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(Re)Mixing Functions
Cognitive-Cultural
Activities in Residential
Neighbourhoods
in Dutch Cities

Chapter 4. (Re)Mixing Functions

Cognitive-Cultural Activities in Residential Neighbourhoods in Dutch Cities[44]

Urban residential neighbourhoods are usually not considered to be important sites of economic activities, let alone of more advanced forms of production. However, residential neighbourhoods do constitute a milieu for, following Allen Scott, cognitive-cultural activities. The first part of this chapter shows that a significant share of economic activities in residential neighbourhoods can be classified as cognitive-cultural and that this share has been growing over the period 1999-2008. We then home in on the entrepreneurial practices of cognitive-cultural entrepreneurs by comparing them with more 'traditional' entrepreneurs in residential neighbourhoods. For the first part, a longitudinal data set of company-level data is used to describe the development of the share of cognitive-cultural firms in residential neighbourhoods. For the second part, survey-data is used to explore the dimensions on which the business model of cognitive-cultural firms differs from more traditional firms. The results indicate that cognitive-cultural firms indeed seem to display a different business model with regard to, notably, market locality, position in the value chain and face-to-face contacts. Residential neighbourhoods, then, have to be taken more seriously not just as places of consumption but also as milieus of production even for more advanced economic activities.

4.1 Residential neighbourhoods as sites of cognitive-cultural production

Observers in the 19th and early 20th century-from Karl Marx to Georg Simmel and from Émile Durkheim to Max Weber and Louis Wirth-struggled to grasp the implications of the rise of industrial capitalism and, more specifically, of the emergence of an industrial society. What was the underlying logic of the expanding industrial production and how did this impact on wider society (Giddens, 1971)? Whatever questions were asked, whatever answers were given, there was definitely consensus on some key elements of the industrial city. A particular spatial division of labour with large factories spatially separated from residential quarters is one of those common elements (Scott, 2008). At first, these factories were located in the same neighbourhood, but with the development of public transport and, later on, the spread of car-ownership, these factories moved further out. The "… intimate connexion of industrial and domestic life" of the pre-industrial age gave way to

[44] This chapter is co-authored with Robert Kloosterman and is under review at an international peer-reviewed journal.

the rise of "the exact antithesis" namely "the segregated, legally sterilized residential quarter" of the industrial era as Lewis Mumford (1961) observed when this transformation was still in full swing. Now, more than half a century after Mumford's observation, we are again faced with a fundamental break in urban development. Social scientists, also again, have been trying to grasp what is happening. At first, it seemed clearer what the emerging urban constellation was apparently not-as testified by the labels *Post-Industrial City* (Hall, 1997) and *Post-Fordist City* (Marcuse, 1997). These labels gradually gave way to more substantive ones as *Creative City* (Florida, 2002) and, more recently, the *Cognitive-Cultural City* (Scott, 2008; Scott, 2011). Although each of these labels stands for a more or less distinct approach, they all identify the central role of information or knowledge in conjunction with digital technology as a dominant characteristic of the evolving new type of city (Castells, 1996). In addition, most authors agree on the centripetal tendencies of these knowledge-intensive or cognitive-cultural activities driven by the increasing importance of agglomeration economies (Scott, 2007; Phelps & Ozawa, 2003). As a consequence, both inter- and the intra-urban landscapes of production have been changed. So far, most studies focus either on the emerging division of labour between cities and/or on the role of clustered production within them.

Up till now, much less attention has been paid to another spatial aspect of the current transformation, namely the increasing importance of homes and, consequently, of residential neighbourhoods as locations of work thereby reversing the long-term trend of increasing spatial separation of functions as described by Mumford. We contend that not just central business districts or mono-functional business areas are sites of knowledge-intensive forms of production, but that residential neighbourhoods have also become locations for what Allen Scott (2008; 2011) has labelled *cognitive-cultural* economic activities. With a drop in the minimum efficient scale of production in conjunction with cheap digital information and communication technology, opportunities for small businesses have expanded and, in addition, have increased, in principle, the degrees of freedom regarding the location of a (small) business.

Below, we home in on this more particular aspect of the overarching process of the transformation of the production system. Do we observe a re-mix of functions in residential neighbourhoods driven by cognitive-cultural activities and, secondly, are they significantly different embedded in the neighbourhood compared to more traditional neighbourhood-based activities? We, hence, first explore to what extent cognitive-cultural activities, which can be seen as characteristic for the emerging economy, do indeed occur in significant numbers in residential neighbourhoods. We, then, investigate if these cognitive-cultural activities present clearly different business models and related entrepreneurial strategies compared to more "tradi-

tional economic activities" (e.g. small shops or personal services as pedicure) in residential neighbourhoods. We, therefore, examine key aspects such as inter-firm interdependencies, the position within value chains, the nature of client relations, orientation towards innovation, and the location of the clientele to assess the differences by using both quantitative and qualitative techniques. To address these issues we have gathered data on individual firms in fifteen residential neighbourhoods in five Dutch cities, namely Amsterdam, Dordrecht, Leiden, Utrecht and Zoetermeer. We will first briefly dwell on the general changes in the production system (section 2). After that, we explain the methodology (section 3). Then, we present the findings of our research (section 4). We end with discussing the wider implications of our findings (section 5).

4.2 Emerging intra-urban geographies of the cognitive-cultural economy

New urban landscapes of production and consumption driven by the intertwined processes of technological change, intensified global competition from firms notably in Southeast Asia, the unbundling of value chains, and an increase in both the fragmentation and the volatility of consumer demand have emerged (Gabriel & Lang, 2006) (Scott, 2011; 2012) (Dicken, 2011; Jacques, 2012). In addition, neoliberal policies favouring entrepreneurship have lowered legal, institutional and fiscal barriers regarding setting up a business. In many lines of production, the minimum efficient scale dropped as the fixed costs for starting a firm have decreased mainly due to ever cheaper computing and communication technology. In addition, opportunities for small firms have increased due to outsourcing and smaller production series as a result of the increased volatility in demand (OECD, 2010). The opportunity structure, then, has shifted thereby creating more openings for small businesses, including one-person firms, which are dependent on knowledge-intensive labour inputs (Kloosterman, 2010). To survive the competition these firms tend to be part of larger networks, partly based on (spatial) proximity, partly on relational proximity with partners and clients elsewhere (Maskell, Bathelt, & Malmberg, 2006). These are also inclined to engage in Chamberlinian or monopolistic competition whereby each firm strives to sell "unique" products in fragmented consumer markets (Scott, 2008). Fending off competitors can be achieved through an increase of the aesthetic or symbolic content of the products and turn them into experience goods with a unique quality thereby achieving at least some protection against price competition. This protection may be limited in time as volatile consumer demand can move to another product with shifts in fashion. Firms in advanced urban economies, then, have to deploy cognitive-cultural capacities to maintain the uniqueness of the product to be able to survive price competition from low-wage producers. High-tech or high-concept products and continuous

innovation are, hence, key characteristics of the cognitive-cultural economy. In our view, these cognitive-cultural activities are not confined to mono-functional business districts, but are also to be found in residential neighbourhoods thus changing the spatial division of labour within cities.

According to Sleutjes (2012), there are several reasons for the general rise in the number of businesses in residential neighbourhoods. The first one is the increasing flexibility of work in terms of working time. Part-time jobs allow 'regular employees' to start a business and become self-employed as well. Secondly, the scaling down of production not only offers more opportunities for small businesses, but also implies that no large office spaces are needed for new firms as a computer, a relevant social network and a good idea is all one needs. Thirdly, the urban renaissance and the renewed attraction of city centres for highly educated workers has a production side to it as residential neighbourhoods are becoming more attractive as business locations: They offer relatively cheap commercial small-scale real-estate, are within walking/biking distance or a short public-transport ride to the city centre, and are close to flexible work spaces, 'third spaces', and other urban amenities (see also Musterd & Deurloo, 2006; Beckers & Kloosterman, forthcoming; Kloosterman, van der Leun, & Rath, 1999).

Figures regarding these developments are still scarce, but in the Financial Times it was reported that as much as 1 in 12 of the UK workforce are self-employed working from home and that the growth of this segment is five times that of the overall workforce (Warren, 2011). Figures for the UK put the proportion of all businesses being operated from home at some 36 per cent (Mason, Carter, & Tagg, 2011). In the United States, the number of freelance homeworkers had risen to about 12 million by 2010 (The Economist, 2010). In the Netherlands, home-based businesses do not appear in national statistics as such, but the number of self-employed has increased by some 200,000 in the last decade and in 2011 some 728,000 were self-employed without employees (Central Bureau of Statistics, 2013). In 2010, the number of self-employed made up 45 per cent of all business establishments in the Netherlands (MKB, 2013). In addition, about 60 per cent of all businesses in residential neighbourhoods is home-based (Risselada & Folmer, 2012).

4.3 Research questions

We expect that cognitive-cultural activities, given the lowering of the scale threshold and the possibilities offered by ICT for both production and communication, are increasingly to be found in residential neighbourhoods and, moreover, that they constitute a business model that is rather different from traditional economic

activities in these neighbourhoods. It is often assumed that cognitive-cultural industries cluster in or near city centres to be able to sustain social networks based on proximity and to be near urban amenities. This idea supposes the necessity of a kind of 'buzz' for businesses to be able to thrive that we do not associate with residential areas (see for instance Storper & Venables, 2004). While this is undoubtedly part of the story, we contend that these activities are also to be found in 'ordinary' urban residential neighbourhoods. More generally, it may be the case that such a locational shift is the harbinger of a new landscape of production in which functions are much more mixed than in the preceding industrial era.

Cognitive-cultural activities are thus becoming intermingled with care and leisure in residential neighbourhoods. This is contrary to the prevailing notion of neighbourhood economy as a collection of mom-and-pop stores that have been in the same place for a very long time. However, with the changes in the landscapes of production and consumption, the 'neighbourhood economy' has become far more diverse. We now find in residential neighbourhoods an interesting configuration of mostly small businesses and self-employed people, operating in various sectors and in different organizational forms. Some entrepreneurs run globally connected companies from their attic, while others even employ people in their own home. With this intertwining of living and working, place is becoming more important adding more fuel to the argument of Joel Kotkin (2000) who stated that the world is anything but becoming 'anti-geographic'.

We want to explore how these cognitive-cultural activities are inserted and embedded in residential neighbourhoods and what the geography of production there looks like. To what extent are they local in the sense of inputs and outputs? These are large issues and here we can only address this very partially. To find out what is new about cognitive-cultural activities we compare them with more traditional economic activities in residential neighbourhoods. Based on the theoretical framework outlined above we propose the following research questions: Do we observe a re-mix of functions in residential neighbourhoods driven by cognitive-cultural activities? Secondly, are cognitive-cultural activities significantly different from more traditional neighbourhood-based activities in terms of inter-firm interdependencies, the position within value chains, the nature of client relations, orientation towards innovation, and the location of the clientele?

4.4 Methodology

Allen Scott's (2007) definition of which activities embody the cognitive-cultural dimension of contemporary capitalism is fairly broad. His definition covers all industries that involve to a large extent less or non-standardised labour proces-

ses relying on relatively high intellectual or affective capabilities. Consequently, both high-technology (e.g. software development) and high-concept (e.g. fashion design) activities sectors as well as high-end personal services (e.g. financial advice) are part of this cognitive-cultural economy. We follow Scott's conceptualisation and define the signature activities of the new economy *by the nature of the work that they involve* as they require either high-skilled cognitive or ditto cultural labour inputs which are essential to engage in the production of less- or non-standardised goods and services. The data we use in this article comes from a large-scale survey conducted in 2011. Before we discuss our survey data, we first explain how we distinguish between cognitive-cultural and traditional entrepreneurs. To determine if an entrepreneur is engaged in cognitive-cultural or traditional activities, we have used the information our respondents have provided in the survey. We asked them to identify their activities with three questions. First, we asked them to categorize their main activity as 'non-standardized', 'standardized', 'craft' or 'other'[45]. Second, we asked them to select their core business from the list of industries. Third, we asked respondents to describe their main activity in their own words.

Based on the responses to the first question, we classified those firms which defined their main activity as standardised as 'traditional' firms. We, furthermore, labelled respondents who defined their main activity as non-standardized as 'cognitive-cultural', except for those firms active in either real-estate or health care since these tend to be less directed towards outputs with high levels of symbolic or semiotic content. Respondents who answered 'craft' or 'other' on the first question and indicated with the second question that they were active in manufacturing, construction, wholesale, retail & car repair, transport & storage, restaurant, hotel & bar, real-estate, and health-care, sports and miscellaneous services were classified as 'traditional'. All other activities-i.e. information & communication, financial services, consultancy & business services, government services, education, cultural industries-were categorized as cognitive-cultural. We then cross-checked this with the third question where respondents were asked to describe their activities in their own words. For example, an entrepreneur who classified his main activity as 'other' and answered 'construction' on the second question but described himself as 'architect' in the third question was categorized as 'cognitive-cultural firm'.

The survey tried to grasp the extent to which entrepreneurs' production can said to be 'local' in terms of markets, business and collegial relations and co-workers. It also investigated ambitions and work practices of the entrepreneurs. In addition to the survey, we present interview fragments coming from a total of 10 semi-

[45] The survey question was: My products and/or services are mainly: - 'knowledge or technologically intensive: creative and/or computerised' OR 'standardised – mainly produced in factory / mechanical process' OR – 'Craft, mainly made by hand OR - 'Other'. See also appendix V.

structured interviews with entrepreneurs in three of the five research cities. We will however only use this data to illustrate our arguments since the main focus of this article is on the survey data.

4.5 City selection

The large-scale survey conducted in 2011 was part of a larger research programme on economic activities in residential neighbourhoods in the Netherlands sponsored by the NICIS institute in which five municipalities-i.e. Amsterdam, Dordrecht, Utrecht, Leiden, and Zoetermeer-participated by providing additional funding and help in gathering the data. All cities are located in the Randstad region, the large conurbation in the West of the Netherlands. Four of them are "typical" Dutch cities with sizeable 17th century historical cores, surrounded by 19th century, early 20th century, and, further out, post-WWII neighbourhoods. Only Zoetermeer, a farming village only 50 years ago, has been almost completely built after 1970 as part of a new-town strategy to alleviate the pressure on The Hague (van der Cammen & de Klerk, 2006).The two largest cities, Amsterdam (779,000 inhabitants) and Utrecht (311,000 inhabitants), have shown a rather strong population growth in the past few years. Both have relatively high shares of higher educated, young people (partly because of their being centres of higher education) as well as of non-Western immigrants (Marlet & van Woerkens, 2012)[46]. New town Zoetermeer has about 122,000 inhabitants and the cities of Leiden and Dordrecht are somewhat smaller, both with about 118,000 inhabitants; all three more or less stable regarding population size. In Dordrecht and Zoetermeer, the average age of the population is higher than in the other cities, while Leiden also has a relatively high share of higher educated and young people due to its status as a university town. The share of non-Western immigrants is considerably higher in Amsterdam and Utrecht. The cities, then, differ considerably in size, economic performance, and in population composition.

We surveyed entrepreneurs in fifteen residential neighbourhoods in these five cities. With 370 completed questionnaires, the overall response rate was 23%. We start our empirical findings with explorative and descriptive analyses after which we move on to multivariate analysis.

[46] The shares of the population from non-Western origin: Amsterdam: 35, Utrecht: 21; Dordrecht: 17; Leiden: 14; and Zoetermeer 17 per cent.

4.6 Results: size of cognitive-cultural economy in residential neighbourhoods

We proposed that a shift can be observed with regard to the intra-urban geography of economic activities towards an increasing share of cognitive-cultural activities in urban areas, and specifically in residential areas. This image is confirmed by the growth pattern of the share of cognitive-cultural firms in the five cities we studied. Overall, the growth in cognitive-cultural firms in residential neighbourhoods has kept pace with the growth of these firms in cities as a whole. Table 1 shows the development of the share of cognitive-cultural as well as "traditional" firms in the period 1999-2008 in the five research cities Amsterdam, Dordrecht, Leiden, Utrecht and Zoetermeer.

Table 1: Development of cognitive-cultural (CC) and traditional industries in Amsterdam, Dordrecht, Leiden, Utrecht and Zoetermeer (in percentages)

	Amsterdam	Dordrecht	Leiden	Utrecht	Zoetermeer
Growth CC firms on city level '99-'08	23	8.0	7.0	32	16
Growth CC firms in res. neighbourhoods '99-'08	25	14	12	30	18
Growth of traditional firms on city level '99-'08	-14	-3.5	-4.0	-20	-9.0
Growth of traditional firms in res. neighbourhoods '99-'08	-14	-5.0	-5.0	-22	-10
share of CC firms in res. neighbourhoods '08	45	28	35	55	40
share of traditional firms in res. neighbourhoods '08	55	72	65	45	60

Data source: LISA[47] (calculations by the authors)

With Utrecht as the only exception, the growth of cognitive-cultural firms in residential neighbourhoods supersedes the growth of cognitive-cultural firms on city level. The share of traditional firms has declined in all five cities over the period 1999-2008. These growth rates show that the share of cognitive-cultural firms in residential areas is on a par with overall growth rates. In Utrecht, the share of cognitive-cultural industries in residential neighbourhoods already surpasses the share of traditional industries in 2008. The implication of this finding is that we need to consider residential neighbourhoods as places of production that are gaining importance and will continue to do so in advanced urban economies since it is expected that economic growth will predominantly take place in the cognitive-cultural industries (Scott, 2011).

[47] LISA data covers all firms in the five research cities – the definition of cognitive-cultural firms and traditional firms corresponds to the one given at the start of section 4. See also appendix II, cognitive-cultural firms are firms that correspond to high-value-added, innovative and creative sectors minus the health sector. LISA refers to The National Information System of Employment register (Landelijk Informatie Systeem Arbeidsplaatsen).

4.6.1 Business models compared

Table 2 shows that a substantial part of the entrepreneurs[48] (N=370) in the residential neighbourhoods that we sampled can be defined as cognitive-cultural. The distribution is almost equal, with 49 per cent of firms in the residential neighbourhoods operating in cognitive-cultural sectors which is slightly higher than the average share of 41 per cent of cognitive-cultural firms in residential neighbourhoods in the five research cities (in 2008, see Table 1) .

Table 2: Cognitive-cultural and traditional firms in residential neighbourhoods

		Frequency	Per cent	Cumulative Per cent
Valid	Traditional	186	50.8	50.8
	Cognitive-cultural	180	49.2	100.0
	Total	366	100.0	
Missing	System	4		
Total		370		

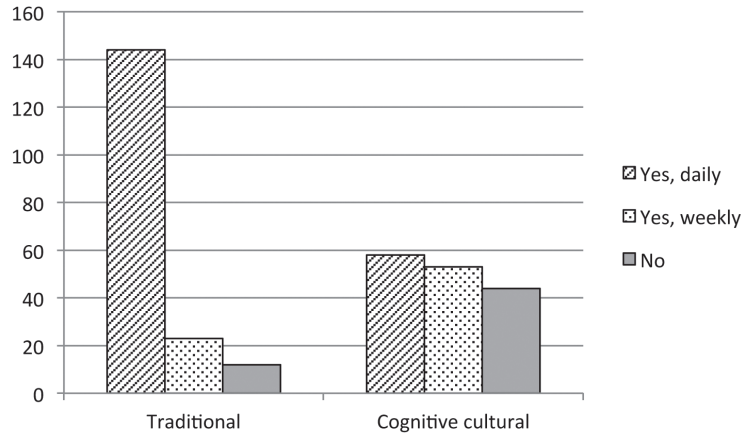
There is a significant [X2 (2, N=365) = 9.57, p<.01] difference in the gender distribution of entrepreneurs in cognitive-cultural firms in our sample. Of female entrepreneurs, 60.6 per cent is running a firm in traditional sectors, whereas over half of the men in our sample are operating a firm in the cognitive-cultural industries. Although entrepreneurs in the Dutch context are relatively highly educated, a higher-level education is especially prevalent among cognitive-cultural entrepreneurs. A majority of 61 per cent of entrepreneurs in cognitive- cultural industries has higher vocational or university training compared to 39 per cent in traditional industries. This difference is again significant X2 (1, N=366) = 37.24, p<.001.

4.6.2. The nature of client relations

Digital technologies are crucial in many cognitive-cultural activities and much of the output consists of digitised products which do not necessarily demand the physical co-presence of producer and customer. This is reflected in the frequencies of face-to- face contact with clients (see Figure 1). The difference in face-to-face contact is significant X2 (2, N = 334) = 65.4, p<.01.

[48] Questionnaires were explicitly asked to be completed by owners or co-owners

Figure 1: Frequency of face-to-face contact with customers



Those in more traditional activities interact more often on a face-to-face basis with their customers. This does not necessarily mean that cognitive-cultural entrepreneurs interact less with their customers, yet they use different means to do so. This implies a difference in business dynamics between the two types of firms with traditional business generating more 'traffic' in the neighbourhood whereas cognitive-cultural activities have various ways of interacting with customers. Several entrepreneurs who rely on face-to-face contact with customers comment on the importance of this kind of interaction and the aspect of visibility for their businesses:

1) 'I would rather be located on a more central place, because more people walk by. We're sort of tucked away in a little corner. Everybody passes on... (name of street) but nobody passes by this little corner. So we've asked about getting some of those nice advertisement signs, to put right there on the corner. Right now, we don't get any accidental passers-by.' (Co-owner flexible work space – Utrecht).

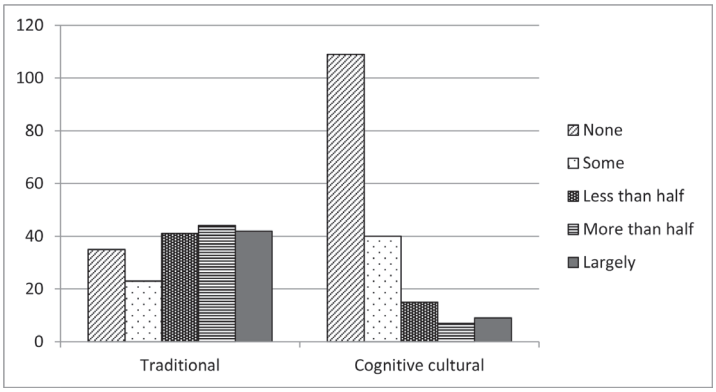
2) 'I advertise with my shop window – people drive, walk or ride by and see my window. Visibility is of key importance to my business. When I was still located at home I didn't have the window and I realized I needed such a thing to make people realize I existed' (self-employed fashion designer – Amsterdam).

The entrepreneur in fragment 2 maintains a fairly broad customer base, the majority of her customers coming from the larger Amsterdam area. Moreover, according to our definition she is a cognitive-cultural entrepreneur. The fragment illustrates how, although face to face contact on a daily basis with clients is less common for cognitive-cultural industries, visibility is a marketing instrument that can nevertheless be very important for these firms.

4.6.3 market locality

Traditional entrepreneurs more often offer daily goods (e.g. foodstuffs) and services (e.g. dry-cleaning) than cognitive-cultural entrepreneurs, who offer more specialized goods and services. We expect that traditional firms will depend more heavily on local markets because of the nature of the products and services that they offer.

Figure 2: The share of locally-based[49] customers



From Figure 2 we can learn that the difference is striking: the number of firms in the cognitive-cultural activities that has no customers from their own neighbourhood is much higher. With firms in traditional activities, the customer base is more evenly spread with a significant share coming from local markets making them more dependent on the fortunes of the local clientele[50]. A higher reliance on local markets make firms more dependent on changes in these markets, and arguably also more vulnerable to changes in consumer behaviour like e-shopping and one-stop shopping. One former entrepreneur who is now president of a local shopkeeper association highlights this dependency:

> 3) 'This whole neighbourhood has deteriorated significantly in the last decade. The municipality of Dordrecht is renewing other parts of the city and is moving people with low incomes to the social housing estates in this neighbourhood. So the average incomes in this neighbourhood have gone down; we have many singles, migrants and unemployed people. This is affecting our sales' (president shopkeeper association -Dordrecht).

[49] Locally refers to the neighbourhood where the firm is based.
[50] Some = 1-10% of clients, Less than half= 11-40%, more than half= 41-70%, Largely= >71%

4.6.4 Location in the value chain

Related to the nature of client relations and market locality is the location in the value chain. . Entrepreneurs in the cognitive-cultural activities more often locate themselves upstream of the value chain (73 per cent), as opposed to entrepreneurs in traditional activities (28 per cent at start of the value chain). In other words, cognitive-cultural entrepreneurs are more often involved in the creation of ideas and setting-up of projects, which means that they do not necessarily have to meet their clients on a daily basis to 'sell' them products and they also do not necessarily have to have a 'physical' presence in the neighbourhood to maintain their clientele. One entrepreneur comments on the importance of a 'fit' of their business with the local market:

> 4) 'The second criterion for the location of our business was the match with the local population. We knew our clientele was here. Furniture and interior design are of interest to two groups; young couples who want unique things and older people who are willing to invest in expensive furniture' (co-owner shop for furniture and interior design products, Utrecht).

4.6.5 Growth ambitions and innovation

Businesses in residential areas are often located in relatively small business spaces, or at the home of the entrepreneur. Only 8% of all entrepreneurs in our sample expressed an ambition for increasing the actual size of their business space. A slightly higher percentage of 13 per cent had the ambition of increasing the number of employees in their business. In this respect, there are no significant differences between traditional and cognitive-cultural entrepreneurs. When it comes to the ambition to develop innovative products and services, cognitive-cultural entrepreneurs are more ambitious, and this difference is significant: $X2$ (1, N = 365) = 5.18, $p<.05$. Overall, the share of entrepreneurs that has the ambition to innovate is 13 per cent. Almost half of all entrepreneurs, 47 per cent, reports the ambition to increase turnover in the next two years, with no significant difference between the two types of entrepreneurs. It might be somewhat surprising that the ambitions of these entrepreneurs are quite modest, but it is important to bear in mind that a large part of these businesses are self-employed entrepreneurs and some of the main reasons that people report to become self-employed is that they desire autonomy, mobility and independency. Scaling down on ambitions allows these entrepreneurs to maintain these qualities. Cognitive-cultural firms are not more expansionist than traditional firms.

4.6.6 Multivariate analysis

We used factor analysis to investigate characteristics of cognitive-cultural industries from a multivariate perspective. Our exploratory analysis showed that the role of local markets is an important point of differentiation between traditional and cognitive-cultural firms and we want to explore this concept further. Scott (2007) considers the social and business relationships entrepreneurs, firms and their workers maintain as increasingly important assets in the cognitive-cultural economy. In fact, Scott emphasizes that both traded and untraded interdependencies are utilised for problem-solving, creative processes and labour market mobility. Market locality and traded and untraded relations with other entrepreneurs will therefore be the focus in the remainder of this empirical section. The survey included multiple topics that deal with the locality of market relations, and frequency and nature of relations with other entrepreneurs We conducted a factor analysis (PCA) in order to a) compress the large amount of items in our survey inquiring into these topics and b) see whether we could use the factor loadings to conduct further analyses of different types of entrepreneurs in residential neighbourhoods. The analysis met the assumptions of the KMO and Bartlett's test[51], so we assumed that these variables are suitable for factor analysis. From the analysis, we can distinguish two components shown in Table 3:

Table 3: Components from factor analysis

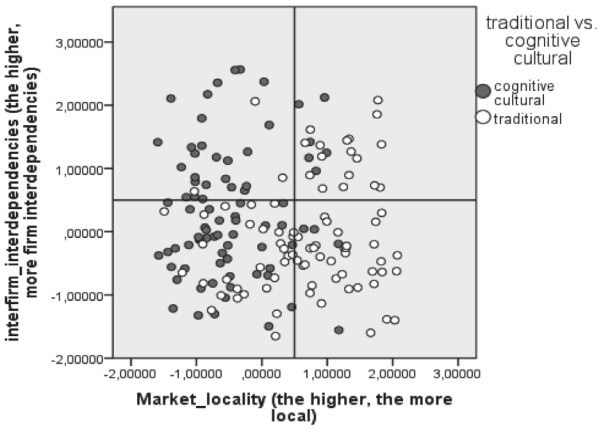
1. Market locality	2. Inter-firm interdependencies
Share of local[52] customers	Frequency of contact with other entrepreneurs in the entrepreneur's own and adjacent neighbourhoods
Share of supralocal[53] customers	Frequency of contact with other entrepreneurs in the city[54]
Share of customers being consumers (not business-to-business)	Frequency of contact with other entrepreneurs outside the city (nationwide)
Share of local[55] traded interdependencies	Main reasons for contact with other entrepreneurs are exchanging labour market information and business strategies
Share of supralocal traded interdependencies	Main reasons for contact with other entrepreneurs are work acquisition and collaborative projects

We included variables that cover contact with other entrepreneurs on different scale levels as well as the reason for maintaining contact with other entrepreneurs.

[51] KMO .751 and Bartlett's test of sphericity significant at p<.001 level, see also appendix III.
[52] Customers coming from the entrepreneur's own neighbourhood
[53] Supralocal refers to customers outside the city of location
[54] Outside the entrepreneur's own or adjacent neighbourhoods
[55] In the entrepreneur's own neighbourhood and adjacent neighbourhoods

Also, we included variables that relate to customer base, (supra)local traded interdependencies and type of clientele. The share of traded interdependencies on different scale levels and the frequency of contact with other entrepreneurs on various scale levels refer to different questions in the survey. Traded interdependencies refer to the share and the scale of business relations, involving monetary compensation whereas the 'contact with other entrepreneurs' was left undefined as to refer to any type of contact. As a follow up, we asked entrepreneurs to indicate the main reasons for having contact with other entrepreneurs. Respondents indicated how often they had contact with other entrepreneurs about: Exchanging information about the neighbourhood; exchanging information about business strategies; exchanging information about labour market; exploring how to improve the neighbourhood; setting up collaborative projects; acquisition of work; friendly, personal exchanges. Firms that score high on what we've termed 'market locality' generally have a high share of local customers and conversely, a low share of supralocal customers. A high share of local customers is congruent with a high share of customers being consumers as well as with a high share of local traded interdependencies and a low share of supralocal traded interdependencies. A high share of local traded interdependencies means that over half of the entrepreneurs' total traded relations are located in the same and adjacent neighbourhoods. An interesting outcome is that entrepreneurs that display a high frequency of contact with other entrepreneurs do so on all scale levels. Entrepreneurs that have more contact with other entrepreneurs mentioned work acquisition, collaborative projects, labour market information and business strategies as the main reasons for having contact with other entrepreneurs. Capturing our sample by plotting their factor scores while differentiating between cognitive-cultural industries and traditional industries results in the graph displayed in Figure 3:

Figure 3: Market locality and inter-firm interdependencies



The graph[56] shows a clear distinction between the two types of firms when it comes to market locality. The upper and bottom right quarter of the graph show that traditional firms generally score higher on market locality. The distribution with respect to inter-firm interdependencies is less straightforward. The top left quarter of the graph is dominated by cognitive-cultural firms, scoring high on inter-firm interdependencies, and low on market locality. However, the top right quarter also contains quite some traditional firms that score high on inter-firm interdependencies. In many studies, the importance of local 'buzz' for firms in the cognitive-cultural industries is stressed. The argument is often made that cognitive-cultural firms rely heavily on interaction with other firms and therefore we would expect to see a stronger tendency towards more inter-firm interdependencies among these firms. However, the picture seems to be more fragmented. In residential areas, the opportunity for 'buzz' might be less ample, or a different type of entrepreneurs with different relational preferences settles in residential areas; entrepreneurs who form networks and are embedded in completely different ways. The next step in the analysis is to introduce other firm characteristics that might influence market locality and inter-firm interdependencies. We've already seen that cognitive-cultural firms are far less likely than traditional firms to operate in a local market. Other firm characteristics we introduce are: being home-based (two categories), age of the firm, the educational attainment of the entrepreneur (two categories) and the number of hours spent at the business address. Table 4 displays descriptive statistics for all variables used.

Table 4: Descriptive statistics

Variable name	N	%	Mean	SD
Cognitive-cultural firm				
Cognitive-cultural	80	48		
Traditional	84	52		
Home based business				
Yes	94	58		
No	67	42		
Highly educated[57]				
Yes	105	62.5		
No	59	37.5		
Years in operation	164		16.3	15.7
Time spent on business address[58]	157		27.4	17.4

[56] The factor analysis resulted in 164 cases with a valid score on both components, evenly distributed along traditional (84) and cognitive-cultural (80) firms.

[57] Highly educated is defined as a completed higher vocational or university training.

[58] In average hours per week.

We propose that being home based is negatively related to market locality since being home based implies low visibility. The lack of research on home based business keeps us from specifying it's relation to inter-firm interdependencies. Age of the firm might have either effect on market locality and inter-firm interdependencies: Older firms are more likely to have an established name and draw from a very broad circle of customers yet they might also have a stable clientele and do not invest in expanding it further. We could expect older firms to have more inter-firm interdependencies because they might know more people due to time and experience while on the other hand young firms might be more eager to learn from other (starting) entrepreneurs and expand their business opportunities. There is a high correlation between educational attainment and being a cognitive-cultural entrepreneur, so we use it as a check when the latter has not been added to the model. The number of hours spent on the business address is expected to be positively related to market locality (see also Figure 1) and negatively related to inter-firm interdependencies since being sedentary decreases opportunities for contact with other entrepreneurs.

Table 5: OLS regression; determinants of market locality

Model 1: market locality (Standardized coefficients)			
		Control variables	*Added: cognitive-cultural firm (dummy)*
Bèta-coefficients	Constant	.179	.458
	Cognitive-cultural firm (dummy)		-.608**
	Home based business (dummy)	-.181*	-.041
	Highly educated (dummy)	-.186*	-.056
	Years in operation	.025	-.022
	Time spent on business address	.217**	.181**
	R^2	.165	.478
	Adjusted R^2	.142	.460
	N	150	150

** p< .01 *p<.05

Table 5 shows the determinants of market locality. The negative effect of being higher educated on market locality disappears when the dummy cognitive-cultural – traditional firm is added to the model. This illustrates the strong correlation between educational attainment and being a cognitive-cultural entrepreneur. The same happens to the negative effect of being home based, implying that a large

share of home based business is cognitive-cultural. The time spent on the business address remains significant. Market locality thus also implies customers coming to the entrepreneur instead of the other way around. We thus see the previous relation confirmed: cognitive-cultural firms have a market orientation that is very different from traditional firms. The control variables tell us that without a sectoral reference, highly educated, home based entrepreneurs are less likely to operate in a local market. The explanatory strength of the control variables is greater regarding inter-firm interdependencies (Table 6). Although cognitive-cultural firms are more likely to be part of inter-firm interdependencies, so are non-home-based firms and younger firms. We find that being home-based is negatively related to inter-firm interdependencies. These entrepreneurs display a lower 'connectedness' with other entrepreneurs on all scale levels compared to firms located in an office, shop or other type of commercial real estate. This raises questions as to whether home-based businesses are rather isolated, and if so, if this is the case by choice or whether they do connect to other entrepreneurs in ways that our survey was not able to capture. Interestingly, a large share of cognitive-cultural firms are home-based so this points to a divide in inter-firm interdependencies for cognitive-cultural firms that are home-based versus those that are not. We find that the age of the firm is negatively related to inter-firm interdependencies, implying that older firms seek out contact with other firm less often as well as for different reasons. However, it was argued by Schutjens and Stam (2001) that young firms expand their networks up to a certain age and then stop investing in networks, implying a curvilinear relationship between firm age and inter-firm interdependencies.

Table 6: OLS regression; determinants of inter-firm interdependencies

Model 2: inter-firm interdependencies (Standardized coefficients)			
		Control variables	*Added: cognitive-cultural firm (dummy)*
Bèta-coefficients	Constant	.604	.486
	Cognitive-cultural firm (dummy)		.176*
	Home based business (dummy)	-.245**	-.286**
	Highly educated (dummy)	.100	.064
	Years in operation	-.326**	-.312**
	Time spent on business address	.016	.029
	R^2	.122	.148
	Adjusted R^2	.098	.119
	N	151	151

** p< .01 *p<.05

The following interview fragment illustrates the composition and reciprocity of inter-firm interdependencies:

> 5) 'I have a good relationship with this accountant, who keeps the books for about a 100 self-employed people. Imagine that one of his clients wants to buy a house. The client has to go to the accountant to get the financial administration. So this accountant is one of the first people he talks to. If he asks him where he wants to go to get a loan for the house this client says that he will go to the bank. They all say they will go to their bank. The accountant suggests to his client to refer him to an excellent financial specialist that can offer a more personal service than a bank. The accountant cannot ask money for such a referral and yet it rubs off on him in a good way if I do a good job'. (Self-employed financial services- Dordrecht).

This fragment comes from an interview with a home-based entrepreneur in financial services, illustrating how inter-firm interdependencies can result in financial as well as less quantifiable advantages.

4.7 Re-mix, re-model

The transformation processes in advanced urban economies have been looked at from many perspectives. The shift to more knowledge–intensive or cognitive-cultural economic activities and their specific, clustered locational patterns has been one of the most widely studied topics of this transformation. Notwithstanding this widely shared research interest, one aspect has remained quite firmly below the radar of most researchers. As most studies home in at cognitive-cultural activities in more or less centrally-located, mono-functional areas in cities, residential neighbourhoods as attractive milieus for (small) businesses in high-end producer and personal services and in cultural industries tend to be overlooked. Above, we have shown that with the shift to cognitive-cultural activities and the concomitant increase in opportunities for small businesses in combination with more degrees of locational freedom thanks to ever cheaper ICT, residential neighbourhoods are now to be taken seriously as spaces for production. We are currently witnessing, arguably, a partial reverse of the long-term trend of an ever increasing spatial separation of functions which started even before the Industrial Revolution: a re-mix of functions at the level of homes and residential neighbourhoods. This re-mix may have serious implications not just for the neighbourhoods involved, but also more generally for advanced urban economies and, from a theoretical perspective, for theories on firm location.

Above, we have looked at the differences between cognitive-cultural and more

traditional activities in fifteen residential neighbourhoods in five Dutch cities, i.e. Amsterdam, Dordrecht, Leiden, Utrecht, and Zoetermeer. We divided the firms located in these neighbourhoods into two categories: cognitive-cultural and traditional activities. We did find salient differences between these two types. Cognitive-cultural activities are, as we expected, to be found more upstream in the value chain, they cater much less to a local customer base, and are less dependent on daily face-to-face contacts with customers. The extent to which the two types of activities differ with respect to local inter-firm interdependencies is less clear. The proclivity towards being part of 'flexible inter-firm networks' is less the prerogative of cognitive-cultural firms. Although they display a stronger tendency than traditional firms to maintain contacts with other entrepreneurs, so do younger firms in general and firms that are not home-based. It has been contended that 'different industries rely on different knowledge bases for activities that are most central to their competitiveness' (Hatch, 2013:265 referring to Asheim and Gertler, 2005; Gertler, 2005). This also holds up for the nature of the firm location and the way knowledge bases are accessed. Home based firms are networked differently than non-home-based firms, indicating that they gain access to sources of knowledge and information in different ways.

What emerges from our study is an evident departure from the more conventional image of neighbourhood economies dominated by mom-and-pop stores, low-end personal services and other assorted economic activities aimed at the local clientele. Innovative activities, focused on non-standardised products, catering to non-local markets and requiring the input of cognitive-cultural labour can be found in considerable numbers in residential neighbourhoods. The horizons of these firms stretch far beyond the own neighbourhood, in terms of markets as well as traded and untraded interdependencies. Cognitive-cultural production seems to suit a home-based environment. Some of these firms which will grow out of the seams of the home will move to more mono-functional areas after the start-up phase. Yet, especially for home-based businesses it holds that the preference to stay home based is strong and a relocation decision is intertwined with the family situation (Risselada & Schutjens forthcoming). Even if they do relocate, they often look for business accommodation in their own neighbourhood (Mackloet, Schutjens, & Korteweg, 2006). The residential neighbourhoods, then, are (much) more than just incubator areas but are becoming specific business environments in their own right. It seems plausible that these changes in the spatio-temporal division of labour and the concomitant mixing of functions will affect a whole range of spatial levels: that of individual dwellings, streets, neighbourhoods, cities and of urban systems.

From a more policy-oriented perspective, it appears that as production activities

become more integrated in residential quarters, both the built and the regulatory environment have to allow more mixed uses and throw up fewer barriers to changes in (combinations of) uses. As stated by Harrison et al. (2004):

"…new economy production no longer requires people to work together in the same physical space to access the tools and resources they need to produce their work. Production can be spatially decentralized and reintegrated back into other aspects of life ... a much finer granularity of interplay between work and leisure becomes possible"

This (re-mix) of functions will also offer opportunities for cities with an extensive pre-industrial built environment which evolved around a finely-grained mix of functions. In a sense, then, cities are getting back to more pre-industrial combinations of work and other activities and policy makers should be more aware of the economic opportunities offered by residential neighbourhoods and be less focused on mono-functional business districts.

These changes will also require a rethinking of the relationship between the city as a site of production and a site of social reproduction as these become more intertwined (see also Folmer & Risselada, 2012; Beckers & Kloosterman, forthcoming). It may also entail a revision of firm location theories as the concept of firm as a closed-off and spatially fixed unit is eroded and different considerations, such as the possibility to combine work and care, have to be taken into account (see also Buliung, 2011). Locational theories used to be solely focused on business concerns, but with the intertwining of different functions at a very low level of scale, that of the home itself, other issues come into play. The present conceptualizations of 'the firm' and 'enterprise' do not seem adequate for explaining the phenomenon of the self-employed and home-based business (Taylor, 1999). As Taylor suggested, we need to look for different analytical instruments to get a better understanding of these economic entities that are becoming a more prominent part of the urban economic landscape. This will require a broader approach of how entrepreneurs work and how businesses fit in within the wider scheme of the owner's life. More in-depth, qualitative analysis, and ethnographic observation is needed to unravel the different configurations of businesses in residential neighbourhoods. Exploring home-based businesses in these ways may also offer new insights why they are found more in particular neighbourhoods and how they benefit from which types of agglomeration economies.

The shift to a cognitive-cultural economy does not mean that everything will change-we do not believe in epochalist readings of history. Instead, we view this very important change as adding a new layer to advanced urban economies, partly

replacing other, older layers. This new layer consists of landscapes of production and consumption which are geared towards products with a high cognitive-cultural content. This re-mixing of functions in residential neighbourhoods necessitates a re-modelling of the built environment on different levels (from the individual home to the city as a whole), of the politics towards businesses, and also a re-modelling of locational theories.