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Abstract
Internet makes it possible for consumers to shop without visiting a physical store. As online shopping is becoming more popular, this could have significant impact on in-store shopping. The extent to which consumers, producers and retailers make use of the Internet as a complementary channel or as a substitute for in-store shopping is fundamental for the way traditional retailing will be affected.
It is only recently that geographers are becoming interested in the spatial consequences of this new form of commerce. From a traditional geographical perspective, one could expect that business-to-consumer (b2c) e-commerce could make physical shopping redundant, leading to a 'death of distance'. There are, however, several factors that may limit this new form of commerce, such as logistical constraints (e.g., personal delivery of goods may be quite expensive), habits of people, and the need for social contact.
The main goal of the paper is to draw some expectations concerning the relationship between b2c e-commerce and inner city retailing. Using new insights based on evolutionary economics, hypotheses will be developed concerning the impact of b2c e-commerce on consumers' shopping behaviour, retailers' store strategy, and the inner city retailing environment as a whole. We claim that habits may act as a constraint to change consumers' shopping behaviour. In addition, routines can explain why retailers may be rather reluctant in exploiting this new channel of commerce, and why they are most likely to adopt rather conservative e-commerce strategies. We also explain how and why inner cities, as important retailing and consumption places, may affect the way actors deal with this new form of commerce. One may expect that especially in these localities, both stimulating and limiting factors of b2c e-commerce adoption are predominant, depending on the quality or the attractiveness of the inner cities, among other things.

1. Introduction

In the pre-Internet era, shopping was largely a physical, time-consuming activity. With the rise of the Internet, a new medium for communication, information, transaction, and even delivery came available to consumers and retailers, creating a new channel for retailing. In principle, at present, virtually all shopping activities can be carried out online.

Consumers are increasingly using the Internet for shopping activities. In the Netherlands, for instance, 62 percent of the total population above the age of 16 had Internet access in 2002 (TNS Interactive, 2002). Online retail revenues in 2003 were approximately 1.2 billion euros. Although this number is rather small, compared with the total Dutch retail revenues (81 billion euro), it is growing fast; in 1998, online retail revenues were only 40 million euro (Thuiswinkel.org, 2004). Thus, in principle, the growth of b2c e-commerce in the Netherlands could have significant impact on in-store shopping and physical retail locations, like inner cities.

Up to now, academic interest in b2c e-commerce and its impact on firms and people has been largely driven by disciplines outside of geography. For instance, there has been wide interest by (marketing) researchers in the factors that determine why consumers (intend to) shop via the Internet (e.g., Liao & Cheung, 2001; Lohse et al., 1999; Shim et al., 2001). In addition, in transportation research, there is a growing interest concerning the impact of b2c e-commerce on transportation and shopping patterns (e.g., Casas et al., 2001; Farag et al., 2003a; Golob & Regan, 2000). It is only recently that geographers are becoming interested in the spatial consequences of this new form of commerce (Leinbach & Brunn, 2001; Wrigley et al., 2002). With the growing attention from geographers for this phenomenon, the question raises what effect it may have on geography in general, and on inner cities, as major retailing and consumption places, in particular.

In many visions concerning the impact of the Internet on society, geography is considered as something that can be replaced by technology. According to futurists like Negroponte (1995), "distance means less and less in the digital world. In fact, an Internet user is utterly oblivious to it" (p. 178). Cairncross (2001) points out that "the death of distance loosens the grip of geography" (p. 5). Their central argument is that ICT is destroying the spatial monopolies of information and knowledge, as a result of the competitive advantage offered by using new technologies over distance (Dixon et al., 2002). However, expectations that Internet technologies are leading to an end of geography are largely exaggerated (Leamer & Storper, 2001; Zook, 2002). Even under the most radical scenario, b2c-commerce will not make geography irrelevant. As long as retailing is about delivering 'real' instead of 'virtual' products to consumers, distance and geography still matter (Li et al., 2001; Wrigley & Lowe, 2002).

The use of b2c e-commerce may, however, have a significant effect on the development of economic activities in places like cities (Anderson et al., 2002; Button & Taylor, 2001). As Dixon et al. (2002) point out, "the impact of technological change on location dynamics in cities is driven through the firm level response to such change" (p. 6). In particular, the growth of b2c e-commerce has implications for retailers' demand of physical space in inner cities. This depends, among other things, on the question whether the diffusion of broadband Internet results in "disintermediation of retailers in both physical *and* virtual space by facilitating direct attention between … producers and consumers" (Currah, 2002, p. 1429).

To a large degree, the impact of b2c e-commerce will depend upon the extent to which retailers and consumers regard it as an additional (complementary) channel or substitute for physical shopping. Using the Internet as a substitute means that every shopping stage is handled on the Net; goods are delivered at home, or even downloaded, and physical shops will become redundant. Using the Internet as a complementary channel means that only a few shopping stages will be handled online (e.g., product information search).

Researchers assume that it is more likely that b2c e-commerce is rather complementing than substituting inner city retailing, at least in the short run (e.g., Worzala et al., 2001; Graham & Marvin, 1996; Wrigley & Lowe, 2002). They use various arguments to underline this view. For instance, since shopping has emerged as a major leisure activity in cities where consumers go out to explore physically new consumer spaces, they are likely to use the Internet as a complementary channel instead of a substitute for in-store shopping (Graham & Marvin, 1996). Additionally, (Dutch) inner city retailers have heavily invested in their city centre stores and, therefore, are more likely to choose a complementary strategy (Borchert, 1998; Burt & Sparks, 2003). However, a number of 'quasi-retail' sectors, like banks and travel agents, may be become redundant in inner cities, since they retail 'virtual' products or services that are not purchased and taken physically away from the location (Burt & Sparks, 2003; Bördlein & Schellenberg, 2002; Wrigley & Lowe, 2002).

In this paper, we attempt to make two contributions to this literature concerning the relation between b2c e-commerce and geography. First, we think it is unfortunate that geographic research concerning b2c e-commerce and retailing is rather descriptive and lacks a strong theoretical foundation (c.f., Currah, 2002). Research, therefore, should move from its current descriptive paradigms to more explanatory ones with a stronger theoretical base (Dawson, 2000). Since b2c e-commerce can be regarded as a disruptive process innovation (Burt & Sparks, 2003), an approach is needed that could capture the adoption process of both consumers and retailers in particular places. In this paper we will show that evolutionary economics may be a suitable candidate, since it is a theory of economic change that focuses on the capability of firms and people to take benefit of innovations (Boschma et al., 2002; Boschma, 2004).

Second, it is unfortunate that the inner city itself is underestimated in geographical research on b2c e-commerce in retailing. Inner cities are the largest, and most important shopping locations in the Netherlands. Approximately 51 percent of all shops in the Netherlands are located in inner cities (Locatus, 2002). Up to now, little is known about the impact of b2c e-commerce on Dutch inner cities as important places of retailing and consumption (Kolpron Consultants, 2001). In this paper, we present the inner city as a dynamic environment with strong selective forces that could both limit and increase the impact of b2c e-commerce on retail activities located here. For instance, the possibility to perform multiple activities (e.g., shopping, recreation, etc.) at one central location, limits the impact of b2c e-commerce in inner cities. Conversely, consumers in inner cities tend to have a lifestyle (e.g., time-constrained) that supports Internet shopping. In addition, we set out some preliminary thoughts concerning the fact that the impact of b2c e-commerce is likely to differ between cities. Consequently, we claim research should focus more on identifying which inner cities are most likely to be affected by b2c e-commerce.

The structure of the paper is as follows. In Section 2, we show the appropriateness of evolutionary economic theory in describing the impact of b2c e-

commerce on inner city retailing. Based on evolutionary thinking, hypotheses are drawn in Section 3 concerning many aspects of the relationship between b2c e-commerce and inner city retailing. Section 4 draws some conclusions.

2. Evolutionary economics: supply, demand and geography

Nelson and Winter (1982) were the first to provide a comprehensive evolutionary theory of economic change, which still stands out as the major reference. After the publication of this seminal book, a new discipline was born called 'evolutionary economics' (Nelson, 1995). In short, its main emphasis is on qualitative and structural change that is analysed with basic principles such as bounded rationality (routines, habits), heterogenous agents (variety), path dependency, irreversibility (lock-in) and selection (Boschma et al., 2002).

As all social constructs, theories tend to evolve. Evolutionary economics is still in an early stage of development. For sure, it needs to be worked out more thoroughly both conceptually and empirically. We believe evolutionary economics provides an exciting and promising new field of research in economics.

Boschma and Lambooy (1999) have made an attempt to link the field of evolutionary economics to theories, topics and empirical issues in economic geography. They claim that the two disciplines have a lot in common, yet may also benefit from one another. In this paper, we further explore how evolutionary thinking may be introduced into the field of economic geography. We believe evolutionary economics may provide useful insights in how retailers (section 2.1) and consumers (section 2.2) respond and adapt to a new technological opportunity, as provided by the Internet. In addition, in section 2.3 we present the inner city as an interesting location to examine and apply evolutionary concepts. Accordingly, a first attempt is made to fill the theoretical gap that has been noted earlier with respect to geographic research concerning b2c e-commerce and retailing.

2.1 Supply side: retailers

Our main focus in this paper is on the supply side, which has drawn most attention from evolutionary economists. With respect to our topic, this means analysing from an evolutionary perspective how (and why) different retailers (within and between retail sectors) in different inner cities are currently responding to b2c e-commerce. Internet retailing is a potentially disruptive process technology, which can make existing business models obsolete, providing the possibility of a new distribution channel. The history of retailing is replete of such technological turmoils, such as the introduction of department stores, mail order and discount stores (Dixon et al., 2002). There are some interesting observations regarding the adoption of b2c e-commerce by retailers, which lend strong support for the relevance of an evolutionary economic geography approach concerning this particular topic.

First, the initial stage of the development of b2c e-commerce was more an evolutionary than a revolutionary process. At the early start, it were the dotcom companies that were largely involved. Since they had no significant costs (e.g. establishing a website was cheap, while hardly any buildings and inventories were needed), entry barriers were relatively low. As shown in Table 1, quite a considerable number of virtual retailers have taken a significant share of the Dutch Internet market.

Table 1: Top 20 Dutch online retailers in 2004 (based on the last 3 online purchases of Internet users)

Name	Share in %	Type of organisation
Bol.com	13.13%	Virtual retailer
Wehkamp	8.53%	Catalogue retailer
Marktplaats.nl	5.27%	Online auction
E-bay	3.35%	Online auction
Neckermann	2.80%	Catalogue retailer
ECI	2.65%	Catalogue retailer
Amazon.com	2.21%	Virtual retailer
Ticketservice.nl	1.64%	Virtual retailer
Proxis.be	1.43%	Virtual retailer
Top Ticket Line	1.43%	Virtual retailer
Belbios.nl / Bios.nl	1.41%	Virtual retailer
Free Record Shop	1.24%	Traditional retailer
Basiq Air / Transavia	1.07%	Producer/Service provider
Otto	1.03%	Catalogue retailer
Dell	1.01%	Virtual retailer
Easy Jet	0.88%	Producer/Service provider
Pabo.nl	0.86%	Catalogue retailer
Nederlandse Boeken Club	0.84%	Catalogue retailer
InkClub	0.82%	Virtual retailer
Bon a Parte	0.80%	Catalogue retailer
Other	47.68%	-
Total	100.00%	
Number of online purchases	5,254	
Number of respondents	2,010	

Source: Weltevreden & Van Rietbergen, 2004

As expected, established retailers were reluctant to embrace this new, radical technology at once, due to lock-in effects (e.g. routines, sunk costs, fear of cannibalisation). The next stage, however, was featured by the (hesitant) adaptation of incumbent retailers, which was reinforced by the Internet hype in the late 1990s, during which capital investors often forced incumbent companies to pursue an Internet strategy. However, many newcomers had to exit the market because they were unable to grow to a sustainable level, despite their lower costs with respect to buildings and inventories. These start-ups were unable to find enough consumers, because they had no brand names on which they could build to take away consumers' lack of trust. By contrast, incumbent retailers, most importantly catalogue firms, had a well-established brand identity enhancing trust, and they could draw on this to start with Internet activities.

This is confirmed by Currah (2002) who observes that "bricks-and-mortar retailers are increasingly pursuing a multichannel strategy by operating an Internet-based Web store alongside the existing network of physical retail outlets" (p. 1411). Many authors have emphasised the (theoretical) advantages of this new form of retailing (Steinfield et al., 1999; Steinfield, 2002), as compared to pure b2c e-commerce and physical retailing. Using a multichannel strategy implies that physical space is still needed, but that the nature and type of use of physical outlets could change. As a result, "the growing dominance of a bricks-and-clicks organisational

paradigm is effectively reducing the contestability of retail markets and raising entry barriers by imposing the set-up and accumulated sunk costs of *both* traditional retail outlets *and* the Web store upon firms seeking a lead role in the industry" (Currah, 2002, p. 1414).

Figure 1: Internet adoption among city centre shops in the Netherlands in 2004, differentiated by sector (N = 3,366)

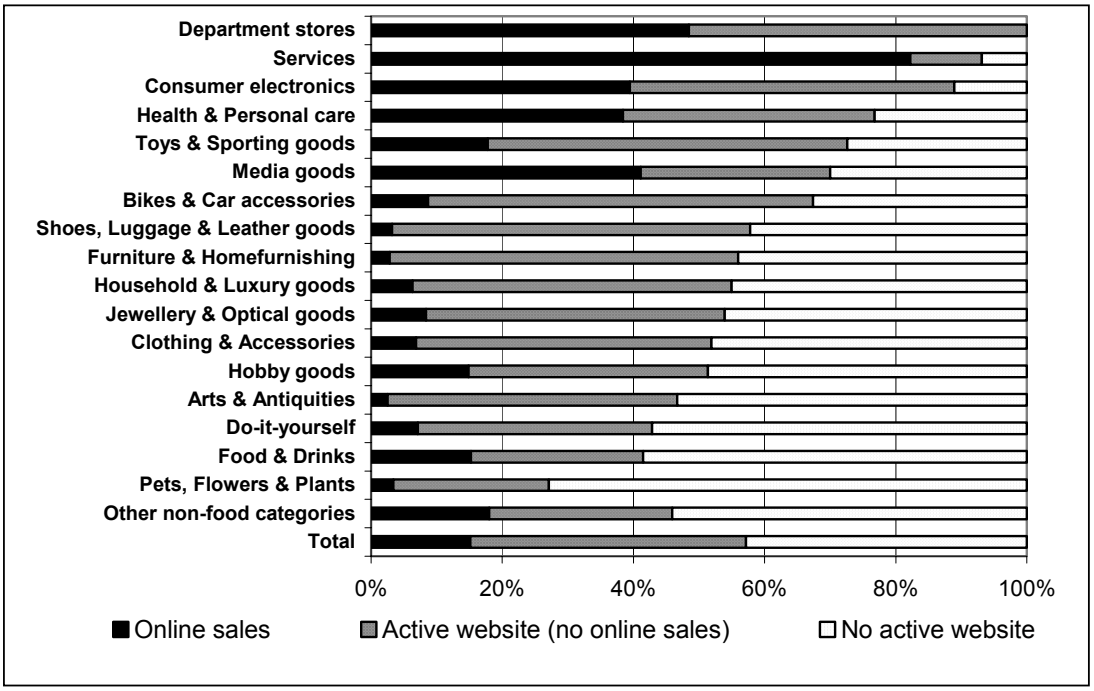


Figure 1 presents some first results of research we recently conducted concerning the Internet adoption among approximately 3,400 shops in eight city centres in the Netherlands. As shown in this figure, already more than half of the retailers in Dutch inner cities have established a Web presence. However, large differences in adoption of an active website and online sales can be discerned among the retail categories. To a large extent these differences can be explained by the fact that the online selling opportunities vary between retail sectors. For example, retailers that sell online can be largely found in search good sectors as media goods, services and consumer electronics. Retailers that sell more experience goods that often require physical inspection, like clothing or shoes, do not often have online sales. However, this is only one part of the story since every retailer, regardless of his product, should be able to create a website with information about its store. Yet, still large differences can be observed between sectors in the adoption of an active website without online sales. We think this has much to do with variation in organisational routines between retailers, which will be dealt with later on.

Besides the fact that traditional retailers have been successful in adopting b2c e-commerce, there is another observation that merits attention from an evolutionary perspective. Currently, no dominant Internet strategy can be observed among incumbent retailers. Evolutionary theory has much to offer here as an explanatory framework. Evolutionary economists claim that human and organisational behaviour is routinised, because of 'bounded rationality'. Since behaviour of economic agents is

routinised, responses to an external change are neither 'optimal', nor will they be the same for all firms. Although firms can learn from their mistakes and from other firms (Alchian, 1950), organisational change in general, and imitation of successful strategies in particular, are often hard to realise, due to cognitive constraints and firm-specific routines. Imitation of a successful routine, for instance, often fails because it needs to be complementary to the existing set of routines in an organisation (Rivkin, 2000). With respect to our topic, both retailers (as organisations) and consumers (as individuals, or as social groups) are restricted by their routines and habits (Hodgson, 2002), which has implications for the way they respond to b2c e-commerce as a new technology. Because of e-commerce, for instance, incumbent retailers are under pressure to redefine their organisational structures, but they are unlikely to be capable of getting rid of their routines instantaneously, not in the least because vested interests of individuals and groups in companies may be threatened.

This is an intriguing research topic: to what extent does effective e-commerce adoption require organisational (un)learning, and to what extent are incumbent retailers capable of doing so? As shown in Table 2, research among 500 Dutch retailers revealed that one of the most important barriers to online selling is the fact that the corporate culture to b2c e-commerce is difficult (Databank Consulting, 2002). This might indicate the importance of routines for the adoption of b2c e-commerce.

Table 2: Important barriers to diffusion of online selling among retailers in the Netherlands in 2002

Barrier	Percentage of respondents agreeing "completely" or "somewhat" to the statement
Goods / services do not lend themselves to selling online	56.0%
Revenue of online sales is still low	54.4%
Technology is expensive	54.2%
Customers are hesitant to buy online	52.8%
Corporate culture to b2c e-commerce is difficult	45.9%
Processing of payment for online orders is a problem	40.9%
Few customers online	37.5%
Delivery process causes substantial problems	18.1%

Source: Databank Consulting, 2002

As expected from an evolutionary point of view, there is no uniform strategy among retailers. Until recently, the study of e-commerce has been too much blinded stressing a too strict distinction between brick-and-mortar retailers on the one hand, and e-tailers on the other hand. This is much too simple. Evolutionary economics provides tools to explain that organisations (in this case retailers) will react differently, which has much to do with their routines undertaken in their past. In fact, we observe a large variety of e-commerce strategies among incumbent retailers, labelled hybrid or 'click-and-mortar' strategies. Steinfield et al. (2000) state that these hybrid strategies range from approaches "with limited interaction between the physical and virtual entities to those in which the two modes are tightly coupled" (p. 2). In other words, there is, currently, no dominant design. It is evolutionary economics as usual: new concepts are introduced, new and old strategies fail and disappear, successful concepts are sometimes imitated but variation will not disappear, and it is unpredictable which strategies will survive in the long run.

Despite this current variety of (competing) Internet strategies, we expect from an evolutionary point of view that Internet retailing embodies localised, or incremental, rather than revolutionary, or disruptive changes, although in the long

term the resulting changes may indeed be pervasive. The forms that Internet strategies often take illustrate this: they reveal no break with their past. Utmost, it is a matter of a (hesitant) recombination/integration of the new (online) and the old (offline), or what Schumpeter called 'neue kombinationen'. As Currah (2002) has put it, "e-tailing has incurred limited organisational disruption" (p. 1411).

There are a number of developments that tend to give witness to such a gradual, evolutionary process as far as the adoption of e-commerce is concerned. First, catalogue firms have been very successful to embrace e-commerce, compared to traditional retailers. They could duplicate 'their existing mail order and phone channels' easily, while the logistical process of selling over distance, for instance, was already part of their routines. As shown in Table 1, it comes as no surprise that catalogue retailers, like Wehkamp, Neckerman, ECI, and others, are dominant in the top 20 online retailers in the Netherlands (Weltevreden & Van Rietbergen, 2004). Second, b2c e-commerce as a major new process technology has hardly been accompanied by product innovations. Internet is often used as a new distribution channel for the same, traditional products. So-called dematerialised consumption (i.e., 'digital delivery of virtual products') of formerly physical products has not (yet) made much progress.

Third, there are firms that make use of an Internet channel next to their physical outlets, with the aim of extending their markets geographically. In this way, an Internet strategy is used as a first (and very cheap) step to conquer a market the firm is totally unfamiliar with, and it does not require a reorganisation of their current activities (Steinfield et al., 2000). Such a 'parallel' strategy has, for example, been adopted by several Dutch banks (e.g., ING Bank), which set up Internet banking facilities abroad to supply new markets that are beyond the reach of their existing, physical outlets (Groeneveld, 2003).

2.2 Demand side: consumers

Demand side analysis has been poorly developed in evolutionary economics (Witt, 2001). The topic of b2c e-commerce lends itself to deal with the demand side, because it is an innovation that offers consumers the opportunity to change their behaviour. How will consumers react to new developments, and how are these changes shaped by individual features (habits, rules) and the social context (including the geographical dimension)?

Contrary to standard theory, which is based on given preferences and optimal behaviour, evolutionary economics deals with routines in consumer behaviour, or the localised nature of consumer knowledge, as Metcalfe (2001) has put it. Moreover, it aims to understand increasing and decreasing variety of individual consumer behaviour over time, as contrasted to the neo-classical emphasis on the uniform, representative consumer. More in particular, it describes changing preferences based on experimentation (trial-and-error) and learning behaviour (e.g., through imitation) in consumption, similar to the evolutionary analysis of changing behaviour of producers. So, an evolutionary account of the demand-side should focus on the diversity of consumer behaviour and how different behaviours change over time, both at the individual level and the structure of populations of consumer behaviours. In doing so, evolutionary economics recognises both "the significance of the past (consumer experience) as the significance of social interaction (learning by observing the experience of others)" (Metcalfe, 2001, p. 42).

As a consequence, changes in consumer behaviour are largely incremental of nature, because habits are involved. Consumers have to deal with many constraints, such as income constraints. However, an evolutionary perspective stresses that there is also a time dimension involved; there is not enough time to engage in rational decision-making. For instance, daily shopping is based on habits: it would take too much time to check the quality of each product, to compare this product with similar ones in other shops each time you do shopping. As Witt (1993) puts it, "the abundance of goods and services offered for consumption makes it impossible to know, and be aware, of all available choices and their many features. By necessity, therefore, information must be processed selectively" (p. 30).

Once again, as in the case of the retailers, there are some interesting observations regarding the adoption of e-commerce by consumers, which lend strong support for the relevance of an evolutionary point of view concerning this particular topic. In fact, current behaviour of consumers gives witness to rather slow, incremental changes in behaviour, suggesting the overall importance of habits. Rule-bound behaviour results in rather conservative behaviour, especially when experience has brought about satisfying, rewarding results, or when new products, or new complex technologies, require new knowledge to consume it fully.

First, older generations find it difficult to deal with complex technologies, like the Internet. In 2001, no more than five and one percent of the Dutch people in the age of 55 to 64 and 65 to 74, respectively, had shopped online, compared to, for example, 16 percent of people in the age of 25 to 34 (Statistics Netherlands, 2003). Second, consumers still mainly use the Internet as an information channel, instead of a transaction channel. In 2000, approximately 40 percent of the Dutch population used the Web for information gathering, while only 7 percent actually shopped online (Statistics Netherlands, 2002). Currently, b2c e-commerce accounts for no more than 1.4 percent of total retail revenues in the Netherlands (Thuiswinkel.org, 2004). In addition, Table 3 shows that the most important reason for not purchasing online among Dutch Internet users is that it is easier and/or more fun to purchase goods and services in a physical store (TNS Interactive, 2002).

Table 3: Important reasons for not purchasing goods and services online among Dutch Internet users, who have not purchased online, in 2002.

Reason	Percentage of respondents
Easier/more fun to buy goods and services in a store	30%
It's more secure buying goods and services in a store	20%
Don't want to give credit card details / security problems	18%
You don't know what you get	17%
Don't trust online brands / lack of trustworthiness	9%
It's too difficult / lack of knowledge	7%
Prices too high / expect lower prices on the Internet	4%
Product and services found on the Internet are not very Interesting	3%

Source: TNS Interactive, 2002

Third, the products and services that are traded through the Internet are mainly simple, standard goods (e.g., books, CDs, software) that need little contact between the customer and the retailer (TNS Interactive, 2002). This is because standard goods have a fixed quality, which needs no physical inspection beforehand. Other, more heterogeneous, or more valuable goods are still traded via traditional channels. Fourth, consumers tend to consider Internet and catalogue shopping to be closer substitutes than Internet and in-store shopping (Ward, 2001). In the Netherlands, for

instance, a large share of the clothing that are currently purchased online, are former catalogue sales (Thuiswinkel.org, 2004; Weltevreden & Van Rietbergen, 2004). This is because of the large similarities between the two channels. The Internet is often regarded as an electronic catalogue with some extra services. There is a large group of Dutch consumers who orders products from catalogue retailers. Since the process of buying over distance is already part of their habits, they are more inclined to adopt b2c e-commerce and, consequently, substitute their own catalogue sales.

A real evolutionary approach, however, accounts both for stability and dynamics of behavior of economic agents (Boschma & Lambooy, 1999). Above, we explained that consumer behaviour is rather stable, and tends to evolve in a slow and gradual way, because habits or rule-bound behaviour are involved. However, since fashion trends may affect the behaviour of consumer, other evolutionary forces than inertial ones may become manifest. Evolutionary economists like David (1985) and Arthur (1994) claimed that the role of increasing returns, in combination with small, historical events, may have a large impact on the adoption rate of users of new, competing technologies. A similar line of reasoning may be followed concerning our topic. Small events (such as an effective advertising campaign enhancing consumer knowledge) and self-reinforcing processes (e.g. network externalities) may quickly change consumer behaviour, as the diffusion of the mobile phone underlines.

As a consequence, an evolutionary economic geography approach of the demand-side should focus on the analysis of the evolution of behaviour of consumers in particular contexts in time and space. It aims to understand the diversity of consumer behaviour (e.g., making a distinction between online shoppers, information searchers and offline shoppers, with respect to our b2c e-commerce topic), and how different behaviours change over time in particular contexts. Such an approach recognises that changing preferences, based on experimentation (trial-and-error) and learning behaviour (e.g., through imitation), take place within (enabling and constraining) structures at the individual level (habits) and the contextual level (e.g. social networks). At the same time, it accounts for the fact that these structures are changed and transformed by the actions of consumers.

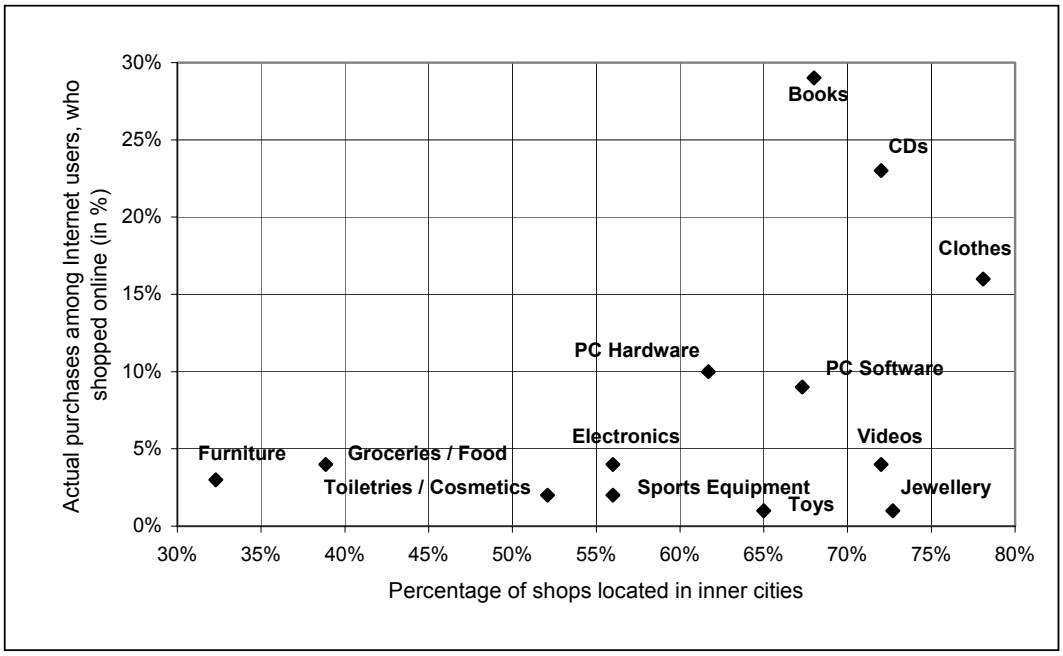
2.3 Geography: inner cities

In the previous sections, we used evolutionary economic theory to describe retailers' and consumer' adoption of (or reaction to) b2c e-commerce. However, we need to analyse the interplay between the behaviour of consumers and retailers, and integrate this with the geographical dimension. Below, we explore how this interplay may be affected by (different) inner city environments.

Inner cities are highly relevant research units with respect to this topic. As mentioned before, inner cities are the largest and diversified shopping centres in the Netherlands. What is more, the potential sensitiveness of b2c e-commerce is high in inner cities. As demonstrated in Figure 2, the degree of online purchases differs substantially between retail sectors in 2002. In the same figure, we plotted the percentage of shops in each retail sector in inner cities in the Netherlands for the period 1997-2001. Combining online purchase statistics with retail location data, Figure 2 gives an impression of the b2c e-commerce sensitiveness of inner cities. The data demonstrate that retail sectors with the highest rates of e-commerce (i.e. books, CDs and clothes, accounting for over 65% of total online purchases) are largely

concentrated in Dutch inner cities. Moreover, research (Farag et al., 2003b) has shown that Internet use and online buying are largely urban phenomena in the Netherlands.

Figure 2: Inner city presence of e-commerce sensitive retail sectors in the Netherlands



Sources: elaborations of HBD, 2001, 2002b; Locatus, 2001; Stam et al., 1997; TNS Interactive, 2002

We still have to explain, however, how inner city environments may affect the degree and nature of b2c e-commerce. As explained in the introduction, very little is known concerning this issue. We argue in a very explorative way how inner city location characteristics may be both stimulating and limiting factors for b2c e-commerce adoption among retailers. We present the inner city as a dynamic environment with strong incentive and selection forces. In doing so, we associate the inner city retail environment with typical evolutionary concepts like variation, selection environment, and innovation.

Inner cities may stimulate the adoption of b2c e-commerce. Consumers in inner cities may be expected to be more open to explore new consumption opportunities. In inner cities, consumers are relatively younger, more open-minded towards technology, and tend to have a more modern lifestyle (e.g., time-constrained), which all encourage Internet shopping (c.f., Anderson et al., 2002). As a result, inner city retailers have to be more innovative because consumers tend to be more critical. Another reason is that the selection environment is quite harsh. Inner cities are characterised by concentrations of similar shops (meaning intense local rivalry), and tend to have the highest rental prices. Inner city retailers are, therefore, likely to follow their competitors online, due to the fear of losing market share. A loss of sales may be fatal because of the high property costs. In addition, the close proximity to competitors facilitates imitation of (successful) Internet strategies. Finally, due to their centrality, inner cities are attractive locations for retailers to develop a bricks-and-clicks strategy. Inner cities provide an advantage over other shopping locations, because it is easier for consumers to pick up and pay for the goods they ordered via

the Internet at a central location where they can also perform other (shopping) activities (i.e., trip chaining). In addition, in the after sales phase a central, inner city location may be important. Even if retailers directly deliver goods to individual homes, consumers may need at least a physical service point, for example, to return products.

At the same time, the inner city may, however, provide an environment that does not encourage, and could even limit, the adoption of b2c e-commerce. Due to fear of cannibalisation, retailers may be reluctant to adopt an Internet selling strategy (Shapiro & Varian, 1999). Cannibalisation means that the development of an Internet channel will not generate new sales, but that sales are drawn from a retailer's existing channel(s). For inner city retailers, cannibalisation of in-store sales may be fatal for their physical outlets, because of the high property costs. Moreover, it is widely believed that b2c e-commerce is promising because it enables the rapid exchange of information between buyers and sellers, thereby reducing the constraints imposed by geographical distance. Inner cities, however, already fulfil this role. Because of the concentration of similar shops, product information may be gathered relatively quickly (Nelson, 1958). Finally, inner cities are not only places to go shopping, but also places to meet and recreate. According to Buursink (1996), the attractiveness of an inner city depends on four factors: (1) a characteristic environment, often historical, (or ambiance), (2) a concentration of a large variety of functions other than shopping (restaurants, theatres, museums), (3) the amount and variety of shops, and (4) the crowdedness. Thus, the inner city has an advantage over the Internet (and other shopping locations) because consumers can perform many activities in one central location. People often come from far to visit the inner city, implying that distance is no problem for consumers because of its attractiveness. An attractive mix of both shopping and leisure activities in inner cities limits the adoption of b2c e-commerce and stimulates 'fun shopping' (i.e., a combination of leisure and shopping).

In sum, there are many reasons why it is interesting to examine the adoption of b2c e-commerce by inner city retailers. We explained in a very preliminary way why an inner city environment may both stimulate and limit e-commerce adoption. We did not yet explain, however, whether the impact of b2c e-commerce is likely to differ between cities. In the next section, we claim, among other things, that research should focus on identifying which inner cities are most likely to be affected by e-commerce.

3. Expectations

So far, we made an attempt to show the appropriateness of evolutionary economics as a theoretical base for examining the impact of b2c e-commerce on inner city retailing. In this section, we formulate five hypotheses concerning the relation between b2c e-commerce and inner city retailing, based on evolutionary thinking.

To begin with, we develop four hypotheses regarding the adoption of b2c e-commerce strategies by inner city retailers. The first hypothesis accounts for the fact that routines and competences between firms differ substantially, resulting in a wide range of Internet strategies (variation), while the second hypothesis states that this variation is expected to be larger between, than within, inner cities, due to the proximity effect. The third and fourth hypotheses illustrate the remarks made earlier that changes in retail strategy are most likely to evolve in a slow and gradual way.

Hypothesis 1: In the early stage of b2c e-commerce, there is a large variation in Internet strategies among inner city retailers.

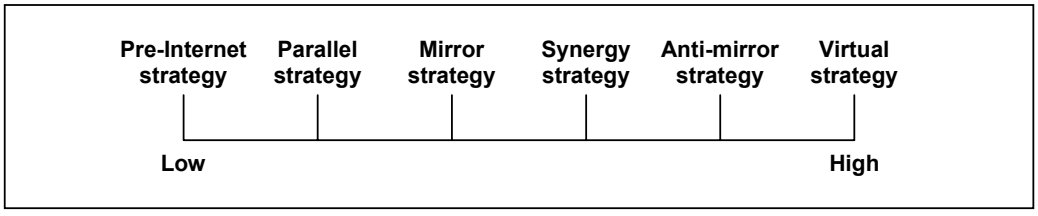
Hypothesis 2: The variation in Internet strategies will be larger between inner cities, as compared to intra-urban variation.

From an evolutionary perspective, we hypothesise that in the early stage of b2c e-commerce, there will be a large variation in Internet strategies among retailers. More explicitly, we expect that, currently, there is no dominant b2c strategy. Inner city retailers have different routines, interests, and resources, which leads to a large variety in Internet strategies, at least in the short run. In the long run, strategies are more likely to (but do not necessarily) converge, since inner city retailers will learn through their own experience, and from their competitors (by observation and imitation) which Internet strategies are the most successful. In addition, we expect intra-urban variety of Internet strategies to be smaller than inter-urban variety. This is because proximity stimulates learning and imitation between retailers in an urban context, while geographical distance between retailers in different urban centres may impede such spillovers.

Hypothesis 3: Traditional inner city retailers will adopt an Internet strategy, which is complementary, or at least not detrimental, to their physical channel(s).

Despite the large variation in strategies, inner city retailers are expected to adopt an Internet strategy at first, which causes little disruption for their physical channel(s). Most traditional inner city retailers regard their inner city presence as a major asset, and may be reluctant to adopt a strategy that causes much disruption. Thus, retailers' routines are expected to limit major organisational changes. In addition, consumers are not able to, or will not change their shopping behaviour instantaneously in reaction to b2c e-commerce, because habits are involved. As mere illustration, six possible Internet strategies that inner city retailers can adopt are briefly presented in Figure 3. Moving from the left to the right, the strategies range from small to large disruption for retailers' physical channel(s). This implies that inner city retailers will more likely adopt pré-Internet, parallel, or mirror strategies.

Figure 3: Six Internet strategies and their impact on retailers' physical channel(s)



Source: Adapted from Venkatesh, 1999 (quoted by Steinfield et al., 2000)

Hypothesis 4: Inner city retailers will expand their Internet strategy in small steps.

Hypothesis 4 is closely related to the previous one. Because of their routines, retailers are expected to expand their Internet strategy in small steps. Only after retailers have gained experience (e.g., customers' reaction to, and organisational implications of, their Internet strategy), they will further develop their Internet strategy. It takes time to gain experience and to incorporate the new Internet strategy in their existing set of routines. As a result of hypotheses 3 and 4, the adoption of b2c e-commerce will only become gradually visible in inner cities.

Hypothesis 5: The larger the amount and variety of shops in inner cities the less likely consumers are engaging in b2c e-commerce.

As explained earlier, the attraction of an inner city depends not only on the amount and variety of shops, but also on other functions (like cafés), the ambiance, and the crowdedness. Moreover, the accessibility of a shopping location also counts for both consumers and retailers (Nelson, 1958; Heinritz, 1992). Thus, some inner cities will be more attractive for consumers to shop and retailers to do business, which may lead to different rates of adoption of e-commerce in different inner cities.

Both the Internet and the inner city facilitate rapid information gathering between retailers and consumers. There are, however, large differences in product comparison and availability between inner cities, because the number and variety of shops vary between cities. Therefore, consumers living in (or near) smaller inner cities (with, for example, one or two CD shops) are expected to be more likely to engage in b2c e-commerce, because here the Internet has an advantage regarding comparison and purchase options. In addition, large inner cities tend to be more crowded than smaller centres because of more shopping opportunities. Therefore, (specialised) retailers in large inner cities are more able to survive despite the threat of e-commerce, because of a critical mass of consumers.

4. Conclusions

As we pointed out, it is not likely that b2c e-commerce will lead to a death of distance, making cities as important retailing and consumption places to become obsolete. That it will influence inner city retailing, however, is almost certain. The level of impact is, nevertheless, still unclear, since b2c e-commerce is in its infancy.

Geographical research concerning the impact of b2c e-commerce on (inner city) retailing is rather descriptive and lacking from theory. In this paper we made a first attempt to fill this gap. We showed that evolutionary economics could be suitable candidate for examining the relationship between b2c e-commerce and (inner city) retailing. Evolutionary economics provides possible explanations for the way in which both retailers and consumers respond to a new technology like b2c e-commerce. For example, catalogue retailers are successful in engaging in Internet selling, because the process of selling over distance is already part of their routines.

With respect to b2c e-commerce, an evolutionary economic geography approach should focus on the analysis of the evolution of behaviour of retailers and consumers in particular contexts in time and space. In doing so, it aims to understand the diversity of behaviour of retailers and consumers with respect to the use of Internet, how retailer and consumer behaviour interact, and how different behavioural

patterns change over time in particular contexts. Such an approach recognises that changing behaviour, based on experimentation and learning (e.g., through imitation), takes place within (enabling and constraining) structures at both the individual level (routines and habits) and the contextual level (e.g. social networks or inner city settings). At the same time, it accounts for the fact that these structures are changed and transformed by the actions of consumers.

At this moment there is a lack of grounded empirical research regarding the adoption of b2c e-commerce by retailers and consumers within a specific geographical context, like inner cities. Recent research explaining the adoption of Internet shopping by Dutch consumers shows that geography matters. According to Farag et al. (2003) Internet use and online buying are still largely urban phenomena in the Netherlands, although there is a small trend visible towards diffusion to the weakly and non-urbanised areas. However, early adopters living in non-urbanised areas buy more often online than early adopters living in strongly urbanised areas

This paper shows that the impact of b2c e-commerce is likely to differ between types of inner cities, based on differences in attractiveness. As Dixon & Marston (2002) already pointed out, further research should try to identify which (inner) cities will be most greatly affected by b2c e-commerce. Additionally, different aspects of the inner city retail environment could influence the adoption of both retailers and consumers located here. Are retailers in attractive inner cities, for example, more likely to adopt a fun shopping strategy, instead of an Internet strategy, than those in less attractive cities, where the Internet might be seen as a channel to generate extra sales? Such questions have been largely neglected in the literature.

Studies examining the impact b2c e-commerce on retail locations have focused mainly on retailers' changing need for retail real estate, because of e-commerce (Dixon & Marston, 2002). Comprehensive studies about consumers' changing shopping habits, because of b2c e-commerce within a specific retail location are virtually non-existent. Moreover, research regarding the adoption of b2c e-commerce has focused too much upon (large) retail chains (i.e., Hart et al., 2000; Morganosky, 1997; Worzala & McCarthy, 2001), instead of small and medium sized retailers. How will small, independent, localised retailers respond to the organisational challenge of b2c e-commerce, and does Internet has the same level of significance for them as for large retailers (Currah, 2002)? Future research should, therefore, aim to include both groups of retailers in their sample and find out if there are differences in their response to b2c e-commerce.

Finally, one should bear in mind that b2c e-commerce is not the only trend affecting (inner city) retailing, which make it difficult to disentangle it from other trends. In the Netherlands, continuous ageing of the population, a growing need for 'fun shopping', and the growth of out-of-town retailing, for example, are as much (or even more) important for the future of inner city retailing as b2c e-commerce. B2c e-commerce should, therefore, be seen in the light of other trends that currently shape inner city retailing.

References

Alchian, A.A. (1950). Uncertainty, Evolution, and Economic Theory. Journal of Political Economy, 58, pp. 211-221.

Anderson, W.P., et al. (2002). (Geo) E-Commerce, Transportation and Economic Geography. Presented at the STELLA Focus Group 1 Kick-off Meeting, Globalization, E-Commerce and Trade, Siena, Italy.

Arthur, W.B. (1994). Increasing returns and path dependence in the economy. Ann Arbor, The University of Michigan Press.

Borchert, J.G. (1998). Spatial Dynamics of Retail Structure and the Venerable Retail Hierarchy. GeoJournal, 45, pp. 327–336.

Bördlein, R. & J. Schellenberg (2002). (Geo) Die Bedeutung neuer Informations- und Telekommunikationstechniken für das Zentralörtliche System am Beispiel von Telearbeit und E-Commerce. In: H. Blotevogel: Fortentwicklung des Zentrale-Orte-Konzepts. Hannover, Akademie für Raumforschung und Landesplanung, 217, pp. 104-119.

Boschma, R.A. & J.G. Lambooy (1999). Evolutionary Economics and Economic Geography. Journal of Evolutionary Economics, 9, pp. 411-429

Boschma, R.A., K. Frenken & J.G. Lambooy (2002). Evolutionary Economics. An Introduction (in Dutch). Bussum, Coutinho.

Boschma, R.A. (2004). The Competitiveness of Regions from an Evolutionary Perspective. Regional Studies, forthcoming.

Burt, S. & W. Sparks (2003). E-commerce and the Retail Process: A Review. Journal of Retailing and Consumer Services, 10, pp. 275-286.

Button, K. & S. Taylor (2001). Towards an Economics of the Internet and E-Commerce. In: Leinbach, T.R. & S.D. Brunn. Worlds of E-Commerce: Economic, Geographical and Social Dimensions. Chichester, John Wiley & Sons Ltd.

Buursink, J. (1996). De Betrekkelijkheid van de Aantrekkelijkheid van de Binnenstad als Koopcentrum. In: Boekema, F., J. Buursink and J. van de Wiel (Eds). Het Behoud van de Binnenstad als Winkelhart. Assen, Van Gorcum, pp. 33-48 (in Dutch).

Cairncross, F. (2001). The Death of Distance 2.0: How the Communications Revolution Will Change our Lives. New York, Texere.

Casas, J., et al. (2001). Impact of Shopping Via Internet on Travel for Shopping Purposes. Presented at the Transportation Research Board 80th Annual Meeting, January 2001, Washington D.C., USA.

Currah, A. (2002). Behind the Web store: The Organisational and Spatial Evolution of Multichannel Retailing in Toronto. Environment and Planning A, 34, pp. 1411-1441.

Databank Consulting (2002). ICT & e-Business in the Retail Sector. Bonn / Brussels, European Commission.

David, P.A. (1985). The economics of QWERTY. American Economic Review (Papers and proceedings), 75, pp. 332-337

Dawson, J. (2000). Retailing at Century End: Some Challenges for Management and Research. International Review of Retail, Distribution and Consumer Research, 10, pp. 119-148.

Dixon, T. & A. Marston (2002). U.K. Retail Real Estate and the Effects of Online Shopping. Journal of Urban Technology, 9, pp. 19-47.

Dixon, T., et al. (2002). eProperty = eBusiness + eCommerce: The New Digital Economy and UK Commercial Property. Presented at the 9th European Real Estate Society Conference, Glasgow, UK.

Farag, S., et al. (2003a). Exploring the Use of E-shopping and its Impact on Personal Travel Behaviour in the Netherlands. Presented at the 82nd Annual Meeting of the Transportation Research Board, Washington D.C., USA.

Farag, S., et al. (2003b). E-shopping in the Netherlands: Does Geography Matter? Paper presented at the 83rd Annual Meeting of the Transportation Research Board, January 11-15 2004, Washington, D.C.

Golob, T.F. & A.C. Regan (2000). Impacts of Information Technology on Personal Travel and Commercial Vehicle Operations: Research Challenges and Opportunities. Transportation Research C, 9, pp. 87-121.

Graham, S. & S. Marvin (1996). Telecommunications and the City. New York, Routledge.

Groeneveld, J.M. (2003). Internetbanken Schudden Sector Op. Economische Statitische Berichten, 7-2-2003 (in Dutch).

Hart, C., et al. (2000). Retailer Adoption of the Internet; Implications for Retail Marketing. European Journal of Marketing 34, pp. 954-974.

Hodgson, G.M. (2002). The Mystery of the Routine. The Darwinian Destiny of an Evolutionary Theory of Economic Change, Working Paper, 2 July 2002.

HBD (2001). Factsheets Branches 2001. Den Haag, Hoofdbedrijfschap Detailhandel. <http://www.hbd.nl/> (in Dutch).

HBD (2002a). Wehkamp Meest Bezochte Webwinkel. Den Haag, Hoofdbedrijfschap Detailhandel. <http://itb.hbd.nl/index.cfm/4,389,58,html> (in Dutch).

HBD (2002b). Factsheets Branches 2002. Den Haag, Hoofdbedrijfschap Detailhandel. <http://www.hbd.nl/> (in Dutch).

Heinritz, G. (1992). The Attraction of Retail Locations: IGU-symposium, 5 - 8 August, 1991. Kallmünz/Regensburg, Lassleben, Germany.

Kolpron Consultants (2001). De Binnenstad: Instrumenten voor offensief beleid. Den Haag, Hoofdbedrijfschap Detailhandel & PlatformDetailhandel.nl (in Dutch).

Leamer, E.E. & M. Storper (2001). The Economic Geography of the Internet Age. Journal of International Business Studies, 32, pp. 641-666.

Leinbach, T.R. & S.D. Brunn, Eds. (2001). Worlds of E-Commerce: Economic, Geographical and Social Dimensions. Chichester, John Wiley & Sons Ltd.

Li, F., et al. (2001). Between Physical and Electronic Spaces: The Implications for Organizations in the Networked Economy. Environment and Planning A, 33, pp. 699-716.

Liao, Z. & M.T. Cheung (2001). Internet-based E-shopping and Consumer Attitudes: An Empirical Study. Information & Management, 38, pp. 299-306.

Locatus (2001). Retail Handboek 2001. Woerden, Locatus (in Dutch).

Locatus (2002). Retail Handboek 2002. Woerden, Locatus (in Dutch).

Lohse, G.L., et al. (1999). Consumer Buying Behavior on the Internet: Findings From Panel Data. Communications of the ACM, 42, pp. 32-38.

Metcalfe, J.S. (2001). Consumption, Preferences and the Evolutionary Agenda. Journal of Evolutionary Economics, 11, pp. 37-58.

Morganosky, M.A. (1997). Retailing and the Internet: A Perspective on the Top 100 US Retailers. International Journal of Retail & Distribution Management, 25, pp. 372-377.

Negroponte, N. (1995). Being Digital. New York, Alfred A. Kopf, Inc.

Nelson, R.L. (1958). The Selection of Retail Locations. New York, Dodge.

Nelson, R.R. (1995). Recent Evolutionary Theorizing About Economic Change. Journal of Economic Literature, 33, pp. 48-90.

Nelson, R.R. & S.G. Winter (1982). An Evolutionary Theory of Economic Change. Cambridge Mass., Harvard University Press.

Rivkin, J.W. (2000). Imitation of Complex Strategies. Management Science, 46, pp. 824-844.

Shapiro, C. & H.R. Varian (1999). Information Rules; A Strategic Guide to the Network Economy. Boston: Harvard Business School Press

Shim, S. et al. (2001). An Online Prepurchase Intentions Model: The Role of Intention to Search. Journal of Retailing, 77, pp. 397-416.

Stam, M.J. et al. (1997). Handboek Detailhandel. Hoofddorp, IMK-REA (in Dutch).

Statistics Netherlands (2002). De Digitale Economie. Voorburg, Statistics Netherlands (in Dutch).

Statistics Netherlands (2003). De Digitale Economie. Voorburg, Statistics Netherlands (in Dutch).

Steinfield, C., et al. (1999). Electronic Commerce and the Local Merchant: Opportunities for Synergy Between Physical and Web. Electronic Markets, 9.

Steinfield, C. et al. (2000). Leveraging Physical and Virtual Presence in Electronic Commerce: The Role of Hybrid Approaches in the New Economy. Presented at the International Telecommunications Society, July 2000, Buenos Aires, Brazil.

Steinfield, C. (2002). Understanding Click and Mortar E-Commerce Approaches: A Conceptual Framework and Research Agenda. Journal of Interactive Advertising, 2.

Thuiswinkel.org (2004). Home Shopping in the Netherlands. Thuiswinkel.org. <http://www.thuiswinkel.org>.

TNS Interactive (2002). Global eCommerce Report 2002. Taylor Nelson Sofres Interactive. <http://www.tnsofres.com/ger2002/>

Van de Wiel, J. (1996). De Winkelfunctie van de Binnenstad: Ontwikkelingen Sinds de Tweede Wereldoorlog. In: Boekema, F., J. Buursink and J. van de Wiel (Eds.). Het Behoud van de Binnenstad als Winkelhart. Assen, Van Gorcum, pp. 8-21 (in Dutch).

Ward, M.R. (2001). Will Online Shopping Compete More with Traditional Retailing or Catalog Shopping? Netnomics, 3, pp. 103-117.

Weltevreden, J.W.J. & T. van Rietbergen (2004). Verdwijnt de winkel? Een onderzoek naar de gevolgen van online winkelen voor de detailhandel in binnensteden. Utrecht, Sectie Economische Geografie, Universiteit Utrecht (in Dutch).

Witt, U. (1993) (ed.). Evolutionary economics. Aldershot, Edward Elgar.

Witt, U. (2001). Economic Growth – What Happens on the Demand Side? Introduction. Journal of Evolutionary Economics, 11, pp. 1-5.

Worzala, E.M. et al. (2001). The Impact of E-commerce on Retail Real Estate in the UK and US: Some Comparisons. World Congress of the International Real Estate Society, Girdwood, Alaska.

Worzala, E.M. & A.M. McCarthy (2001a). Bricks & Clicks: E-commerce Strategies for the Chain Retailer. Journal of Shopping Centre Research, 8, pp. 7-34.

Wrigley, N. & M. Lowe (2002). Reading Retail: A Geographical Perspective on Retailing and Consumption Spaces. London, Edward Arnold.

Wrigley, N., et al. (2002). Progress Report: Retailing and E-tailing. Urban Geography, 23, pp. 180-197.

Zook, M.A. (2002). Hubs, Nodes and By-passed Places: A Typology of E-commerce Regions in the United States. Tijdschrift voor Economische en Sociale Geografie, 93, pp. 509-521.