Do Virtual Enterprises Exist?

A Proposed Analysis Model

Eric Brunelle
HEC MONTREAL

ABSTRACT

Because of the phenomenal innovations within the field of information and communications technologies during the last decade, companies have been able to reinvent their techniques for selling products and services, reorganise the work process and build strategic partnerships. The use of these technologies has resulted in major spatial and temporal asynchronies. The decompartmentalisation of time and space in organisational activities has given rise to a new kind of organisation that many people refer to as a virtual enterprise. In this article, we propose a different approach. We believe that virtuality is a dimension that exists in all enterprises; consequently, all organisations need to pay particular attention to it. On this basis, we developed an analysis model based on organisational relationships that can be used to assess the degree of virtuality in an enterprise. We believe that this model will help managers to better understand the impacts of virtuality on their organisations and consequently on their management methods.

Keywords: Virtuality, virtual organisation, virtual enterprise, model.

In the early 1990s, a new concept appeared in managers’ vocabulary: the virtual enterprise (Davidow & Malone, 1992). Since then, as demonstrated by the growing number of articles referring to the concept, we have seen increased interest in the subject on the part of people who have a direct or indirect link to the business world. Many journals specialising in information and communications technologies (ICTs) and management continually refer to this kind of enterprise—described as the company of the future—and attempt to clarify its strategic possibilities and possible competitive advantages (Gunasekaran, Lai, & Cheng, 2008; Sarkis, Talluri, & Gunasekaran, 2007), the various structural forms and their characteristics (Riemer & Klein, 2008; Wadhwa, Mishra, & Chan, 2009), technological aspects (Jagdev, Vasiliiu, Browne, & Zaremba, 2008; Preece, Chalmers, McKenzie, Pan, & Gray, 2008), and finally its implications for managers (McSweeney, 2006; Zuo & Panda, 2008).

Nevertheless, although much has been written on the subject and many studies carried out, the concept of virtual enterprise remains fuzzy and devoid of meaning for many people; no established definition exists. This leads us to question the very existence of this concept. How do virtual enterprises differ from traditional organisations? Is there really a difference between this type of organisation and the structures described in the past (Chandler, 1962; Mintzberg, 1979)? As we have pointed out, despite more than 20 years of research and reflection on the topic, there is no consensus on how to define what a virtual enterprise is.

Based on our review of the literature, we have identified three different perspectives that emerge from the publications of researchers and practitioners that can be used to describe this kind of organisation. We will call them the commercial perspective, the internal perspective and the strategic perspective.

The commercial perspective describes the virtual enterprise in relation to its customers and suppliers. This perspective focuses on what many researchers call cyber-enterprises. To some extent, these are organisations with which consumers (both individuals and organisations) can communicate by using an ICT (for example, a transactional website or call centre).
Typical examples of virtual enterprises as viewed from the commercial perspective are Amazon.com, which was originally a bookstore that sold exclusively on the Internet and now retails a multitude of products, and Dell Computer, the world’s leading computer manufacturer. These companies carry out transactions worth millions of US dollars each year exclusively using ICTs. This kind of enterprise is said to be virtual because all or a major proportion of their business transactions are carried out on an electronic marketplace, rather than a physical marketplace with a tangible place of business and a physical presence, as had always been done traditionally (Rayport & Sviokla, 1994).

The internal perspective refers to how work is organised. What gives enterprises their virtual nature is the lack of conventional offices, which are replaced by the use of new technologies that make it possible to decentralise work by dispersing it geographically and temporarily, while still enabling employees to retain a direct link with the company (Kirkman & Mathieu, 2005). This is what many people call a virtual office. Several kinds of work organisation fit into this perspective: paperless offices, shared offices, hoteling, telework, home-based work and virtual work teams (Davenport & Pearlson, 1998). The company VeriFone, the world leader in payment automation systems, is often cited as an example of this new kind of work organisation and indeed has been called the first true virtual enterprise (Galal, Stoddard, Nolan, & Kao, 1995).

Finally, the strategic perspective describes the virtual enterprise by means of the proximity of its relationships with its business partners in the achievement of common, shared goals (Kahtara & Fujii, 2008). In this perspective, the virtual enterprise is defined as an organisation that brings complementary individuals and interest groups together in an association, which acts like a conventional enterprise. Thus, there are said to be three kinds of virtual enterprise: the group of freelance workers; the network of small and medium-sized enterprises working to create a product or service; and the global corporation, whose products and expertise can be located around the world in its various subsidiaries. These different types of organisation share certain essential characteristics: the involvement of legally independent partners, a limited lifespan, the existence of a common mission for all participants, a focus on each partner’s key competencies, and the intensive use of information technologies (Choe, 2008). The virtual nature of this kind of organisation results from the fact that these enterprises do not really have any actual physical existence but exist through the pooling of resources belonging to each of the partners.

Some authors have attempted to unite all three perspectives. Venkatraman and Henderson (1998), for example, propose that these three kinds of virtual organisation are not mutually exclusive but complementary. They add that the three forms are interdependent and that any one of them only becomes completely possible through the achievement of the others. In the view of these authors, contrary to what is reflected in many articles, it is limiting to define virtual organisations by means of only one of these perspectives. They assert that it is more accurate to consider them as being interrelated (see Figure 1).
The Definition of Virtual
In recent years, the adjective virtual has become all but ubiquitous; it is used in various ways to describe specific kinds of objects and events. Nevertheless, despite its popularity, many people find the term fuzzy and meaningless (Gibson & Gibbs, 2006; Shekhar, 2006). In our view, it is indispensable to first define the concept, so we can better understand what a virtual enterprise is. Dictionaries define the word virtual along the following lines: unrealised, having no actual effect, potential, theoretical.

Virtuality takes the individual as the starting point. It exists through the projection in an individual’s imagination of a fictitious, potential or theoretical conceptualisation. Thus, the virtual is essentially the fruit of the individual imagination. An object is virtual if it requires individuals to use their imaginations to represent it.

A brief reminder will illustrate this claim: contrary to popular belief, virtuality is far from being a recent invention that is exclusively related to the use of technology. The ancient Greeks and Romans lived in a context that referred to the concept. A good example of this is the creation of gods; these gods had an existence that could be called virtual insofar as they existed only theoretically, through the representation of the human imagination. This virtual creation or projection of the imagination was shared among humans to create a reality that we can qualify as being virtual.

The Virtual Enterprise
The realisation that virtuality stems from a construction of reality with the help of the imagination leads to the following question: What is a virtual enterprise? In the sense we have just examined, a virtual enterprise would be an enterprise that is unrealised, has no actual effect, is potential or theoretical—in short, an enterprise that exists only in the imagination. Obviously, none of the three perspectives proposed in the literature specifically corresponds to this definition. In all three of these perspectives, there is always an actual, real and concrete aspect. Let us examine why these approaches cannot truly be defined as being virtual.

Within the commercial perspective, databases, individuals who really work for the company, warehouses, offices, concrete work spaces, and so on, really do exist and have an actual and tangible effect. These elements allow us to delimit the enterprise concretely, and not
merely theoretically and potentially. Thus, despite the use of an electronic marketplace that requires a certain amount of imaginative interpretation, we cannot define this kind of enterprise as being ‘virtual’. Rather, the term refers to a kind of transaction or exchange: electronic commerce.

From the internal perspective, the presence of real, concrete infrastructure—tangible offices, physically accessible technologies, individuals who work in real life and who are members of the enterprise—leads us to conclude that we cannot qualify this kind of organisation as completely ‘virtual’ either. As we found in the commercial perspective, these enterprises are never entirely the outcome of an act of imaginative interpretation. We believe it would be more appropriate to describe this kind of organisation as dispersed or extended.

Finally, the strategic perspective is the one that comes closest to what could be defined as truly being a virtual enterprise since, at the extreme end of the continuum, the enterprise is proposed to be no more than a platform linking a number of legally independent partners. However, the mere fact that the enterprise uses technological tools (networks, servers, databases), carries out concrete activities and hires personnel, even if they are not exclusively members of that enterprise, prevents us from qualifying it as completely virtual. Thus, we believe that it would be more appropriate to describe this kind of organisation as a networked enterprise, outsourced enterprise, partnership or even strategic alliance.

To sum up, if we consider the etymology of the word virtual, we find that, regardless of the perspective presented in articles on the topic, it is conceptually impossible to describe any of these enterprises as virtual, because the presence of human beings, concrete infrastructure or technological tools for information processing and storage makes them ‘non-virtual’.

A broader understanding of the word virtual suggests that the only kind of enterprise that could be defined as truly virtual would be one that exists only potentially or theoretically. For example, a company that an entrepreneur imagines as he or she develops a business plan can be described as virtual since it exists only in the entrepreneur’s imagination.

Along the same lines, we propose that all enterprises possess a virtual dimension. Like the company imagined by an entrepreneur, an existing enterprise is also in constant flux. Every organisation requires some imagination if it is to be understood as a coherent whole. This kind of representation may be more or less important in different organisations, but it is always a factor.

We believe that the adjective virtual, which has become so fashionable in recent years to describe new kinds of business, is essentially used with the simple goal of representing the spatial and temporal changes that companies have been experiencing. These changes are closely related to the existence of new technologies that have enabled the development of omnipresent organisations. It is true that these technologies highlight the virtual dimension of enterprises, but they do not actually make them virtual. In our view, a poor understanding of the word virtual led to the conceptual impasse described by Lemke (1998), namely that no definition of the concept of virtual enterprise has been unanimously accepted.

**VIRTUALITY WITHIN ENTERPRISES**

As we have claimed, virtuality exists within all organisations, and the development of ICTs is reinforcing its importance and its presence. Although it is utopian to speak of virtual enterprises in the sense used in recent articles on the topic, it is still imperative to accurately grasp the role that virtuality plays in organisations so that we can better understand its scope and its implications. The three perspectives described above reflect situations in which the
individuals involved have no choice other than to use their imagination to represent reality. Thus, in these organisations, managers must deal with a certain amount of virtuality. Since every organisation has a virtual dimension, we believe that all enterprises can be situated on a virtuality continuum (see Figure 2).

**Figure 2: The Virtuality Continuum in Business**

![Virtuality Continuum](image)

We believe that the level of virtuality within an organisation can be explained by the communicative relationships among different actors. The perspectives described by the authors cited above are not random, since they cover all the possible communications that organisations engage in. In the first perspective (commercial relationship), the relationships are established with customers or suppliers. In the second perspective (internal relationship), the relationship builds up among members inside the enterprise. Finally, in the third perspective (strategic relationship), the relationship exists between the enterprise and its various partners that are working together to execute a project. Relationships with the government authorities may be included in commercial or strategic relationships, depending on their nature. To sum up, every entity likely to have any kind of relationship with the enterprise is represented by these three perspectives.

Regardless of the type of relationship—a financial transaction, a data transfer, information sharing, and so on—virtuality in an organisation always results from a relationship between at least two entities. Without relationships, virtuality acts only on the individual level and consequently has only an indirect impact on the organisation. Although it would be very interesting to study the individual level, we will limit our deliberations to the virtuality that exists at the organisational level.

Since virtuality is more and more a part of the daily lives of organisations and generates a multitude of increasingly observable consequences, we think it would be appropriate to develop a model that would better represent virtuality within organisations. We are therefore proposing an analysis model that has been constructed on the basis of the literature on the subject and our own research.

**AN INTEGRATIVE ANALYSIS MODEL**

The model proposes to analyse relationships among the various entities that communicate with the enterprise in question. As we showed above, virtuality with an organisation arises out of the relationships among stakeholders. The degree of virtuality is directly related to the importance of using the imagination to represent reality. We can define imagination as the faculty of representing within one’s mind objects, people or actions that are unreal or have never been perceived. At the organisational level, these images are shared by means of a common space where different people interact. Like Barnatt (1995), we will call this space cyberspace. Cyberspace is a timeless location without geographical limits. In some sense, it is the place where the collective imagination exists. Thus, during communication, the more individuals need to use their imagination to represent reality, the more important the presence of cyberspace will be.

Communications in cyberspace necessarily require imaginative interpretation by the stakeholders. Since communication does not necessarily occur in the same time or in the
same place, the people involved need to conceptualise some elements in their minds in order to function well and execute their activities. Thus, the more important relationships with cyberspace are, the greater the level of virtuality within the enterprise.

Since virtuality within organisations results from the relationship with cyberspace, and relationships in all three of the perspectives mentioned above are developed with the help of cyberspace, we believe it is important to retain these perspectives in developing our model. Furthermore, as we have explained, these perspectives have the advantage of delimiting all the possible organisational relationships.

**Commercial Relationships**
What we mean by commercial relationship is one in which a transaction with a customer or supplier is performed or negotiated. The relationship may therefore be with a company; in this case, we are speaking of what are generally known as Business-to-Business or B2B transactions. Alternatively, the relationship may be with the end user, that is, an individual who acquires the product or service offered.

**Internal Relationships**
Internal relationships refer to all the communications between members of the same organisation. These communications may flow from top management to the base of the hierarchical pyramid (top-down), from the base to the top (bottom-up) or among members at the same hierarchical level. As well, these communications can be directed to a specific individual or to a group (for example, union, committee, community of practice, department members, all employees).

**Strategic Relationships**
Strategic relationships are all the relationships an enterprise maintains with its business partners in order to carry out a common project. The partners may be freelance workers, other companies or independent subsidiaries. These are relationships with partners who have the same goals as the enterprise but are legally independent.

Based on the literature and our research, we have classified the relationships that organisations can engage in and that influence their degree of virtuality into five categories: direct, mediated, deferred, planned and automated (see Table 1).
### Table 1: Graphic Representation of the Different Kinds of Relationships

<table>
<thead>
<tr>
<th>Type of relationship</th>
<th>Graphic representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td><img src="#" alt="Direct Relationship Diagram" /></td>
</tr>
<tr>
<td>Mediated</td>
<td><img src="#" alt="Mediated Relationship Diagram" /></td>
</tr>
<tr>
<td>Deferred</td>
<td><img src="#" alt="Deferred Relationship Diagram" /></td>
</tr>
<tr>
<td>Planned</td>
<td><img src="#" alt="Planned Relationship Diagram" /></td>
</tr>
<tr>
<td>Automated</td>
<td><img src="#" alt="Automated Relationship Diagram" /></td>
</tr>
</tbody>
</table>

**Direct relationship**
This type of relationship requires practically no connection with cyberspace. The individuals involved talk face to face. This minimises the importance of the virtual dimension. However, a certain amount of virtuality applies to the subtleties of nonverbal language and interpretation mechanisms.

**Mediated relationship**
This kind of relationship introduces the use of cyberspace. As in a direct relationship, the relation between individuals occurs in real time (synchronously). However, an element that acts as a screen—often a kind of technology—mediates between the sender and the receiver. This is the case in a telephone conversation, for example, where the telephone is the screen. We can also consider call centres, which may be located anywhere in the world without the sender being aware of it. An individual who enters into a relationship with a call centre has no other choice than to imagine a certain reality. Another example of a mediated relationship is the use of online chat. This relational tool makes it possible to establish a relationship in real time, but one that is mediated by a computer. Thus, participants visualise their interlocutors based on a multitude of personal criteria.
Deferred relationship
A deferred relationship represents the extension of a mediated relationship. This kind of relationship increases the degree of virtuality since it introduces a new factor: time. The deferred relationship puts individuals into contact in a context in which the receiver does not get the sender’s message at the same time as it was sent. Thus, feedback does not occur in real time. For example, communication via email allows a relationship to develop between individuals. However, the response to a message that is sent will be formulated at a later time. That time cannot be known. Moreover, there is always some uncertainty about whether the electronic mailing process will function properly. Because of this uncertainty, the individuals involved must imagine a whole range of elements in order to believe that communication really exists between them. This kind of relationship requires human intervention so that feedback can take place, but they are asynchronous interventions.

Planned relationship
A planned relationship is primarily characterised by the fact that one of the two parties does not intervene directly. Thus, the receiver will attempt to anticipate possible responses to a message coming from a sender. Voice mail systems are a good example of this kind of relationship. The developer of a voice mail system tries to anticipate the potential requests customers might make concerning the services and products on offer. A cineplex that provides movie schedules, ticket prices and reviews in this way is an excellent example of this kind of relationship. However, this kind of system does not take exceptions into consideration. Customers come into contact with the organisation without any direct intervention by a member of the organisation’s staff. For the person who programmed the interface, the relationship abstracts entirely away from time and space, since everything happens in cyberspace. Nevertheless, despite the physical absence of one of the parties, there is a dynamic feedback process between them. In this kind of relationship, ICTs generally play a key role, enabling programmed responses to be memorised and used.

Automated relationship
This kind of relationship is an extension of the planned relationship. It requires a greater connection to cyberspace because the relationship between sender and receiver takes place without any direct intervention at all. An example would be an integrated system that automatically sends orders to a supplier by entering them into its database. This kind of relationship can only occur in cyberspace and does not require any real-time intervention. However, both receiver and sender must program a relationship, using their imagination to construct it.
Table 2: Some Examples of Different Kinds of Relationships within the Different Perspectives

<table>
<thead>
<tr>
<th></th>
<th>Commercial perspective</th>
<th>Internal perspective</th>
<th>Strategic perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct</strong></td>
<td>• Sale in a store</td>
<td>• Face-to-face meeting</td>
<td>• Trade show</td>
</tr>
<tr>
<td><strong>Mediated</strong></td>
<td>• Telephone sale</td>
<td>• Web conference</td>
<td>• Web conference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Videoconference</td>
<td>• Videoconference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Teleconference</td>
<td>• Teleconference</td>
</tr>
<tr>
<td><strong>Deferred</strong></td>
<td>• Purchase or sale by broker</td>
<td>• Use of an intranet</td>
<td>• Electronic tendering</td>
</tr>
<tr>
<td></td>
<td>• Sale by mail</td>
<td>• Communication by e-mail</td>
<td>• Communication by email</td>
</tr>
<tr>
<td></td>
<td>• Purchase or sale on the Web</td>
<td>• Use of a distribution list</td>
<td></td>
</tr>
<tr>
<td><strong>Planned</strong></td>
<td>• FAQ on website</td>
<td>• Use of an intranet</td>
<td>• Providing information by EDI</td>
</tr>
<tr>
<td></td>
<td>• Digital operators</td>
<td>• Use of a shared database</td>
<td>• Providing information by an extranet</td>
</tr>
<tr>
<td></td>
<td>• Sale by EDI</td>
<td></td>
<td>• Sharing information on a multi-company network</td>
</tr>
<tr>
<td></td>
<td>• Sale by extranet</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Automated</strong></td>
<td>• Transaction generated by an integrated system</td>
<td>• Planning a meeting with groupware</td>
<td>• Exchange of information by an integrated system</td>
</tr>
</tbody>
</table>

Table 2 presents some examples of relationships of the various kinds discussed above. It is clear that all organisations must deal with a certain amount of virtuality, particularly given that the use of certain technologies has become indispensable. The proposed model makes it possible to visualise the level of virtuality within an organisation as positioned on a continuum with three branches that correspond to the three perspectives we investigated above (see Figure 3).
When we attempt to determine what kinds of relationships can exist between different entities, we need to examine three indicators: (1) Does communication occur in real time (or asynchronously)? (2) Is a screen used (or not)? (3) Is a reaction by an individual necessary for a response (or not)?

Seen in this way, direct relationships occur in real time, without a screen and necessitate reaction by an individual. Mediated relationships occur in real time and require an individual to react; however, the relationship is mediated by a screen (for example, a telephone or chat room). Deferred relationships require an individual to react and are mediated by a screen but do not occur in real time. Planned relationships take place in real time for A, but not for B, who uses a screen to anticipate A’s demands; there is therefore no need for an individual to react to respond, as the screen takes over. Automated relationships occur in real time and are mediated by a screen; the entities do not need to react but rather to anticipate (see Table 3).
Table 3: Indicators for Different Kinds of Relationships Resulting in Organisational Virtuality Due to the Presence of a Screen

<table>
<thead>
<tr>
<th></th>
<th>Reaction necessary</th>
<th>Reaction not necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real time</strong></td>
<td>Mediated</td>
<td>• Planned (for A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Automated</td>
</tr>
<tr>
<td><strong>Asynchrony</strong></td>
<td>Deferred</td>
<td>Planned (for B)</td>
</tr>
</tbody>
</table>

When no technological screen is present, the relationship is necessarily direct.

IMPLICATIONS

The goal of this article was to reflect on the concept of virtual enterprise and replace it by the concept of virtuality within organisations. From this point of view, we have developed an analysis model that allows users to better assess the degree of virtuality that exists in organisations. As we have seen, businesses today operate in a context characterised by significant spatial and temporal asynchrony. This new organisational context requires more and more individuals to interpret reality by using their imaginations. It is this relationship with the imaginary that creates a certain degree of virtuality within all organisations. The more communications among the various entities related to a business take place in cyberspace, the more necessary it becomes to use one’s imagination and, consequently, the greater the degree of virtuality will be. Although we have heard more and more about virtuality in recent years, this very real organisational dimension has always existed. However, the new technological possibilities and the growing complexity of modern organisations are accentuating its importance and pervasiveness.

It is important for virtuality within enterprises to be managed. It has become imperative for managers to pay particular attention to the source of virtuality, namely the relationships between individuals and cyberspace. As we have seen, the use of a screen in relationships is an important element underlying the expansion of virtuality. Thus, the design, implementation and use of interfaces that enable a relationship of trust to be established are indispensable for the effective management of virtuality. Part of the role that used to be played by managers themselves in their relations with suppliers, customers, employees and business partners has today been quietly usurped by technological interfaces. Consequently, a new challenge for managers is to properly manage this human-cyberspace relationship by considering interfaces as concrete representations of virtuality within the enterprise and the cornerstone of its management.

ACKNOWLEDGMENT

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NOTES

1 We consulted the Harrap’s, Merriam-Webster and Oxford dictionaries.
2 When no technological screen is present, the relationship is necessarily direct.
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ABOUT THE AUTHOR

Eric Brunelle, PhD (technology management from École Polytechnique de Montréal, Canada) is an assistant professor in the Department of Management at HEC Montréal. His current research interests are e-leadership, e-business practices, human behaviour on the Internet, and the impact of virtuality on organisation practices. He also teaches leadership, management skills, and project management at HEC Montréal.

Eric Brunelle
Department of Management
HEC Montréal
3000 Chemin de la Côte-Sainte-Catherine,
Montréal, Québec, H3T 2A7, Canada
Tel: +01 514 340 7316
Fax: +01 514 340 5635
Email: eric.brunelle@hec.ca