

RESEARCH ARTICLE

# The business model as a generative replicator

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## Abstract

This paper proposes a new conceptualization of business model (BM) that rigorously exploits the important insights this notion offers and links them to related views developed in economics and business studies. We develop the foundations of a BM concept consistent with the principles of generalized Darwinism (GD) and with contributions already developed within this framework. Thus, we demonstrate the relevance of GD as a unifying framework for developing the evolutionary theory of firm and industry. We suggest analysing BM as a generative replicator hosted by the firm, which structures interactions between the members of this organization and the social entities of its industrial environment. We argue that GD allows us to clarify the nature and boundaries of the BM concept and to specify its relationships to other key evolutionary concepts, such as organizational routines.

**Key words:** Business model; evolutionary economics; firm; generalized Darwinism; industry; replicator; routine

**JEL classification:** B52; D20; D83; L14; L20

## 1. Introduction

Generalized Darwinism (GD) has been presented as a possible unifying framework for the evolutionary approaches developed in economics and in management and organization studies (Aldrich *et al.*, 2008; Breslin, 2011; Hodgson and Knudsen, 2010; Hodgson and Stoelhorst, 2014; Hodgson, 2013; Johansson and Kask, 2013; Stoelhorst, 2008a, 2008b, 2014). GD is claimed to be a relevant means to overcome the limitations which make this vast field of research persistently fragmented and hinder its cumulative development (Abatecola *et al.*, 2020; Hodgson, 2019a: 109–132; Winter, 2014; Witt, 2014). According to its proponents, GD could help provide more accurate definitions and more rigorous uses of key evolutionary concepts, a *sine qua non* for properly relating insights developed in the field. As Vromen (2007) explains, this unifying approach identifies an accurate formulation of Darwinism that is general enough to embrace the specific features of socioeconomic evolution. GD does claim to offer a relevant framework for analysing novelty, emergence, continuity and other phenomena that characterize dynamic human systems such as firms. Darwinian principles of variation, selection and inheritance may indeed help address the evolution of complex and open social systems while considering individual and collective learning and adaptation or human agency and intentionality. Campbell (1974) makes a clear distinction between social and biotic evolution but posits that the core principles of Darwinism apply to both. In the same vein, Hodgson and Knudsen (2010: 3, 6) argue that GD ‘could become the backbone of a unified evolutionary framework for the social and behavioural sciences’ without falling into the trap of biological reductionism.

However, GD has been confronted with opposition or disregard from some leading members of evolutionary economics (Aldrich *et al.*, 2008; Hodgson, 2019a). Even if the reasons for these reactions

may vary, the best way to face them is to prove the fruitfulness of GD as an encompassing metatheoretical framework supporting the consistent development of evolutionary approaches used in economics and management studies (among others). In Hodgson's (2019b: 33) terms, '[t]he challenge is to show that generalized Darwinism can have an important impact on the development of middle-range theory and serve as a useful guide for empirical enquiry'. The current paper is an attempt to contribute to this programme. It intends to lay the foundations of a middle-range theory based on insights developed in management and organization studies around the concept of business model (BM).

Over the last decades, in the wake of the 'digital revolution', the BM has gained a central place in various streams of management science, such as strategy, entrepreneurship and innovation management (Foss and Saebi, 2017; George and Bock, 2011; Massa *et al.*, 2017; Zott *et al.*, 2011). It now appears that this concept could help improve our understanding of three main kinds of phenomena: foundations of the coherence of the firm and of its relative stability over time, foundations of industrial structures and of their relative stability over time and coevolution between the firm and the industry. However, the fulfilment of these promises involves overcoming the significant ambiguities that characterize the current literature regarding the very nature of BM. One should indeed acknowledge that this notion remains quite poorly defined (Foss and Saebi, 2018; Ritter and Lettl, 2018).

BM is commonly viewed as a set of very heterogeneous elements, with some referring to the behaviours of firm members, others relating to ideas such as representations or visions (e.g. the definition of 'a value proposition'), and others consisting of materially grounded mechanisms such as organizational routines or capabilities. This heterogeneity has been present since early conceptualizations of BM and has become more prominent with the development of the literature (Chesbrough and Rosenbloom, 2002; Foss and Saebi, 2018; Massa *et al.*, 2017; Osterwalder and Pigneur, 2010; Wirtz *et al.*, 2016; Zott *et al.*, 2011). Now, the loose integration of such disparate elements within the same concept raises serious problems in analysing their relationships and the role they play in different key processes, such as the replication processes that underlie firm reconstitution and the diffusion of certain BMs within and sometimes across industries.

The aim of this paper is to propose a new conceptualization of BM that would allow us to exploit on a more rigorous basis the important insights this concept offers and to relate them to corresponding views that have been developed in economics and management studies. To this end, we propose building the foundations of a BM concept consistent with the principles of GD and the contributions already developed in this frame. In doing so, we intend to help demonstrate the relevance of GD as a unifying framework for developing the evolutionary theory of firm and industry. Our conceptualization of BM in the frame of GD is expected to find a hearing among contributors to the management literature on BMs. There are already a few intersection points between the research communities focused on BMs and GD in management and organization studies (Carlborg *et al.*, 2018; Kask *et al.*, 2019).

We suggest analysing BM as a generative replicator hosted by the firm, which structures the interactions between the members of the organization and the social entities of its business environment. Our approach leads us to consider BM as a coherent set of materially grounded organizational dispositions, which guides the development of the firm in response to cues that appear within the organization and in its environment. We argue that due to its rigour constraints in defining and using notions, the framework of GD may allow us to clarify the nature and boundaries of the BM concept and to specify its relationships to other crucial concepts, such as organizational routines, from an evolutionary perspective (Hodgson, 2013). An original proposal of the article involves analysing BM as a generative replicator related to a special type of organization, namely, business firm selected at the industrial level. This means that the selection of firms at the industrial level involves selection for BMs, plus selection for routines, habits and genes. One of the theoretical consequences of this argument is to propose a new level of analysis of replication (requiring a new interactor and a new replicator) that embraces some of the key insights developed in the management literature on BM and that makes the conceptualization of BM theoretically more robust by notably adding new microfoundations. We add that this proposition encompasses both an evolutionary and institutional point of

view (Hodgson and Stoelhorst, 2014) and could be especially fruitful for thinking about the relations between the evolution of organizational routines and industrial dynamics.

Hence, our new conceptualization is expected to help link, on rigorous bases, the BM literature to other bodies of work that share common insights, though developed independently of each other. Prominent among the latter is the nascent literature on the interrelations or interdependence between routines (Hoekzema, 2020; Kremser and Schreyögg, 2016; Sele and Grand, 2016). We claim that notions of BM and of the ‘network of routines’ (Feldman *et al.*, 2016) both support the need to identify an ontological layer above routines themselves to properly address some evolutionary processes that affect the adaptation and selection of the firm in its industrial environment. Conceptualizing BM – rather than organizational routines – as the highest-level replicator hosted by the firm is particularly helpful for addressing the coevolution of firms and ‘industry architectures’ (Jacobides, 2016; Jacobides *et al.*, 2006).

The rest of the paper is organized as follows. Starting from an overview of the BM literature, section 2 discusses the value of the GD framework in developing a new conceptualization of BM. Building on this insight, section 3 elaborates an evolutionary and institutional approach viewing BM as a generative replicator. Section 4 concludes the paper and highlights paths for future research.

## 2. Conceptualizing the business model: a critical assessment

Though recent, the management literature on BMs has already developed several insights that are relevant for addressing a diversity of organizational, strategic and industrial phenomena. This fast-growing body of work could thus fruitfully contribute to the evolutionary theory of firm and industry, which requires overcoming the significant conceptual problems from which the literature on BM suffers, in order to provide a clear definition of the BM consistent with the key concepts currently used in evolutionary approaches. We suggest doing this by developing an original approach to the BM from the perspective of GD.

### 2.1 An overview of the business model literature

Given the number of papers dealing with BMs published over the last decades, it would be the aim of an entire article to review the diversity of BM definitions and approaches that have been proposed.<sup>1</sup> Several systematic reviews of the BM literature have been published over the last 10 years (Foss and Saebi, 2017, 2018; George and Bock, 2011; Lambert and Davidson, 2013; Massa *et al.*, 2017; Wirtz *et al.*, 2016; Zott *et al.*, 2011), on which we primarily elaborate our own synthesis of the literature.

The success of the term ‘business model’ dates back to the 1990s and was first related to the blossoming of the so-called ‘New Economy’ (Zott *et al.*, 2011).<sup>2</sup> The expression was first used by practitioners (managers, consultants, public actors and so on) and journalists to characterize the innovative strategic positioning of firms in the IT industry or the IT-based repositioning of firms in traditional sectors. By the late 1990s, several scholars had started to reappraise the notion, aiming at conceptualizing it and linking it to key principles of management science (e.g. Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002; Magretta, 2002). This move has been accompanied by a generalization of BM approaches to a broader diversity of firms and economic sectors (Lambert and Davidson, 2013). Currently, the BM has gained significant legitimacy in different fields of management research (i.e. strategy, entrepreneurship and innovation management, including with a view to social and environmental objectives), as shown by the sharp increase in academic publications addressing this issue (Massa *et al.*, 2017; Zott *et al.*, 2011).

The BM literature has proven fruitful in shedding new light on several issues, such as firm classification, firm performance and innovation (Amit and Zott, 2016; Foss and Saebi, 2015; Lambert and

<sup>1</sup>Foss and Saebi (2017) identify 7,391 publications focused on business model in the Scopus database for 1980–2015.

<sup>2</sup>We here disregard early uses of the term (see Wirtz *et al.*, 2016: 37).

Davidson, 2013; Zott *et al.*, 2011). However, one must admit that this blossoming research field has developed in the absence of firm conceptual groundings (Foss and Saebi, 2018; George and Bock, 2011; Lambert and Davidson, 2013; Wirtz *et al.*, 2016; Zott *et al.*, 2011). As Foss and Saebi (2015: 6) sum up, '[m]uch research has been done and continues to be done in spite of continuing conceptual confusion'. Indeed, many papers do not make explicit their definitions of BM (Zott *et al.*, 2011). Moreover, when a definition is offered, it often consists of a collection of elements that are both heterogeneous and loosely defined. In their survey of components that are frequently considered important parts of BM in the current literature, Wirtz *et al.* (2016: 41–42) mention – among others – 'strategy', 'resources', 'competencies', 'capabilities', 'networks and partnerships' and 'the market offering model' of the firm, including its 'value proposition', 'revenue model', 'activities' and 'processes'. Even if these elements are often not clearly defined when used in the BM literature, it is recognized that they are very different in nature. Some of these elements consist of depictions or mental schemes, others refer to the behaviours of actors who may operate within or outside the firm, while others consist of materially grounded structures that may shape and orient these behaviours.

This conceptual fuzziness has now been recognized as a major hindrance to advances in research on BM (George and Bock, 2011; Zott *et al.*, 2011) and indeed makes it difficult to relate the various insights and results this literature has produced and to develop cumulative knowledge on firm foundations. Admittedly, some progress may have been made towards a shared view of BM in recent literature. Foss and Saebi (2015: 8) argue that '[r]esearchers seem to converge on the basic understanding that business models denote the firm's core logic for creating and capturing value by specifying the firm's fundamental value proposition(s), the markets and market segments it addresses, the structure of the value chain which is required for realizing the relevant value proposition, and the mechanisms of value capture that the firm deploys, including its competitive strategy (e.g. Teece, 2010)'. Without denying the existence of such a convergence movement, we argue that, to date, it has not allowed us to provide clear answers to crucial questions regarding the content and manifestations of BM.

The nature and foundations of the 'core logic' of BM, to use Foss and Saebi's (2015) terms, must be much more clearly specified if one wants to understand the effects a BM exerts on the firm and its environment. Having analysed in detail a sample of 216 articles from the BM literature, Massa *et al.* (2017) identify three major interpretations of what BM means and is used for, referring to BMs as 'attributes of real firms' (i.e. the 'activities' implemented by firms and/or the 'resources' and 'capabilities' needed to perform them), as 'cognitive/linguistic schema' (i.e. 'images' or 'narratives' of real systems formed by organizational members) and as 'formal conceptual representations/descriptions' (i.e. scaled-down 'models' depicting how a business functions). Thus, major advances are still needed to improve the theoretical and empirical cumulativeness of the research developed in this field (Foss and Saebi, 2018).

Despite its deficiencies, we posit that the literature on BM, in its diversity, has developed some important insights that could help address three main categories of phenomena that directly interest the evolutionary theory of firm and industry.

First, the BM literature may help us analyse the coherence of the firm and its relative stability over time. As Zott *et al.* (2011: 1036–1037) argue, 'business model researchers generally adopt a holistic and systemic (as opposed to particularistic and functional) perspective, not just on *what* businesses do (e.g. what products and services they produce to serve needs in addressable market spaces) but also on *how* they do it (e.g. how they bridge factor and product markets in serving the needs of customers)'. This holistic and systemic perspective has notably been developed by approaches that analyse BM through the lens of 'organizational design' and of the 'resource-based view (RBV)' broadly defined, i.e. including the capabilities view (George and Bock, 2011: 85–87). From this perspective, the BM is first and foremost seen as the 'architecture of the value creation, delivery and capture mechanisms employed' (Teece, 2010), the nature of which should essentially be viewed as 'organizational' (Foss and Saebi, 2015, 2018). It is noteworthy that this literature echoes the research on 'corporate coherence' that

has developed in the fields of evolutionary economics (Teece *et al.*, 1994) and Austrian and post-Marshallian economics (Foss and Christensen, 2001).

Second, the BM literature has also developed valuable insights to better understand the foundations of industrial structures and of their relative stability over time. Such an ‘industry-level’ view (Wirtz *et al.*, 2016: 38–39) notably derives from ‘transactive’ approaches of BM (George and Bock, 2011: 88–89) that highlight the structures of a firm’s boundary-spanning transactions. As Lambert and Davidson (2013: 677) argue, ‘[t]he business model concept extends beyond boundaries of the traditional unit of analysis, the firm, to include network partners, other allies and the customer making it particularly useful as a unit of analysis where the success of the organization is closely tied to the relationships the entity has with others in the network’. In other words, the ‘transactive’ approaches of BM convey a view of a firm’s value creation that crucially depends on the members of its ecosystem (Massa *et al.*, 2017). As such, we argue that the BM concept may shed new light on the processes through which relatively stable configurations emerge at the industrial level from the interactions between firms and other actors, which is a long-standing issue of evolutionary and post-Marshallian economics (Bloch and Finch, 2010; Jacobides *et al.*, 2006; Jacobides, 2016; Richardson, 1972).

Third, the BM literature may help better elucidate coevolution between firms and industry. The goal is to uncover to what extent and how relations between the firm and the entities that operate within its industrial environment shape the possibilities and modalities of the firm’s evolution and to what extent and how these relations may lead to evolving industrial structures. This issue remains a key challenge for evolutionary and institutional economists (Bloch and Finch, 2010; Jacobides and Winter, 2005, 2012; Madsen and Szyliowicz, 2016). The approaches of BM in terms of ‘innovation form’, ‘opportunity facilitator’ and ‘narrative’ (George and Bock, 2011: 87–88) may contribute to the analysis of such phenomena. Such approaches highlight the role of BM as ‘both an enabling and limiting structure for the firm’s accumulation and deployment of resources’ (George and Bock, 2011: 99) and, at the same time, for the evolutionary dynamics of the industry in which the firm operates. The ultimate question relates to the mutual causal relations between evolving BMs and industrial dynamics (Bankvall *et al.*, 2017). Such a question requires relating upward effects on the industrial ecosystem by the BM innovations introduced by incumbent or newcomer firms to downward (selective in particular) effects of industrial structures on the BMs implemented by firms (Kask *et al.*, 2019).

The diverse approaches of BMs that have been put forward over the last two decades have thus provided many valuable insights that may improve evolutionary and institutional analyses of firms, of industries and of their dynamic relations developed in economics and management studies. However, exploiting these insights requires linking them consistently within an encompassing framework, which would have firm conceptual and theoretical foundations. We argue that such a framework could be established, following the GD perspective, as has notably been developed by Hodgson and Knudsen (2010).

## 2.2 Reframing the business model literature within a generalized Darwinism perspective

The project to generalize Darwinism derives from the ontological statement that the core Darwinian principles apply not only to biological evolution but also to all complex and evolving systems, including those within the socioeconomic sphere (Hodgson, 2002). Stoelhorst (2008a: 343) explains that ‘a generalized Darwinism [should acknowledge] both the ontological continuity and ontological similarity of all evolutionary processes and [...] needs to be complemented with multi-level selection logic’. This conjecture has several implications. GD notably claims that reality has a multilevel structure and that there is no ontological break between these levels. Each level of reality is thus dependent on the properties at work at lower layers. This logic of continuity (see also Stoelhorst, 2008b) is consistent with the view that each layer of reality can admit emergent properties. In brief, emergentism holds that each layer of reality is irreducible to the properties of lower layers and may even act on these lower layers (Lawson, 2012). According to this view, Szathmàry and Maynard Smith (1995) explain that complexity increases with the diversity of actions an entity can carry out, notably due to



transitions and information translations. There is a high degree of relatedness between the local units that combine within the higher entity (Maynard Smith and Szathmàry, 1997).

Moreover, GD relies on the claim that the evolution of every complex population system necessarily involves the three Darwinian principles of variation, inheritance and selection, even if these principles are not enough to provide a detailed account of these evolving systems (Hodgson and Knudsen, 2010). Building on these ontological foundations, GD proposes a set of concepts (replicator, interactor, fitness, etc.) and processes (subset selection, successor selection, diffusion, etc.) that are relevant to explain the evolution of various complex population systems and that are crucial to the development of a theory of evolution on multiple levels. In short, the project of GD promotes an original – and we believe fruitful – approach aiming at reconciling two distinct methodological perspectives held in the social sciences. The first objective is to build an encompassing metatheoretical framework based on a few general principles, concepts and processes that may have wide-ranging explanatory power. Second, GD nonetheless supports the development of detailed empirical studies and middle-range theories that acknowledge specificities of the level at which every phenomenon takes place and the characteristics of the context in which it occurs (Stoelhorst and Hensgens, 2006; see also the conclusive chapter of Hodgson and Knudsen, 2010).

The approach of BM as a generative replicator, which we elaborate on, is characteristic of these ‘middle-range theories’ that Hodgson and Knudsen (2010) call for other scholars to develop (see also Dollimore, 2014b; Rod, 2018). From this perspective, we suggest defining BM as a coherent set of organizational dispositions hosted by an organization to energize conditional patterns of interactions between the members (individuals or groups) of this organization and the social entities (interactors) of its industrial environment (consumers, competitors, suppliers, partners, public authorities, etc.), involving sequential responses to cues that are partly dependent on social positions in the organization and in its industrial environment. This definition, which explicitly echoes Hodgson and Knudsen’s (2010: 241) definition of routines, is elaborated on and discussed at length in the following section. For the time being, let us position the definition within the BM literature.

Our definition of BM resumes some of the main insights developed in the literature, especially in (i) the holistic (or systemic) organizational approaches of BM, namely, the ‘organizational design’ and ‘resource-based view (RBV)’ approaches (George and Bock, 2011: 85–87), and (ii) the ‘transactive’ approaches (George and Bock, 2011: 88–89). The definition is largely, although not completely, consistent with *The Palgrave Encyclopedia of Strategic Management’s* definition of BM as ‘a set of interdependent organizational activities centred on a focal firm’, the ‘architecture’ of which ‘captures how the focal firm is embedded in its ecosystem, that is, in its multiple networks of suppliers, partners and customers’ (Amit and Zott, 2016). Our definition first derives from the view that one of the most distinctive features of the BM concept lies in its account of interactions between the focal firm and the actors of its industrial environment. This characteristic is rooted in the very first developments of the BM literature, which highlighted the importance of firms to develop and manage networks of actors and business platforms so as to gain a competitive advantage in digital economy sectors (Amit and Zott, 2016; Jacobides, 2016; Parker and Van Alstyne, 2016). Second, our definition builds on the widespread insight that the BM emphasizes the interdependencies between different key features of a firm. However, we suggest being much more restrictive than what is usually done in the literature when characterizing the building blocks of the BM. We argue that the BM should be viewed as a system of organizational routines that govern the activities of the firm and, more specifically, interactions between the focal firm and its different external stakeholders. In this respect, our definition departs from Amit and Zott (2016), who define BM as an ‘activity system’. In our view, arguing that the BM is largely responsible for the ability of the firm to survive and develop in its industrial environment requires viewing it as an enduring *determinant* of the activities of the firm and of the firm’s reconstitution. In other words, ‘[w]e need to approach the question of business model as a question of capability architecture [...] to develop the capability to adapt and change’ (Jacobides, 2006: 162). In our view, this capability architecture mainly consists of a network of organizational routines – and more specifically of *intraindustry organizational routines* as argued in the next section.

Our definition also departs from approaches that define BMs as representations or narratives. While agreeing that the BM of a firm often embodies the vision of its managers and that it can be described and promoted through a narrative, we argue that (i) such a vision or narrative should not fall within the definition of BM, (ii) any firm has a BM, whether it has been formally described or remains largely tacit, and (iii) there may be some discrepancies – more or less so depending on the firm – between the BM of an organization and the representations actors (including managers) have of it. In terms of GD, it is crucial to distinguish the BM as a replicator, namely, the network of organizational routines that provide the ‘instructions to help guide [the firm’s] growth and development’, from the activities and narratives that may have led the organization to adopt the BM and from the activities and narratives generated by the BM once it has been adopted by the firm (Hodgson and Knudsen, 2010: 66). As argued in the next section, these ‘instructions’ depend on ‘environmental triggers or stimuli’ and are ‘materially grounded’, including on entities that operate at lower levels such as organizational routines and individual habits.

### 3. Building on a generalized Darwinism approach to business model

Arguing that BM should be viewed as a generative replicator derives first and foremost from the acknowledgement that individual routines should not be considered the highest-level unit for selection in industrial dynamics. As Feldman *et al.* (2016: 511) emphasize, acknowledging the ‘relationality [of routines] implies that we move beyond organizational routines as the unit of analysis and consider relations among routines and networks of routines’. We indeed argue that the selection of a firm as a cohesive entity not only involves selection for independent organizational routines but also for a coherent set of organizational dispositions carried by the firm, which structures its interactions with actors in its industrial environment. Hence, in this main section of the article, our objective is threefold: (1) to review some of GD’s key concepts and to consider how they are applied in the economic and managerial sphere to expose the few revisions we recommend introducing in this respect; (2) to propose an original definition of BM as the highest-level replicator hosted by the organization and as a unit for selection at the industrial level; and (3) to highlight the central role of the replication and diffusion of BMs in coevolution between firms and industry.

#### 3.1 Social interactors and replicators: towards a definition of BM as an emergent entity

The distinction between interactors and replicators is crucial in GD since these concepts are supposed to be relevant for the analysis of evolving systems, be they natural or social. Following Hull (1988: 408), an interactor can be defined as ‘an entity that directly interacts as a cohesive whole with its environment in such a way that this interaction *causes* replication to be differential’. The work of Sober and Wilson (1998) shows that the idea of group selection proposed by Darwin provides a legitimate evolutionary theory for understanding individual and collective behaviour. The authors add that ‘at the behavioural level, it is likely that much of what people have evolved to do is *for the benefit of the group*’ (Ibid.: 194), which implies studying the generative mechanisms that motivate adaptation in the social world and analysing replicators and interactors (see Mysterud, 2000).

In the social sphere, individuals meet the definition of interactors. Building on the idea of ‘group selection’, Hodgson and Knudsen (2004, 2010) argue that many organizations, particularly business firms, also qualify as interactors. To be an interactor, a group has to be cohesive and constitute a coherent emergent system. Firms usually meet these conditions. As Chassagnon (2014) explains, a firm is indeed a durable relational emergent entity based on complex institutional and organizational mechanisms that create, structure and change social interactions. From a complementary point of view, Stoelhorst (2008a: 356) argues that ‘[g]iven its ontological commitments to continuity and causal explanation, a Darwinian explanation of the existence and functional integrity of a higher level of organization (e.g. a firm) always needs to account for the ways in which this higher level of organization has overcome the detrimental effects of competition at the lower level of organization (e.g.

between the individual employees’). As we show in the rest of this article, BM appears as a conceptual opportunity to build on this ontological requirement.

Indeed, every social interactor hosts different replicators. In the main, a replicator is ‘a material structure hosted by the entity that is causally involved in the replication process and carries the information’ (Hodgson and Knudsen, 2010: 240–241). Genes, habits and routines qualify as replicators hosted by different social interactors, as shown in Table 1. The distinction between interactors and replicators and the identification of their relations are most important when considering the multilevel selection processes that operate in evolving social systems. This approach indeed allows us to differentiate between the cohesive entities selected in evolution (i.e. the interactors) and the entities that experience differential replication through these selection processes (i.e. replicators).

In defining replicators, it is important to stress their nature of ‘material structure’, which is not to deny the importance of the transmission of information through the replication process. The replication process does consist of the passing of information from one material entity to another, namely, from a replicator to its copy – and possibly, at the same time, from one interactor to another.<sup>3</sup> In addition, this argument allows for a rethinking of the relationships between adaptation and selection and of the principle of inheritance. In response to the work of Reydon and Scholz (2009), which concludes that organizational ecology is not a Darwinian research programme, Dollimore (2014a) explains that it is possible to conceptualize evolving Darwinian populations by specifying inheritance to approach adaptation and selection in a non-dichotomized way and to highlight the evolutionary significance of knowledge transmission. This general statement raises key and intricate questions surrounding the mechanisms of information or knowledge diffusion in the social sphere and their differences from related processes in the natural realm (see *infra*). Unlike DNA, social replicators, such as corporeal habits and habits of thought, replicate indirectly through behavioural expressions. The imperfections likely to characterize the copying of habits – especially in the case of habits of thought (see Veblen, 1898) – and the transmission of the information they embody are an important source of variation or novelty in social evolution.

Genes, habits and routines all qualify as ‘generative replicators’ that guide, as such, the development of their related interactors (see Table 1 and Hodgson and Knudsen, 2010: 122). Habits, be they corporeal habits or habits of thought, are crucial social generative replicators that lead to the development of the individuals who have acquired them. From a Pragmatist perspective, habits are foundational to the motives, preferences, beliefs and decisions of individuals as well as to social interactions and to the emergence of social structures (Brette *et al.*, 2017; Dewey, 2002 [1922]; Hodgson, 2004; Stoelhorst, 2008b; Veblen, 1914). Habits are notably foundational to the existence and persistence of this special type of institution, that is, organizations, including business firms. However, the distinctive features of an organization that make it a social interactor lead to the identification of a generative replicator that is specifically related to it, namely, organizational routines. Routines emerge from the structured interactions of individuals who are members of the organization as a cohesive entity. In brief, routines qualify as *emergent* entities borne from habits.

Now let us precisely define routines as generative replicators related to their specific interactors, namely, organizations. Hodgson and Knudsen (2010: 241) define routines as ‘organizational dispositions to energize conditional patterns of behaviour and interaction within organizations, involving sequential responses to cues that are partly dependent on social positions in the organization’. We endorse this definition, but we suggest extending it further to take into account the fact that routines may energize conditional patterns of interaction not only within the organization that hosts these routines but also between the members of this organization and the social entities that operate in its industrial environment. We suggest that these latter routines be referred to as *intraindustry organizational routines*. As a consequence, we adopt the following definition of organizational routines, which adds the elements shown in italics to Hodgson and Knudsen’s definition: routines are organizational

<sup>3</sup>This case, ‘common in the social domain’, refers to the notion of ‘diffusion’, which is ‘a type of inheritance that involves the copying of replicators, but not of interactors’ (Hodgson and Knudsen, 2010: 238).



**Table 1.** Interactors of three levels and corresponding replicators

Levels	Interactors	Replicators
Organizational	Organizations	Routines, habits, genes
Group	Groups	Habits, genes
Individual	Individuals	Habits, genes

Source: Hodgson and Knudsen (2010: 173).

dispositions *hosted by an organization* to energize conditional patterns of behaviour and interaction within *this organization and between the members of this organization and the social entities of its industrial environment*, involving sequential responses to cues that are partly dependent on social positions in the organization *and in its industrial environment*.

This extended definition remains fully consistent with the view that a routine is an entity emerging from the individual habits of members of an organization as well as a generative replicator related to an organization as its interactor. This assumption is notably ensured by our insistence on the fact that, to be considered a routine, an organizational disposition must be *hosted by an organization*, even when this disposition energizes conditional patterns of behaviour and interaction between the members and non-members of this organization. We incorporate here the view central to ‘transactive’ approaches of BM that ‘the firm’s activity system [and its capability architecture – see Jacobides, 2006] may transcend the focal firm and span across the firm and its industry boundaries but remain firm-centric’ (Amit and Zott, 2016).

This view paves the way to a definition of BM as an emergent entity from organizational routines and, more specifically, from *intraindustry organizational routines*. In brief, BMs are not reducible to organizational routines alone; BMs are positioned one ontological layer above routines themselves.

### 3.2 The BM of the firm as a unit for selection at the industrial level

Arguing that BM is an emergent entity from organizational routines means, to follow Lawson’s (2012: 348) definition, that this entity and its properties ‘arise through the relational organizing’ of routines and that ‘the emergent properties in question are not possessed’ by routines. In this respect, our approach to BM is consistent with the emphasis placed by recent literature on ‘the relationality of routines’ and namely, the idea that ‘organizational capabilities might be understood as networks of routines, rather than bundles of routines’ (Feldman *et al.*, 2016: 511) and with the view of the firm as a relational emergent entity (Chassagnon, 2014). We indeed argue that the relations of mutual dependence between different organizational routines that govern the interactions between members of a firm and the social entities of its industrial environment are at the crux of some key organizational and industrial phenomena. Acknowledging the importance of these relations leads us to challenge Hodgson and Knudsen’s (2010: 172) view that ‘routines [...] are the highest-level replicator hosted by the organization’. Thus, we propose introducing into the GD framework a replicator positioned one layer above routines, i.e. the BM, which is claimed to be foundational to the firm’s coherence, to the understanding of firms’ competitive strategies, to the emergence of industrial structures and to firm-industry coevolution.

As shown in Table 2, we argue that BM is a generative replicator related to a special type of organization, namely, business firms selected at the industrial level.<sup>4</sup> This finding means that the selection of firms at the industrial level involves selection for BMs plus selection for routines, habits and genes. In this respect, we are in the wake of a long tradition of thought that has acknowledged the importance of industry (Bloch and Finch, 2010). Marshall (1920 [1890]) and Schumpeter (1939)

<sup>4</sup>In his 2014 article, Chassagnon proposes, based on an ontological analysis, distinguishing the firm as a real institutional and organizational entity from other forms of organization. See this article for further clarification.

**Table 2.** Interactors of four levels and corresponding replicators

Levels	Interactors	Replicators
Industrial	Firms of an industry	Business models, routines, habits, genes
Organizational	Organizations	Routines, habits, genes
Group	Groups	Habits, genes
Individual	Individuals	Habits, genes

Source: Adapted by the authors from Hodgson and Knudsen (2010: 173).

already stressed the crucial importance of the industrial level for understanding economic evolution. The economy is indeed composed of multiple industries that have their own evolutionary paths. Between the microlevel of the firm and the macrolevel of the whole economy, there is a mesolevel analysis, which is vital for understanding the birth, growth, decline and death of firms in market economies (Dopfer *et al.*, 2004).

An industry primarily involves firms that share the same business in the sense that they market goods or services that are relatively homogeneous. These business firms interact with one another (by competing, cooperating, imitating, etc.) and with other entities such as consumers, suppliers, public authorities, non-public organizations and so on. In addition, the dynamics of industry are not disconnected from institutional environments (see Chassagnon, 2011a). Thus, we refer to a broad Darwinian view of the industrial environment that has an impact on the evolution of firms. The industrial environment concerns the specificities of the sectors and their actors as well as the business-political environment. As Vatiro (2017) reminds us, in business firm analysis, we have to take into account politics-driven variations, inheritance and so the selection of corporate attributes (see also the evolutionary perspective of Roe, 1996). From a complementary point of view, Pagano (2012: 1272) considers that ‘the advent of the new organizational species [...] require[s] a complex political process’. It is clear that the governance of private firms could be established in part by legal and political dynamics regarding the conduct of economic activities. Positive and state rules are based on external regulatory influences, but the private nature governing the internal social organization of the firm also results in political balance among different members. The private internal ordering of the firm is based on intrinsic organizational standards and complements positive law in industrial dynamics (see Chassagnon and Haned, 2019).

Our suggestion to consider BM as the highest-level replicator hosted by the organization has many foundations and implications we successively consider in the rest of this section. As Hodgson and Knudsen (2010: 174) argue, ‘[t]he competitive selection of cohesive groups such as firms is due to their differential properties in a common environment’. Routines have long been identified as a major source of a firm’s distinctiveness and of the performance differentials between firms in market competition (Nelson and Winter, 1982). Recently, the view that ‘from an organizational perspective outcomes are generated not through single routines but through the *multiplicity of all routines* as a whole’ has been systematically addressed (Pentland *et al.*, 2016). This acknowledgement has paved the way for an analysis of ‘routine interdependence’ and for an elaboration of the concepts of ‘networks of routines’, ‘clusters of routines’ and ‘ecologies of routines’ (Feldman *et al.*, 2016; Hoekzema, 2020; Sele and Grand, 2016). In Kremser and Schreyögg’s (2016) view, ‘a cluster [of routines] consists of multiple, complementary routines, each contributing a partial result to the accomplishment of a common task’. This view sheds new light on the notion of ‘complementarities’ (Ennen and Richter, 2010; Milgrom and Roberts, 1995), which is foundational to Foss and Saebi’s (2018) approach to BM. Hence, we argue that the concept of a ‘routine cluster’ allows us to give firmer foundations to the organizational ‘architecture’ the BM consists of, and thus to the coherence of the firm (Teece, 2010; Teece *et al.*, 1994).

For Teece *et al.* (1994: 3), ‘firms are coherent to the extent that their constituent businesses are related to one another’, adding that ‘in the language of economics, businesses are related if there

are economies to their joint operation'. The vision of BM we propose allows us to connect the concepts of 'routine cluster' and 'complementarities' and makes it possible to contribute to the literature on 'corporate coherence' by bringing new explanatory elements to the evolutionary paths of firms (Foss and Christensen, 2001). Basically, our approach highlights the material foundations of the coherence of the firm that lie within the organizational routines and the individual habits developed in relation to its BM. The *intraindustry organizational routines* of the firm – i.e. the routines that govern interactions between the firm and the social entities of its industrial environment – are dependent on one another and on the other routines of the firm and the habits of its members. These relations delimitate the possibilities of and hindrances on the firm's adaptiveness. For instance, while the causes of the failures of leading firms such as Kodak and Nokia at the turn of the 2010s have been variously interpreted, it seems clear that both primarily suffered from their inability to adapt their respective *intraindustry organizational routines* to their changing environments. The former failed to adapt its organization to the new business relations with customers required by the transition from film-based to digital cameras (McGrath, 2010). The latter failed to develop organizational routines governing relations with suppliers of mobile operating systems and developers of applications that every smartphone manufacturer had to manage to survive (Chesbrough, 2011). Such adaptations to the BMs of Kodak and Nokia would have required systemic changes in their respective networks of routines that would have challenged their 'corporate coherences'.

Our conceptualization of BM also offers new perspectives for addressing the issue of 'corporate coherence' in the specific case of multibusiness firms. As Foss and Saebi (2015: 11–12) explain, 'business models exist on the division level of the firm; that is, in multibusiness corporations, a corporate centre oversees the actions of a number of discrete operating business units, each with their own competitive strategy and business model'. Diversification strategies often involve exploiting *intraindustry organizational routines* developed within the frame of a business unit (in relation to certain customers, partners, suppliers and so on) to develop new business units. Hence, connections between the different BMs developed by a multibusiness firm enable it to maintain a kind of corporate coherence when it expands the portfolio of its businesses. Symmetrically, it has been argued that the 'interorganizational cognitions' associated with *intraindustry organizational routines* developed in the frame of the different business units of a firm may be important decision drivers to the narrowing of the firm's business portfolio and the (partial) redefining of its corporate coherence (Aspara *et al.*, 2013).

Additionally, our specific definition of BM leads us to consider that the performance differentials between competing firms primarily result from differences between their sets of *intraindustry organizational routines*. This view meets with rather frequent insights in BM literature, according to which the ability of a firm to manage its transactive relations with the key actors of its industrial ecosystem may be a major source of competitive advantage (Amit and Zott, 2012, 2016; Teece, 2016). As Massa *et al.* (2017: 94) assert in their review of the literature, it is now commonly argued that 'value is created not only by producers but also by customers and other members of their value-creation ecosystems'. In the oligopolistic industries of the digital economy, this argument seems to be empirically illustrated, for instance, by Apple's BM, which is based on its ability to 'own the consumer' and to control the end-to-end supply chain (Montgomerie and Roscoe, 2013), or by multisided platform firms such as Airbnb or Uber (Zhao *et al.*, 2020). Moreover, this view also seems valid in such a different industry facing radically different challenges as the beer industry, notably the microbrewery sector (Wells, 2016).<sup>5</sup>

Our approach to BM thus makes it possible to integrate within the GD framework the significant insights recently put forward in economics and management literature deriving from the view that the 'network of routines' that forms the organizational 'architecture' of a firm may be a unit for selection

<sup>5</sup>In the same vein, the cases of Kodak and Nokia are illustrative of the possibility for incumbent firms to fail because of their inability to adapt their BMs to changing industrial conditions. However, systematic empirical studies showing a robust link between BMs (and business model innovations), firm performance and sustained competitive advantage are still limited (Foss and Saebi, 2017).

in business competition at the industrial level. This view implies that the selection processes to which firms are subject directly affect the distribution of BMs in an industry and the differential replication of these BMs.

### 3.3 BMs in industrial dynamics: generative replication, diffusion and group selection

BMs qualify as generative replicators. A BM has causal effects on its related interactor – i.e. the business firm that hosts it – and on replicators at lower layers. A BM can retroact on the organizational routines of a firm, including specific *intraindustry routines*. In addition, some evolving routines can induce further changes in other routines. The analysis of generative effects of BM as the organizational ‘architecture’ of a firm is only emerging. Some works, notably those building on the notions of ‘complementarity’ and ‘routine clusters’, stress the ‘limits to organizational adaptiveness’ due to the enduring consequences of certain managerial decisions and to the organizational rigidities created by routine interdependencies (Hoekzema, 2020; Kremser and Schreyögg, 2016). However, other works referring to the concept of ‘routine ecologies’ point out some sources of flexibility and endogenous change found in evolving networks of routines (Hoekzema, 2020; Sele and Grand, 2016). These works highlight that the interactions of organizational routines may give rise to unplanned outcomes and offer relevant inputs to analyse the emergent ‘generative effects’ of BMs.

In addition, our specific definition highlights the structuring effects BMs may have on the relations between focal firms, in particular large international network firms, and other firms that operate in their industrial environments, be they competing or cooperating. Replication processes that are at work in the diffusion of BMs from one firm to others thus appear to be crucial determinants of industrial dynamics.

Being aware of the crucial importance of BM to economic competition, firm managers are likely to try to copy the BMs of successful firms. As Jacobides and Winter (2012: 1376) argue, ‘[b]usiness models, in principle, are imitable; once established (usually through the efforts, ingenuity, and constant prodding of the entrepreneur or firm that came up with them), they can be emulated, with no such setup costs, by others’. Then, imitation becomes a strong argument of strategic choices and changing organizations in view of business success (Teece, 2010; Zhao *et al.*, 2020). The distinction between the interactor and replicator is crucial to dealing with the imitation and diffusion of BM – i.e. its replication from one firm to another. The diffusion of a BM derives from imitation by a follower firm ( $j$ ) of the phenotypic manifestations (actualizations) of the BM of a leader firm ( $i$ ). These phenotypic manifestations may consist of actions, ideas or narratives (e.g. the expression of the strategic vision of the firm’s managers in their external communication). As the BM of firm  $i$  is not directly observable by firm  $j$ , but through the relations the two interactors may have, the replication is likely to be imperfect. The more tacit the BM and the specific routines on which it rests, the more difficult the imitation of the BM and the more likely the copy is to be different from its source.

As the literature on ‘replication as strategy’ has long shown, the deliberate transfer of knowledge and routines from one business unit to another within the same firm is complex and subject to ‘copy errors’ (Gao *et al.*, 2018; Szulanski and Jensen, 2006; Winter and Szulanski, 2001).<sup>6</sup> These difficulties are likely to be more significant in cases involving diffusion between competing firms, where firm  $i$  may have much to lose in the replication of its BM by firm  $j$ , leading the former to prevent copying by the latter (Casadesus-Masanell and Zhu, 2013). Even if ‘[a]t a superficial level all business models might seem easy to imitate’, Teece (2010: 181–182) argues that ‘there may be [among other barriers] a level of opacity [...] that makes it difficult for outsiders to understand in sufficient detail how a business model is implemented, or which of its elements in fact constitute the source of customer acceptability’.<sup>7</sup>

<sup>6</sup>Note that the ‘replication as strategy’ literature supports the view that a BM should be considered a unit for selection to the extent that it argues that ‘firms are often better off replicating successful business models in their entirety, rather than trying to figure out which individual parts of their current models to alter, and which to “copy”’ (Aspara *et al.*, 2013: 470).

<sup>7</sup>However, ‘errors’ in the passing of information are not necessarily deleterious for the follower firm. The mutations within the imitated BM may even be a source of innovation for the follower firm and for the industry.

Acknowledging that the diffusion of a BM requires that the information it embodies be copied from the material structure of firm *i* to the material structure of firm *j* addresses the conditions of this ‘re-embeddedness’. The risk attached to the imitation of a BM is not only that it is less effective in the follower firm (firm *j*) than it is in the source firm (firm *i*) but also that it alters the complementarities in firm *j*, its corporate coherence and finally its ability to achieve economic success and survival (Foss and Saebi, 2018). Kremser and Schreyögg (2016) point out the difficulties an organization faces in adopting new routines that can provoke systemic perturbations in the cluster of complementary routines it previously developed, generating significant ‘misfit costs’. Our approach implies that the attempts made by firm *j* to imitate the BM of firm *i* require changing the organizational routines that govern the relations firm *j* has developed with its external stakeholders. Such changes may be particularly difficult to implement by incumbent firms that have established such relations for a long time and built several organizational routines along these lines. However, it may happen that the diffusion of a BM initiates a process of cumulative change within firms (i.e. the interactors) that have managed to adopt it. Moreover, this process is likely to affect, in return, the BM itself and to involve firms in a feedback loop. Finally, the very features of a BM imply that this feedback loop may extend to the social entities of the firms’ industrial environment, thus creating an opportunity to alter the ‘industry architectures’.

The concept of ‘industry architecture’ has been developed to encompass the ‘sector-wide templates that circumscribe the division of labour’ (Jacobides *et al.*, 2006: 1200), namely, ‘the set of organizational and inter-organizational roles, rules, customs, structures, business models and relationships that describe the division of labour within a particular industry and determine how and by whom value is typically created, and who captures value as a result’ (Jacobides, 2016). This notion was intended to serve as an entry point to address key issues related to firm-industry coevolution, namely, the emergence of specific industrial configurations and their evolutionary paths, as well as the downward (industry to firm) and upward (firm to industry) effects involved. We argue that our approach to BM first offers the opportunity to provide a more parsimonious definition of the concept of ‘industry architecture’, namely, the set of BMs of firms that operate within an industry. This set of BMs indeed governs the division of labour between the firms that take part in the industry and the relations they develop in this frame. Analysing industry architectures through the lens of our BM approach also helps highlight the material foundations of industrial structures located in the (*intraindustry*) organizational routines of firms and the individual habits of their members. Finally, our conceptualization of BM opens potentially fruitful paths to analyse the multilevel evolutionary processes that govern industry trajectories. In this respect, we agree with Jacobides and Winter (2012: 1376), who emphasize the need to further analyse ‘the coevolution of firm strategy and the institutional environment’ and thus the interactions between adaptation, diffusion and selection processes.

From our perspective, addressing firm-industry coevolution means analysing how changes in the BM of a firm – or the implementation of ‘business model innovations’ (Foss and Saebi, 2015; Teece, 2018) – affect its relations to other firms in the industry and then how this new transient configuration of the industry architecture has downward effects on the firms that operate in the industry and on their own BMs. These effects may be of two different natures, namely, selection and adaptation. First, the BMs of certain firms may prove unfit for the new configuration of the industry architecture. Second, changes in the ‘industry architecture’ may elicit reactions from some firms to adapt to the new context. This cumulative process is likely to continue until the stabilization, for a certain time, of a specific industry architecture.

The industry architecture can then be viewed as the emerging outcome of both (i) joint attempts of the various firms of an industry to adapt their BMs to the dispositions of other actors in the industry and (ii) the selective effects exerted on these firms in return by the environment thus constituted. This view is in accordance with Hodgson and Knudsen’s (2010) rationale, according to which we must go beyond a static and exogenous view of the selection environment. The latter can notably be shaped by powerful actors, leading firms in particular, that may influence the definition of selection rules,



through their marketing or lobbying policies for instance. The coevolutionary approaches of firms and industries have developed in recent years, especially with the objective of proposing new analyses of adaptation and exaptation (Abatecola *et al.*, 2016). This literature has emphasized the ability of innovative firms to gather existing knowledge and to reuse it to shape their business environments for their own benefit and to some extent for that of the members of their ecosystems. This argument is even truer in large firms organized in networks of production, which have great economic power in industry (Chassagnon, 2011b). These firms influence the evolutionary dynamics of the industry through the dissemination of their BMs. In addition, the BM of the focal firm has an influence on the routines deployed by the subcontracting firms and thus on the organization of work done in the firms of the network. The managers of the focal firm must promote and protect the network's dynamic capabilities because at the centre of the process of interfirm cooperation, we find industrial complementarity effects required by the whole network that are produced by different firms (Chassagnon, 2013). In addition, it is noteworthy that in some sectors, the most important firms in terms of market capitalization, R&D and capabilities, can exert positive externalities on their direct competitors (Jacobides and Tae, 2015). Such firms are indeed able to 'increase the total "pie" available to the segment [they dominate], making it more of a bottleneck' (Ibid.: 905), which shows that relations between the BMs of competing firms, as well as the 'industry architectures' they support, may be diverse and complex, as competition sometimes does not exclude some dose of collaboration.

Our approach may serve to shed light on the fact that the selection process in an industry leads to the selection of groups of firms that have complementary BMs. Because of their self-reinforcing nature, these complementary relationships are likely to lead to a stabilization of industry architectures but also to different institutional configurations of business practices for a given period. In this respect, it is necessary to consider broadly what the industrial environment is to integrate the role of the political and historical context in the configuration of industry architectures and to propose more institutional analyses in organizational economics (see Pagano and Vatiero, 2015 and the managerial work of Jacobides and Kudina, 2013). Such an argument deserves to integrate institutional change more precisely into our Darwinian analysis, notably from a comparative institutional analysis perspective (see Aoki, 2001).

#### 4. Conclusion: contributions and further research

Overall, our paper makes three distinct contributions. First, we lay the foundations of a middle-range theory aiming at integrating within the GD framework what we see as the most significant insights developed in the BM literature. Second, we propose a way to coherently link the notions of routine, BM, network of routines, complementarities and corporate coherence and thus the distinct literature on these concepts. Third, we open new paths to analyse the coevolution of firms and industry architectures within a coherent frame referring to concepts and processes that are precisely defined. As a corollary, we highlight the value of GD as a unifying and fruitful framework for developing the evolutionary theory of firm and industry.

In a recent paper, Abatecola *et al.* (2020) analyse the *state of the art* of coevolutionary research in organization studies and show as a result a scarcity of explanations of the processes that characterize coevolution. In this article, we have proposed reducing this gap in the literature by integrating the BM into the analysis of the coevolution of both the firm level and the industry level. From this perspective, our contribution based on GD enriches the literature on both organizational economics and management. Moreover, in doing so, we also provide answers to criticisms made in the evolutionary literature against GD.

Finally, our article points out the need to better conceptualize the reconstitutive relationships between BMs and institutional environments to renew our understanding of the dynamics of capitalism. Our GD approach to BM is complementary to the varieties of capitalism approach developed by Hall and Soskice (2001), who claim the interest of locating the firm and its network of relationships at

the centre of analysis and thus connecting business studies with comparative political economy studies. According to this view, the authors posit that the firm is relational in so far as what matters is ‘the quality of the relationship the firm is able to establish, both internally, with its own employees, and externally, with a range of other actors that include suppliers, clients, collaborators, stakeholders, trade unions, business associations, and governments’ (Hall and Soskice, 2001: 6). We think that our definition of BM as a generative replicator allows us to reconnect business studies, organizational economics and political economy research and paves the way for future research linking BM, institutional change and dynamics of capitalism.

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