to promote collaboration across all sections of an organization”. (p.2).	(Value Reporting Foundation, 2021a)
2021	IFRS Foundation announces on 3 November, International Sustainability Standards Board (ISSB)	Following COP26 meeting in Glasgow, the IFRS Foundation Trustees announced formation of ISSB, consolidation of CDSB and VRF by June 2022 and publication of prototype climate and general disclosure requirements. Also that ISSB “will sit alongside and work in close cooperation with the IASB, ensuring connectivity and compatibility between IFRS Accounting Standards and the ISSB’s standards-IFR Sustainability Disclosure Standards”.	(IFRS, 2021)
2022	VRF to be consolidated into the IFRS Foundation on 30 June 2022	To help establish the International Sustainability Standards Board (ISSB). This follows the announcement on 25 th May 2022 by boards of IASB and ISSB to work together to agree on how to build and integrate the Integrated Reporting Framework into their standard setting projects and requirements.	(IFRS, no date)

Given these developments in integrated reporting, research findings are mixed as to whether firms produce integrated reports purely for impression management, reputational or legitimation reasons (Lai, Melloni and Stacchezzini, 2016). However, evidence suggests that if it is done properly, integrated reporting can improve internal communication and erode the silo thinking that often exists between financial and non-financial components of the business, and make explicit how value is created (de Villiers, Hsiao and Maroun, 2017). However, when integrated reporting is not properly integrated with internal processes of the business, it can conflict with the existing processes and culture and lead to resistance and lip-service being paid to integrated reporting, treating it as a tick-box exercise with little stakeholder engagement (Dumay and Dai, 2017; McNally, Cerbone and Maroun, 2017).

A variety of studies have indicated that whilst constructing a comprehensive, integrated report is a complex undertaking, skills related to systems thinking and integrated thinking can aid in the process. Integrated thinking represents a shift from either/or to both/and thinking (Smith and Lewis, 2011). Integrated thinking is a learned skill that reflects the ability to hold two opposing ideas in mind simultaneously and to be able to creatively resolve the tensions between them by generating a new idea/s (Martin, 2007; Riel and Martin, 2017). There has been strong and growing interest in the application of integrated thinking in organisations (Cunha and Putnam,

2019), including to areas such as strategic management (Dameron and Torset, 2014) and integrated reporting (Velte and Stawinoga, 2017). Not only is integrated thinking required to produce an integrated report, but integrated reporting itself has been shown to promote integrated thinking (Esch, Schulze and Wald, 2019), and also facilitates a systems view of the organisation and its activities. Thus, integrative thinking is a central element of systems thinking, and vice versa.

4. Illustrating the connection between a systems view and integrated reporting

The integrated report is an outcome of several interrelated activities in a firm, including governance, strategic management, the business model, stakeholder engagement and risk management, to name a few. For example, Michalak et al. (2017) have argued that the disclosure of the business model in a corporate report can assist stakeholders to make sense of other data included (e.g. financial and risk), as well as to assess the overall sustainability of the business. Whether the issue is sustainability in general, or Integrated Reporting specifically, the organisation, its environment, its internal and external stakeholders, as well as its inputs, business activities and outputs and more importantly, the relationships between all of the above, have to be considered more holistically. Thus, Systems Thinking can be a helpful aid in reconceptualising sustainability efforts and in developing more informed, accurate and valuable Integrated Reports, as it aims to perceive the many components that make up a system, their interrelationships and how they communicate with one another.

Barnabè, Giorgino and Kunc (2019) provide an example of how this can be done. In their pursuit of creating a more holistic picture of the business activities of two leading multi-national organisations, they combined a systems thinking methodology known as System Dynamics with the Resource-Based View of the organisation to emphasise the importance of big picture thinking for integrated reporting and organisational governance. They specifically focused on the six capitals as defined by the International Integrated Reporting Council (IIRC, 2013) and showed how they were interconnected (Barnabè, Giorgino and Kunc, 2019) and continuously influenced one another. This mutual influence creates what Systems Thinking terms 'dynamic feedback loops' (Reynolds and Holwell, 2010; Jackson, 2016; Manuele, 2019). The amalgamation of the Resource-Based View of the Firm with System Dynamics explicated the intricacies of their value creation processes. The authors were able to identify several feedback loops between the elements of the resource map, with the relationships between the elements creating either positive or negative linkages. The total number of positive and negative linkages could then be examined to understand the organisation's strategies in the management of their six resources/capitals. For example, the ratios between positive and negative linkages revealed in the case studies, indicated that these organisations were motivated primarily by growth and strategic reinforcement actions. Furthermore, areas of "density" in terms of the complexity and number of feedback relationships about a particular resource were interpreted as being Key Value Creation Spots (KVCS) for these organisations. Thus, these resources were interpreted as being key levers for value creation in the organisation.

The relationships between capitals can be better understood through Systems Thinking-based models of this nature. For instance, one of the organisation's Resource Maps revealed that their investment decisions would reduce the financial capital of the organisation, but would also enhance the possibility of generating new patents and technologies, thus increasing the company's intellectual capital (Barnabè, Giorgino and Kunc, 2019). Models of this nature can assist managers in thinking systemically to develop the ability to see the various business activities and capitals of the organisation as continuously influencing one another and the dynamics these interactions create. In such a case, their integrated thinking skills can be significantly enhanced to generate more holistic and better-informed Integrated Reports, which can lead to more effective policies, decisions, and strategies. Thus, even though the attempts by Barnabè, Giorgino and Kunc (2019) followed the logic of analysing the Integrated Reports of two leading multi-national organisations and then creating a systemic or holistic picture of the data from the reports, so too can the same process in reverse yield benefits, i.e., the use of Systems or holistic thinking to create more comprehensive Integrated Reports.

5. Implications for practice

The application of Systems Thinking to integrated reporting has several implications. Firstly, in its encouragement of involving the widest variety of stakeholders and mental models as possible, Integrated Reporting based on a Systems Thinking approach can aid in overcoming the common critique levelled at Integrated Reporting as an activity done at the top, with little or no engagement with stakeholders at the bottom or from outside the organisation (Monat & Gannon, 2015; Dumay & Dai, 2017; McNally, Cerbone, & Maroun, 2017). However, it is worth remembering that models and maps generated within the context of Systems

Thinking are based on a group of people's (generally executives and senior management's) perceptions of the real world, or their 'mental models' (Ford & Sterman, 1998; Senge, 2006; Jackson, 2016). Therefore, while systems thinking tools or modelling techniques can be valuable in uncovering mental models, such mental models can potentially, and often do contribute to highly subjective and biased decision-making. These decisions are influenced by each person's life experiences, stereotypes, preferences, biases, etc. (Nedopil, Steger and Amann, 2010) and can therefore be incorrect, incomplete or inaccurate. This highlights the importance of including a diverse group of stakeholders in systems thinking based activities for integrated reporting, beyond executives and the senior management team alone.

Secondly, the use of Systems Thinking can promote the integratedness of Integrated Reports. Organisational reporting to stakeholders has seen a transition from brief descriptions of corporate social responsibility initiatives in predominantly financial reports to a growing emphasis on reporting financial, environmental, social and governance-related organisational information. Furthermore, this information has to be presented as a cohesive whole with the connections between the different aspects clearly explicated. Integrated Reports are generally presented as a narrative structured to explain the various actions and policies the organisation has taken with respect to value creation, preservation or erosion in relation to its finance, governance, the environment, and society. However, there is growing debate as to whether such 'Integrated' Reports demonstrate sufficient integratedness and more importantly, whether they effect any real change in, or reduce actual harm to the world. For this reason, there has been growing emphasis on the importance of integrated and systems thinking for Integrated Reporting, examples of which include the Corporate Reporting Dialogue's push for more cohesive and holistic reporting of value creation in 2014, the IIRC's launch of the Integrated Thinking and Strategy group in 2017, the IIRC's 2020 'State of play' report which highlighted the interconnectivity of the multiple capitals and the change in value focus from the 'shareholder' to the 'system' and the Value Reporting Foundation's assertion of the importance of multi-capital integration via virtuous loops and collaboration across all organisational sections in 2021, to name a few (IIRC n.d, 2019; Value Reporting Foundation n.d, 2021a).

Thirdly, systems and integrated thinking are presented here, not as an alternative to the statistical and reductionist thinking commonly employed in financial reporting, but rather as complementary to them (Monat and Gannon, 2015). This is especially needed for constructing a truly Integrated Report in which the synthesis of these ways of thinking and the different types of data they produce are equally critical. Indeed, these different types of thinking skills are both required when trying to understand the organisation as a whole. This is especially relevant since organisations are comprised of 'hard' systems which can be optimised (such as IT systems or financial systems) and 'soft' systems (human/social systems), which are more complex and difficult to deal with (Checkland, 2007).

Fourthly, in viewing organisations as social systems, the importance of stakeholder relations and real world impact is highlighted. Social systems are comprised of various actors and systems joined together through various networks of relationships, or feedback loops, which constantly influence one another in stabilising or reinforcing ways, which can lead to unpredictable and counter-intuitive behaviours (Monat and Gannon, 2015). This is an important consideration when organisations attempt to create and implement policies in the pursuit of sustainability. Integrated reports merely provide a narrative of what the organisation is doing in the pursuit of sustainability, but the complex effects of such initiatives on the systems comprising the organisation (and those outside of it but connected to it, including the natural environment) are not adequately captured in such reports, if at all. Combining integrated reporting with the mapping and modelling techniques proposed by systems thinking can assist in predicting the counterintuitive effects of such sustainability initiatives before any negative impacts are experienced in the real world. Thus, more dynamic and systemic approaches to Integrated Reporting should be encouraged to prevent the creation of reports that read well, but do not create much impact in the real world - or worse, negatively impact the environmental, social and governance systems linked to the organisation – and/or the organisation itself.

6. Conclusion

Producing an Integrated Report is a mammoth and complex task, but one that is becoming increasingly urgent and necessary as stakeholders demand transparency and accountability from organisations and industries the world over. Exemplary Integrated Reporting remains an evolving art open to innovations, both quantitative and qualitative, from a wide variety of fields. It is proposed here that the ability to perceive the interconnectedness

of an organisation's activities and resources and to be able to employ higher-level reasoning (i.e systems thinking and by extension, integrated thinking) with regard to them, can contribute to more effective governance and management of organisations and to more realistic, comprehensive, and informed integrated reports. This is becoming a point of departure for many recent studies exploring the significance of systems and integrated thinking to various facets of the sustainability movement, including to the circular economy (Barnabè and Nazir, 2022), to education around the molecular basis of sustainability (Mahaffy *et al.*, 2019), to corporate sustainability (Ahlström, Williams and Vildåsen, 2020), as a paradigm shift for sustainability transformations (Voulvoulis *et al.*, 2022), and as a means of reporting on the SDGs (Beyne, Visser and Allam, 2021), amongst others. Thus, higher-level thinking is pivotal in making sense of complex problems and in facilitating conversation around them. This conceptual paper has primarily highlighted the potential of systems thinking for integrated reporting. However, further research on how systems thinking can inform producing an Integrated Report is needed.

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