

Scene meets science: knowledge institutions and the creative industries

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1 Introduction

Ample attention has been paid in recent years to the relation between knowledge institutions, particularly universities, and urban and regional development. This relation often is phrased in terms of urban development, either by the involvement of knowledge institutions in urban development projects in the city, or the development of housing and other urban functions on the university campus (e.g. Konings *et al.*, 2005; Wiewel and Perry, 2008; Den Heijer, 2011). It may also be approached from an economic perspective, analysing for instance the impact of purchases and jobs by knowledge institutions on the local economy (Felsenstein, 1996; Armstrong *et al.*, 1997), or the way knowledge institutions contribute to a city's knowledge economy (Van Geenhuizen *et al.*, 1997; Perry, 2008, Franz, 2008), technological knowledge base (Abramovsky and Simpson, 2011) and hence, it is assumed, innovativeness (Caniëls and Van den Bosch, 2011).

Within this broad field of debate, research and policy, the current paper focuses specifically on the ties between creative industries and entrepreneurs on the one hand, and knowledge institutions such as universities, polytechnics and academic research institutions on the other. It is often assumed that cooperation between creative industries and knowledge institutions results in innovation, and by that contributes to local and regional competitiveness. As the creative production and consumption milieu can hardly be separated, however, this particular case makes clear that the various perspectives on the relation between knowledge institutions and urban development are closely intertwined. Both converge for example in the development of incubators and other knowledge-intensive businesses at and near university campuses, the location of student housing and facilities and their impact on the urban climate, or the extent to which knowledge institutions define a city's external image. Moreover, knowledge institutions are not only about research and education (cf. Rodrigues, 2011:180) but also have a huge potential impact on a city's attractiveness and social climate.

The current paper addresses the questions 1) how knowledge institutions may contribute to improve the location climate for creative businesses and creative talent, 2) how knowledge

institutions cooperate with the creative sector to stimulate innovation and creativity, and 3) how creative industries contribute to the curriculum and research projects of knowledge institutions. Last but not least, an overarching question is what local governments could do to stimulate the cooperation between creative industries and knowledge institutions in such a way that urban and regional innovativeness benefits.

Thus, the paper draws a connection with the theme of the forthcoming CCC conference *How does it work? Creative industries meet science*. As a discussion paper, it is an explorative exercise and features as input for an expert meeting that is being organised within the framework of WP6 Activity 5, Transnational learning, of the CCC project. Therefore we strived for conciseness and accessibility, rather than for comprehensiveness. The paper explicitly builds on the Framework Report and the SWOT Report written earlier (Activities 6.1 and 6.2 respectively; see Romein and Trip 2010a/b), as well as on previous research on the city of Delft (Fernández-Maldonado and Romein, 2008; Trip and Romein, 2010;¹ Romein *et al.*, 2011). Although the city of Delft is not in fact a partner in the CCC project, for the theme discussed here it is a highly relevant and interesting case. Knowledge institutions and knowledge-intensive businesses constitute a substantial part of the local economy, and public authorities, businesses and knowledge institutions pursue dedicated strategies to reinforce the local and regional knowledge economy. Furthermore, Delft has a sizable creative industry with connections with its knowledge infrastructure. Because this case is probably relatively unknown to most of the CCC audience, we choose to elaborate on it at some length as an illustration of the ideas discussed here.

The structure of the paper is as follows. Section 2 provides an overview of the various types of interaction that may exist between creative industries and knowledge institutions, based on the primary tasks of knowledge institutions and three main pillars of the creative economy. Section 3 and 4 then elaborate on this, by means of a case study of Delft. Finally, Section 5 draws some conclusions and poses some propositions as starting point for discussion.

2 Positioning interactions between creative industries and knowledge institutions

While the university is a key institution of the Creative Economy, what's not so widely understood is the multifaceted role that it plays. It is not merely there to crank out research projects that can be spin off into companies. To be an effective contributor to regional growth, the university must play three interrelated roles that reflect the 3T's of creative places - technology, talent and tolerance (Florida, 2002:292).

Although it is hardly surprising in this context to refer to Florida's 2002 bestseller, the above quote is in several aspects key to the role of knowledge institutions in the creative economy. Florida focuses on universities, but what he says to some extent also applies to other higher

¹ This particular paper is based on a study carried out for the municipality in Delft, including an analysis by means of a confrontation matrix similar to the analysis of CCC cities and regions in the SWOT Report. See <http://www.dur.ac.uk/resources/geography/conferences/eursc/17-09-10/TripandRomein.pdf>. For the current discussion paper we have gone back to the original interview reports on which the abovementioned study has been based.

education and research institutions. However, ties between research and education are likely to be the strongest in the case of a university or polytechnic

The relations between creative industries and knowledge institutions are not that far-fetched, considering that ‘scene’ and ‘science’ represent two models of innovation. Creativity as fostered in the creative industries often seems to originate from unsystematic inspiration and intuition, but in fact can be trained and focused by practice and by applying dedicated methods (e.g. Fraley, 2007). Research and teaching often are just as creative, and often just as unpredictable, but are structured by their own set of rules. In both cases, however, curiosity is a major driver of the choices that are made, and creativity is applied to find innovative solutions to the problems at hand. These parallels perhaps make it plausible that mutual benefits can be achieved between knowledge institutions and creative industries. Nevertheless the question remains how the multiple interrelations between scene and science could be mapped in a more systematic way.

Florida’s quote refers, partly implicitly, to two dimensions that may be used to position the relations between knowledge institutions and creative industries. First, there are the various tasks and roles of knowledge institutions. Second, the three ‘pillars’ of the creative economy Florida mentions: technology, talent and tolerance. Although these two dimensions are by no means the only way to position relations between creative industries and knowledge institutions, within the context of this paper they provide a versatile and pragmatic framework.

The first dimension to position interactions between creative industries and knowledge institutions refers to the three primary tasks of the latter:

- *teaching* and *learning* are particularly important for universities and other institutions of higher education, where professors are designated by the topics they teach, rather than by their research. It involves the classes and coaching of the formal curricula, as well as less formal ways of learning. Formal teaching is not so much a task of dedicated research institutions, but even here forms of learning by for example internships or on the job training are likely to be indispensable;
- *research* is the essential task of research institutes, but is also a primary task of universities and some other higher education institutions, where it tends to be related to teaching. Especially in the master phase the two may be closely interwoven. Increasing criticism of the limited accessibility of scientific knowledge by expensive academic journals is leading to an increasing emphasis on open access sources, but this conflicts with the scientific appraisal system based citations in high-ranking journals;
- *valorisation* of knowledge is a ‘third mission’ of universities, adding to teaching and research (Rodrigues, 2011; Barge-Gil *et al.*, 2011) that has become much more important in recent years, due to a decrease in public funding and an increasing pressure to deliver ‘value for public money’. Particularly university managers now have adopted an explicit business approach to the university. Some authors comment that a ‘second academic revolution’, defined as “translation of research findings into intellectual property, a marketable commodity and economic development” (Etkowitz and Webster, 1998:21) is in progress.²

The second dimension can be related to technology, talent and tolerance, Florida’s ‘3 Ts’. Florida applies these criteria in quantitative analyses, in which each is measured by a number of

² The first academic revolution in the first quarter of the nineteenth century added the generation of knowledge by research as a second primary task to teaching.

indicators. However, the catchy term hides a lot of nuance, the more so as the aim of this paper is not a quantitative, but a qualitative analysis. Each of the three terms is significantly broader than is being suggested by the indicators used by Florida. Therefore, the ‘3 Ts’ are used here as useful framework, in which the three elements are interpreted as follows:

- although the focus is often on *technology* (too often, as Florida (2005:256) acknowledges) the creative economy involves important non-technological sectors. Rather, the focus here is on technology, design and other creative knowhow;
- *talent* involves not just attracting talented people, but also the management of human resources in a broader term. Thus, it includes for instance education in creative disciplines, training of entrepreneurial skills, and the recruitment and employment of creatives;
- *tolerance* may be considered a synecdoche for a city’s social climate in a broader sense, including more or less elusive factors such as social and cultural diversity, safety, authenticity, openness and progressiveness.

Table 1 presents an overview of plausible mutual relations between knowledge institutions and creative industries, structured by way of the two dimensions elaborated above. The first thing noticeable about this table is that the listed plausible relations are clustered in a number of cells.

Table 1: Mutual relations between creative industries and knowledge institutions.

		‘pillars’ of creative economy (3 Ts)		
		technology, design, creative activities	talent, education, entrepreneurship	tolerance, social climate
primary tasks of knowledge institutions	teaching and learning		<ul style="list-style-type: none"> ▪ training and education of future creative workers and entrepreneurs ▪ traineeships and apprenticeships ▪ guest lectures ▪ holding special chairs 	<ul style="list-style-type: none"> ▪ impact of students on social climate (tolerance, liveliness, progressiveness)
	research	<ul style="list-style-type: none"> ▪ co-development (e.g. research, design, testing) ▪ open innovation ▪ use of knowledge institutions’ facilities (e.g. labs, meeting rooms, library) 		
	valorisation		<ul style="list-style-type: none"> ▪ funding/founding of incubators or cheap working spaces ▪ entrepreneurial training/coaching ▪ labour market for graduates 	

One cluster concerns relations involving teaching and learning, aimed on the development of talent. This includes the education of future creative workers and entrepreneurs by way of regular curricula, for instance by providing traineeships and apprenticeships. There is a two-way interaction here, as creative business have an important role in offering opportunities for

traineeships, internships etc. Creative entrepreneurs also regularly contribute to the curriculum by giving guest lectures on the basis of their practical experience, and they may hold special chairs. On the other hand, regular university staff may have a secondary job in creative business for one or two days a week.

Related to teaching and learning is also the presence of students, who tend to have a considerable impact on the social climate in university towns. In general the presence of large student populations leads to more tolerance, liveliness and a progressive cultural and political climate.

The research task of knowledge institutions is largely related to the ‘pillar’ of technology, design and other activities of creatives and creative industries. This involves the co-creation of products by for instance shared research or design, or by testing of prototypes in a ‘living lab’. In a more structural way it may entail open innovation systems, in which business and knowledge institutions cooperate on a permanent, reciprocal base.³ Finally, it can be imagined that creative business make use of facilities they cannot afford themselves, but which are available at nearby knowledge institutions. This may vary from fully equipped meeting rooms and catering facilities to renting lab time and use of the university library.

A final cluster in Table 1 concerns the valorisation of knowledge by knowledge institutions, a task that is of increasing importance. It concerns ‘selling’ knowledge in the form of the results of research, but also of knowledge embodied in graduates. Education of graduates as such is nothing new of course, but valorisation in this respect is related to the ways in which knowledge institutions provide labour market opportunities for creative graduates, and in particular the ways in which they support business start-ups. Knowledge institutions participate in founding and funding incubator-type of spaces (buildings) and adjoining programmes for creative start-ups. They may also stimulate near graduates in creative disciplines to start their own business. What is required here is the kindling of ambition and drive for entrepreneurship and training of required entrepreneurial skills. These requirements are often not or insufficiently met in the standard curriculum. At the root of this is a ‘non-conventional’ image of entrepreneurship that should be established by institutes for higher education in creative disciplines throughout their curriculum (Brown, 2007; Taylor, 2007; Jacobs, 2009).

Other relations between knowledge institutions and creative industries may be thought of, some of which are more indirect or elusive. For instance, many universities support cultural activities or operate their own theatre, museum or botanical gardens. Things such as these are hardly related specifically to one of the primary tasks of knowledge institutions. Botanical gardens, for instance, have largely lost their once important role in research. This makes these activities no less relevant as urban amenities; it could make them more vulnerable, however, when budget cuts force knowledge institutions to concentrate on their core tasks.

The next section combines this conceptual framework with evidence from the Dutch town of Delft. It discusses how knowledge institutions and creative industries in Delft are cooperating, and how their mutual relations may be positioned within the framework discussed above.

³ The term ‘open innovation’ was introduced by Chesbrough (2003) to describe how, increasingly, firms do not have a monopoly on specific knowledge. Thus, “... valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths to market in the Close Innovation era (Chesbrough, 2003:43).

3 The case of Delft

Delft is a city of almost 97 thousand inhabitants in the densely urbanised western part of the Netherlands (see Figure 1). It is situated between Rotterdam and The Hague, both at about 15 minutes by train. Both cities are considerably larger than Delft, with 593 thousand and 489 thousand inhabitants respectively (Statistics Netherlands, 1-1-2010).

This 'sandwich position' is reflected in many aspects of Delft's social and economic development. It enables the city to borrow size from its neighbours when this is advantageous, as a wide range of facilities and amenities are available at short distance. However, the proximity of both large cities also has less desirable effects. First, this makes it relatively easy for students, recently graduated knowledge and creative workers and young starting entrepreneurs to move to these cities in response to the shortages of affordable housing and working spaces in Delft. Furthermore, commuting from, more in particular to (Bureau Louter, 2007), and last but not least via Delft is considerable, causing congestion on the A13 motorway between The Hague and Rotterdam and hampering the accessibility of Delft by car for a large part of the day. Also, the range of cultural and leisure amenities, especially for young graduates, is relatively small in Delft.

Despite these disadvantages, many inhabitants of Delft value its social and residential climate. As Delft itself is relatively small, it lacks a larger city's amenities but also its problems. Furthermore, it has a historic inner city, dating back to the 16th century, which is lively as well as picturesque. It is now an important element of the city's creative production and consumption milieu, as a location for creative firms, a meeting place and a podium for cultural activities. However, it is also an expensive location, protected by preservation legislation, and to some people too much of an 'open air museum'.

Before the 1960s Delft was a typical industrial city: almost half of its economically active population worked in the manufacturing sector whose main branches were metal, chemical, optical and technical instrument, construction, food and drinks industries. But due to the structural trend of de-industrialisation, manufacturing employment declined by 21.4% between 1960 and 1976, and even faster in the 1980s and 1990s. Symbolically, a last icon of manufacturing Delft, the Unilever peanut butter factory moved to Rotterdam in 2007.

Evolution of the knowledge economy

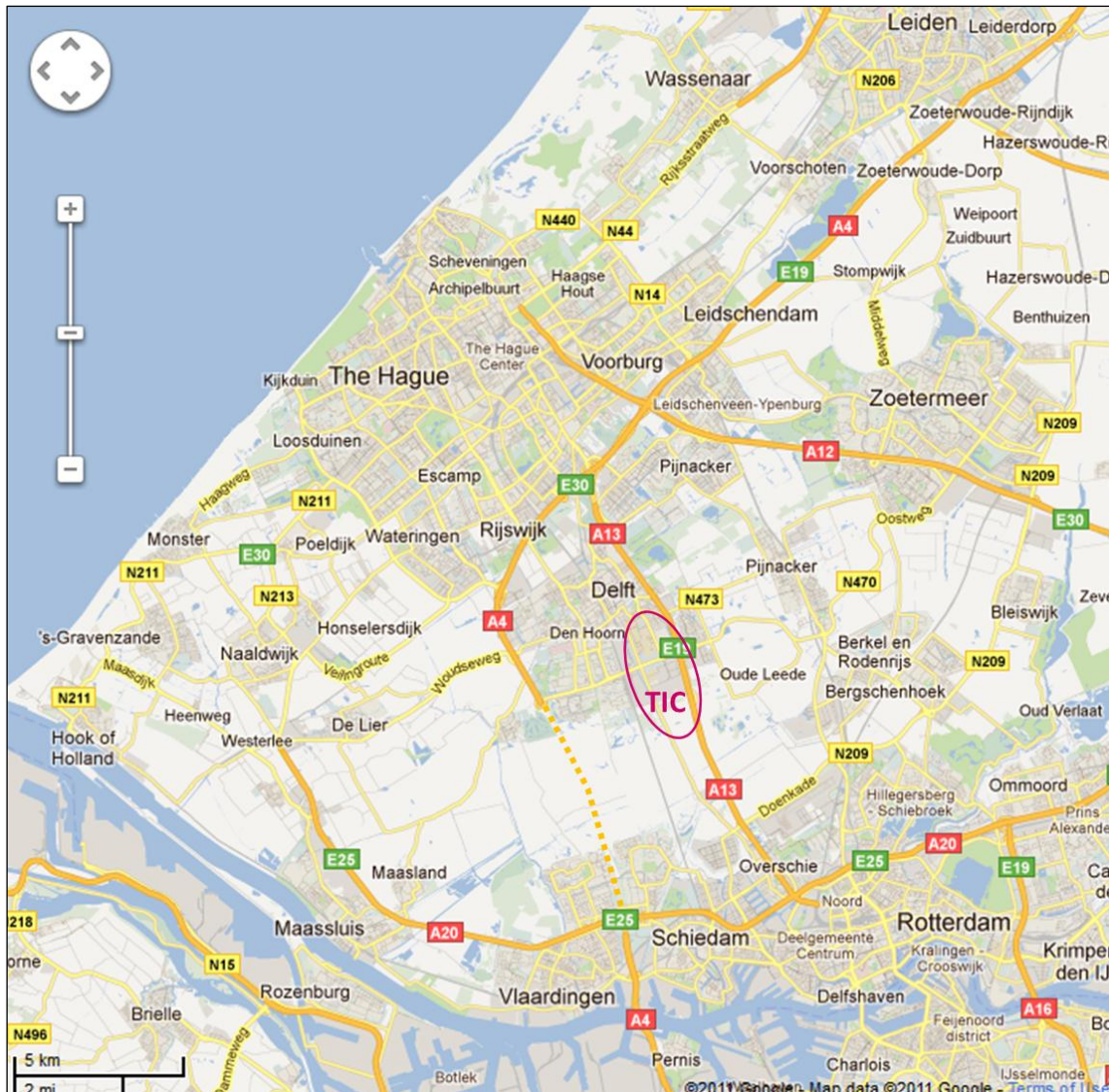
During the last decades, much has changed in Delft in terms of economic structure, but also in the way businesses, knowledge institutions and public authorities cooperate in their strive to develop a knowledge economy. Delft is home to several major research and education institutes, notably Delft University of Technology (DUT) and the Netherlands Organisation for Applied Scientific Research (TNO). Both are located south of the inner city, respectively on and adjacent to a university campus.

Together, DUT and TNO constitute the backbone of the knowledge capacity in Delft. DUT has about 4,600 employees and 17 thousand students (DUT, 2011), making it the largest university of technology in the Netherlands. TNO has several locations in Delft, together accommodating almost 1,200 employees (figure acquired by e-mail). In addition to DUT, the city harbours two multi-disciplinary higher vocational training institutes and the UNESCO-IHE Institute for Water Education. Together, the slightly less than 20 thousand students in Delft are distributed over technical studies (61%), creative and design studies (31%) and social, economic

and environmental studies (8%) (own calculations based on annual reports and information acquired by e-mail and telephone).

Particularly relevant here are the faculties of Architecture and Industrial Design of DUT. They are among the largest faculties in Delft, and the largest of their kind in the Netherlands. They are teaching a range of creative disciplines. In the case of Architecture this ranges from design to building technology to urbanism, while Industrial Design for instance includes automotive design. Both faculties have strong relations with creative industries in Delft.

Figure 1: Location of Delft between Rotterdam and The Hague, and the location of TIC.



Creative industries

Creative industries in Delft provide over 2,200 jobs, 4.7% of total employment (Table 2). Creative producer services are by far the largest subsector, including relatively many architects and designers. This can be related directly to the abovementioned importance of the faculties of Architecture and Industrial Design of DUT. Many of the city's creative entrepreneurs and

workers studied here and still maintain close relations with the university. However, the number of creative business at and around the university campus is limited and mainly includes technology-oriented firms in for instance electronics and ICT. In contrast, the inner city with its attractive production and consumption milieu for creative entrepreneurs is somewhat of a hot spot for creative businesses.

Table 2: Creative industries in Delft (1 Jan. 2008).

	no. of jobs	% of total employment	no. of firms	no. of jobs per firm
arts	576	1.2	153	3.8
media & entertainment	256	0.5	108	2.4
creative producer services	1,381	2.9	255	5.4
total creative industries	2,213	4.7	516	4.3
total Delft	47,299	100.0	3,134	15.1

Source: figures obtained by e-mail from Haaglanden Register of Companies (2009).

Regarding the creative production and consumption milieu, Table 3 shows an overview of strengths, weaknesses, opportunities and threats regarding Delft as a location for creative industries, based on creative entrepreneurs' assessment of place qualities and identification of opportunities and threats. Strengths include the historic inner city (for its urban space and atmosphere rather than as a meeting place), the general residential climate and atmosphere, and — of particular relevance here — the relations between creative industries and higher education institutions, particularly DUT. With regard to cooperation and customer relations, the central location of Delft in regional perspective is often mentioned as an advantage. Weaknesses can be found in a number of more concrete, practical issues, such as accessibility and parking, and the supply of affordable working space and housing. Whereas creative entrepreneurs appreciate Delft, they generally consider the image of Delft as a creative city to be weak. Finally, while there is no lack of 'third places' as such, for example, creative entrepreneurs do not use them very often.

Table 3: Overview of strengths, weaknesses, opportunities and threats regarding Delft as a location for creative industries.

<p>strengths</p> <ul style="list-style-type: none"> ▪ built environment in inner city ▪ solidarity of creative entrepreneurs with city of Delft ▪ availability of formal relation networks ▪ relation to higher education institutions ▪ intake of young creative talent ▪ situation between Rotterdam and The Hague 	<p>weaknesses</p> <ul style="list-style-type: none"> ▪ insufficient supply of affordable and suitable working spaces ▪ no creative city image ▪ insufficient supply of affordable and suitable residential spaces ▪ accessibility by car/congestion due to construction works ▪ parking ▪ 'open-air museum' character of inner city ▪ few 'big players' or 'drivers' in creative sector ▪ insufficient spatial quality of DUT campus
<p>opportunities</p> <ul style="list-style-type: none"> ▪ availability of spaces for redevelopment into working spaces for creative industries ▪ more open attitude of university towards creative industries 	<p>threats</p> <ul style="list-style-type: none"> ▪ city is unable to retain young urban talent (graduates) ▪ policy does not evolve with growth of creative sector and creative businesses

Opportunities include the redevelopment of industrial buildings to lessen the shortage of working spaces for creative industries, and the more open attitude of the university towards relations and cooperation with creative industries. Threats entail the difficulty to retain creative graduates. It is remarked that the inner city tend to be too much of a ‘historic museum’ in the eyes of young creative talent, and has little to offer for graduates who can no longer depend on student-oriented amenities and student housing. Furthermore, particularly larger creative businesses felt that policy focused too much on starting entrepreneurs, rather than addressing for instance the problem of business expansion in the protected inner city.

4 Interactions between knowledge institutions and creative industries in Delft

In this section, relations between the creative industries and knowledge institutions in Delft will be discussed more in detail, according to the scheme elaborated in Section 2.

Teaching and learning

In the field of teaching and learning, relations between the creative industries and knowledge institutions are most notable in the case of the faculties of Architecture and Industrial Design of DUT. In both faculties, creative entrepreneurs and businesses contribute to the curriculum by part-time lectureship and tutorship, giving guest lectures, or providing opportunities for internships. On the flipside of the coin, for creative entrepreneurs this is a way to scout future employees among creative graduates.

Many internationally renown Dutch architects, mostly educated in Delft, hold or have held special chairs in the faculty of Architecture. At the moment this involves e.g. Kees Kaan (Claus and Kaan Architects), and earlier examples include Pi de Bruijn and Carel Weeber (Architecten Cie.) and Francine Houben (Mecanoo), who designed the university library and reorganized public space on the campus. Vice versa, many professors whose primary tasks are in the faculty are active as architects or urban development consultants as well for one or two days a week. The relation between chairs and design practitioners is less explicit in the faculty of Industrial Design, but several active designers from Delft hold or have held chairs in the institution, as have several former designers (from e.g. Philips and furniture company Gispen).

With regard to the social climate in Delft, the presence of a relatively large number of students has a notable influence. Even though a considerable amount of students actually live outside Delft — in 2004 this amounted to 52% of which 11% in Rotterdam or The Hague (data obtained from DUT) — the city has a relatively large number of active students’ unions, and about half of all students is a member of a union. Student facilities and student life is largely concentrated in and around the inner city, where most pubs and student societies are located. This is in sharp contrast to the university and other knowledge institutions, virtually all of which are located outside the centre. However, while students and student facilities have a distinct positive effect on liveliness in the inner city, many of these facilities are accessible for students only, and graduates suddenly find facilities in Delft to be rather limited.

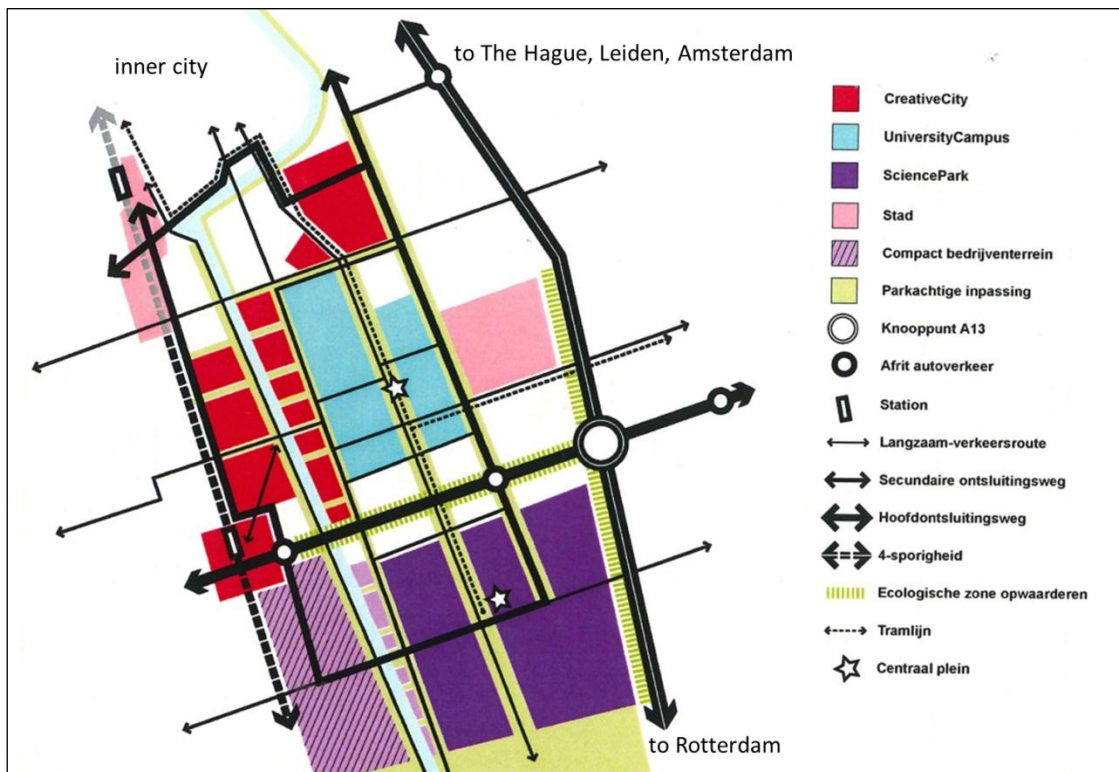
A different but no less notable impact of student life in Delft is the presence of the dedicated student party STIP (‘Students of Technology In Politics’), which has three of the 37 seats in the

city council.⁴ STIP currently has one alderman in local government, responsible for knowledge economy, city marketing, spatial planning and student housing (STIP, 2011). As such, he is also responsible for several projects involving the relation between creative industries and knowledge institutions, such as the Bacinol and Yes!Delft incubator buildings and the development of the Technological Innovation Campus (TIC), which will be discussed below.

Research

Co-development and sharing of research between DUT or TNO occurs on a regular basis, for instance in the development of electronics, but it is still an ad hoc phenomenon. Plans exist, however, to stimulate this type of cooperation on a structural basis. A recent initiative that is particularly relevant for co-development and shared research is the Technological Innovation Campus (TIC), an extensive scheme to transform the DUT campus and its wide surroundings (see Figures 1 and 2). The existing DUT campus, should be made more attractive and better connected to the surrounding areas. Public space on the campus has been refurbished in recent years — although it would be euphemistic to say the result does not appeal to everyone — and the campus area still lacks any public amenity other than a student employment agency. South of the campus area a science park is planned for mostly technology-oriented business that cooperate with each other and with nearby knowledge institutions in an open innovation system (DUT/Gemeente Delft, 2011). This implies that businesses and knowledge institutions share knowledge in a reciprocal, non-competitive way.

Figure 2: Spatial structure of TIC.



Source: DUT/Gemeente Delft (2011).

⁴ Comparable to ‘Student en Stad’ in Groningen.

The elements of the TIC plan described above have a strong relation to the research task of the knowledge institutions in Delft; nevertheless, it also includes elements that are more related to valorisation (see below). The project is a joint effort of DUT and the Municipality of Delft. They are part of the plans for a wider knowledge region reaching from Rotterdam to Leiden, which should contribute to strengthening the competitiveness of the southern Randstad region in the international knowledge economy. However, all these plans are still in a rather preliminary state. Considering the strong involvement of DUT, the strong technological focus of the plans, particularly on clean tech and bio sciences, is hardly surprising. Nevertheless, a final component of TIC is ‘creative city’, which has also been the most elusive part of the project so far. The creative sector in Delft started a lobby to strengthen the position of creative industries in the project and guarantee the position of the ‘creative city’ in the next, more concrete stage of planning.

Valorisation

Valorisation has become more important in recent years and is also taken very seriously at DUT. The university initiated the incubator Yes!Delft (Young Entrepreneurial Society Delft), to facilitate graduates who want to start their own business. Other participants include the Municipality of Delft, TNO and higher vocational training institutions. Initially Yes!Delft focused on techno-starters, but recently it has been seeking to expand its focus to include creative starts-ups also, for instance in design. A creative incubator would be particularly welcome as an addition to the main existing incubator for creative start-ups, Bacinol 2. However, for Yes!Delft this implies a significant change in focus, which raises questions such as whether the same approach can be applied to techno and creative starters, and whether specific facilities are required.⁵

Yes!Delft provides start-ups with affordable working spaces and shared facilities, but it provides other facilities in relation to this. The Yes!Delft Students section provides training in entrepreneurial skills for students, as well as opportunities for internships with start-up firms. On the other hand, entrepreneurs who grow out of the start-up phase can remain a partner in the network around Yes!Delft. But here again, the focus so far has been on the technology sector, rather than creative industries.

DUT is also involved in several other projects that aim to provide affordable working spaces for creative entrepreneurs and cultural facilities. Most of these are part of the ‘creative city’ component of the TIC scheme, particularly a number of former industrial buildings including a glue factory (‘Glue & Culture’) and an extensive cable factory along the river Schie (‘Schiehallen’). The RDM Campus, a former ship building wharf, in Rotterdam is a similar project outside Delft in which DUT participates, and which includes affordable working spaces for starting entrepreneurs.

Overall picture

Table 4 summarizes the relations between creative industries and knowledge institutions in Delft according to the concise scheme elaborated in Section 2. An overall picture emerges from which some interesting point may be highlighted.

⁵ Interview with Mr. Hans Huygens, director at YES!Delft (29 Nov. 2010).

Table 4: Mutual relations between creative industries and knowledge institutions in Delft.

'pillars' of creative economy (3 Ts)			
	technology, design, creative activities	talent, education, entrepreneurship	tolerance, social climate
primary tasks of knowledge institutions	teaching and learning	<ul style="list-style-type: none"> ▪ education of future creative workers, particularly in large Architecture and Industrial Design faculties ▪ creative business offer traineeships and apprenticeships, meanwhile scouting future employees ▪ guest lectures by creative entrepreneurs ▪ active architects and (to a lesser extent) designers hold chairs in Architecture and Industrial Design faculties 	<ul style="list-style-type: none"> ▪ impact of students on social climate and liveliness, mostly in inner city: pubs, student societies ▪ engagement of students in local politics, notably in the field of knowledge economy
	research	<ul style="list-style-type: none"> ▪ TIC science park as an environment for reciprocal open innovation (co-development etc.) ▪ co-development on a B2B basis (e.g. in electronics) 	
	valorisation		<ul style="list-style-type: none"> ▪ TIC Creative City, incl. Glue & Culture and former cable factory ▪ possible expansion of Yes!Delft techno-starter incubator by Yes!Delft Creative ▪ entrepreneurial training for students (Yes!Delft Students)

Creative entrepreneurs in Delft highly value the proximity of knowledge institutions, in particular of DUT. For many DUT is the alma mater to which they still feel a special affection. Many also cooperate with knowledge institutions in the field of research and education. Furthermore, creative graduates from local knowledge institutions are a major source from which creative business in Delft recruit new employees. Finally, as some of the largest organisations in Delft, DUT and other knowledge institutions also have an important role as a client of creative industries, for instance in design and communications.

In view of the type of knowledge institutions located in Delft, which for the most part are strongly technology-oriented, it is not surprising that the relations between creative industries

and knowledge institutions focus on the faculties of Architecture and Industrial Design of DUT. These are the two largest faculties in creative disciplines, also large in absolute figures. Their presence, and the sheer number of creative graduates and starting entrepreneurs they generate, are also reflected in the composition of creative industries in Delft. This in turn leads to a natural focus of many creative entrepreneurs on these two faculties.

For a long period the city of Delft and its main knowledge institutions lived back-to-back. Knight (1995) pointed to a limited synergy between the knowledge sector and the city of Delft, both spatially, economically and socially. The university mostly had an international focus and was strongly technology-oriented. In spatial terms the two were separated more and more, as the university gradually left the inner city for the new, suburban campus. However, in recent years DUT and the municipality of Delft 'rediscovered' each other, resulting in cooperation in projects such as 'Glue & Culture' and Yes!Delft. Creative industries now also notice a more open attitude of DUT towards the creative sector. This is a gradual change, as most of DUT remains focused on 'engineering'. Nevertheless, the inclusion, in some form, of creative industries in the TIC scheme, the plans for Yes!Delft Creative, and the involvement of DUT in for example the abovementioned 'Glue & Culture', difficult to realize as they are even now, would hardly have been imaginable ten years ago.

5 Discussion

But a university cannot do this all alone. The surrounding community must have the capacity to absorb and exploit the innovation and technologies that the university generates, and also help put in place the broader lifestyle amenities and quality of place sought by Creative Class people (Florida, 2002:292).

As the above quote of Richard Florida indicates, the presence of knowledge institutions alone are not sufficient to stimulate the local creative economy if they are not embedded in the city. This embeddedness has largely been missing in Delft for a long time, and while the university and the municipality of Delft have now found each other, in practice there is still a long way to go. The question arises whether Delft itself is large enough to provide the range of lifestyle amenities and place qualities Florida mentions. It is telling in this respect that 61% of higher-educated workers in Delft do not live in the city (Bureau Louter, 2007:51). Nevertheless, particularly the university is like an octopus, having multiple tentacles in the local society, for example by the large number of students it attracts, by the students' involvement in local government, by its contacts to creative and other businesses or by the university cultural centre. This illustrates the broadness of the arena in which the relations between knowledge institutions and creative industries occur.

The preceding sections explored the ways in which universities and other higher education and academic research institutions cooperate with the creative sector to stimulate creativity and innovation and contribute to improve the location climate for creative businesses and creative talent, as well as several ways in which creative industries contribute to the curriculum and research projects. However, 'scene meets science' implies not just creative entrepreneurs dealing with researchers, teachers or university managers. It is also about two communities that

meet. To a certain extent they share a common language and aims, but they differ for example in their conventions, appraisal system and institutional organisation.

Despite these parallels, the final question posed in the introduction to this paper remains a point for discussion. How can scene and science brought together — or to quote the conference title: ‘how does it work?’ — and more specifically, what could local governments do to stimulate the cooperation between creative industries and knowledge institutions? And where, within such a broad field, and how should policy focus on this cooperation in such a way that urban and regional innovativeness benefits? After the preceding sections several issues come to mind that do not constitute a comprehensive approach, but provide relevant starting points for discussion:

1. *Scope of interactions* — from the preceding sections of this paper it becomes clear that several fields of cooperation between knowledge institutions and creative industries may be distinguished. Simultaneously, however, there are extensive areas in which cooperation is less obvious and hardly exists. The question could be asked, then, whether truly innovative ways of cooperation between creative industries and knowledge institutions might be found in these ‘gaps’. Frequent examples of interactions between creative industries and knowledge institutions entail guest lectures, internships and participation in incubator buildings and training of entrepreneurial skills of young graduates. Nonetheless, other types of cooperation between creative industries and knowledge institutions can be imagined, particularly with the more ‘creative’ departments of these. Sharing of facilities might be mutually beneficial, for instance of meeting rooms or workshops that are only used part of the time.
2. *Clustering* — should creative industries cluster in the immediate proximity of knowledge institutions, for instance on a campus, or could they be located all over town just as well? And if clustering is preferable, should industries co-locate on the basis of their similarities, or rather their complementarities in relation to each other and to the faculty or institute around which they centre?
3. *Place qualities* — the issue of clustering also brings about the question what could be the role and place of creative businesses on the university campus, and what this could mean for the campus itself. In comparison to the technology-based business parks that increasingly surround knowledge institutions, the preferences of creative entrepreneurs are more likely to point in the direction of ‘the campus as a city’ (cf. Den Heijer, 2011).
4. *Mutual understanding* — how to encourage the evolution of a ‘common language’ between knowledge and creative workers. Despite the parallels that may be drawn, Rae (2007) indicates there is a ‘cultural discontinuity’ between the formal educational system that is predicated on formal goals, targets and standards while education for creative activities should emphasize experiment and discovery. How does for instance the rigid scientific appraisal system based on peer review and citations relate to more flexible, but to a large extent also peer review-based, ways in which creatives discuss and assess their output? Could there be a role for ‘liaison officers’ to facilitate the match between scene and science?
5. *Mutual benefits* — creative industries may learn from the research and training provided by knowledge institutions, and they may contribute to the education of young creative talent. This illustrates that interaction between creative industries and knowledge institutions could, and probably should, be reciprocal, based on mutual benefits. But other examples can be thought of in view of the distinct qualities of the creative industries. For one thing, the

question arises to which extent creatives might influence knowledge institutions not only by contributing to education and research, but also by way of their possible impact on university culture and organisation? As the work of e.g. TILLT shows the presence of creative in ‘non-creative’ industries can have positive and unexpected impacts on their culture and organisation. Can creatives unveil the curiosity that drives creative as well as scientists, but in practice often fades to the background due to formal institutional structures and bureaucracy?

6. *Bottom-up* — evidence suggests that most successful cooperations between creative industries and knowledge institutions evolve in a bottom-up manner rather than by top-down planning. Should the role of local government in all this be facilitating and mediating? Could large-scale master plans even have a deterrent effect on creative and scientists, and easily become prestige projects for local governments or university boards?

In anticipation of the expert meeting, we kindly ask you to consider these questions, and other relevant issues with regard to the topic of this discussion paper, with regard to your own city or region. For instance, which cooperations between knowledge institutions and creative industries are you aware of, what do you know about the results, and what is your actual or possible role in this as local policy-makers?

References

- Abramovsky, L. and H. Simpson (2011): Geographic proximity and firm-university innovation linkages: evidence from Great Britain. *Journal of Economic Geography*, 11, 949-977.
- Armstrong, H.W., J. Darrall and R.Grove-White (1997): Maximising the local economic, environmental and social benefits of a university: Lancaster University. *GeoJournal*, 41(4), 339-350.
- Barge-Gil, A., L. Santamaría and A. Modrego (2011): Complementarities Between Universities and technology Institutes: New Empirical Lessons and Perspectives. *European Planning Studies*, 19, 2, 195-215.
- Brown, R. (2007): *Promoting entrepreneurship in arts education*. Henry, C. (ed.), *Entrepreneurship in the Creative Industries*. Cheltenham (UK) & Northampton (MA, USA), Edward Elgar, 126-141.
- Bureau Louter (2007): *Economische monitor Delft 2007* [Economic Monitor Delft 2007]. Delft, Bureau Louter.
- Caniëls, M.C.J. and H. van den Bosch (2011): The role of higher education institutions in building regional innovation systems. *Papers in Regional Science*, 90(2), 271-287.
- Chesbrough, H.W. (2003): *Open innovation; the new imperative for creating and profiting from technology*. Harvard Business School Press, Boston.
- Den Heijer, A. (2011): *Managing the university campus; information to support real estate decisions*. Eburon, Delft.
- DUT [Delft University of Technology] (2011): *TU Delft Highlights*. Available from <https://epub01.publitas.nl/84/42/magazine.php#/spreadview/40/> (Sept. 2011).
- DUT/Gemeente Delft [Delft University of Technology/ Municipality of Delft] (2011): *Technologische Innovatiecampus Delft Masterplan 1.0* [Technological Innovation Campus Delft Master Plan 1.0]. Delft.
- Etkowitz, H. and A. Webster (1998) Entrepreneurial science: the second academic revolution. In H. Etkowitz, A. Webster and P. Healey (Eds) *Capitalizing Knowledge: New Interactions of Industry and Academia*. Albany NY, State University of New York Press, pp. 21-46.

- Felsenstein, D. (1996): The university in the metropolitan arena: impacts and public policy implications. *Urban Studies*, 33(9), 1565-1580.
- Fernández-Maldonado, A.M. and A. Romein. (2008): A knowledge-based urban paradox: the case of Delft. In: T. Yigitcanlar, K. Velibeyoglu and S. Baum (eds.): *Knowledge-based urban development. Planning and applications in the information era*. Information Science Reference, Hershey/New York, 221-240.
- Florida, R. (2002): *The rise of the creative class; and how it's transforming work, leisure, community and everyday life*. Basic Books, New York.
- Florida, R. (2005): *The flight of the creative class; the new global competition for talent*. Harper Collins, New York.
- Fraleay, G. (2007): *Jack's notebook; a business novel about creative problem solving*. Thomas Nelson, Nashville.
- Franz, P. (2008) From University Town to Knowledge City: Strategies and Regulatory Hurdles in Germany. In: T. Yigitcanlar, K. Velibeyoglu and S. Baum (eds) *Knowledge-based urban development. Planning and applications in the information era*. Information Science Reference, Hershey/New York, 101- 115.
- Jacobs, D. (2009): *Een creatieve stad is meer dan een stad van creatievelingen* [A creative city is more than a city of creatives]. In: S. Franke and G.J. Hospers (eds.): *De levende stad. Over de hedendaagse betekenis van Jane Jacobs*. Amsterdam, SUN Trancity, 57-67.
- Knight, R. (1995): Knowledge-based development: policy and planning implications for cities. *Urban Studies*, 39(5/6), 929-945
- Konings, R., M. van der Land, P. Metzmakers and A.Romein (2005) *Impact of the Science Park Amsterdam on the 'Indische Buurt' and the 'Oostelijk Havengebied'* (in Dutch). Delft, OTB Research Institute / Amsterdam, Stadsdeel Zeeburg.
- Perry, B. (2008) Academic Knowledge and Urban Development: Theory, Policy and Practice. In: T. Yigitcanlar, K. Velibeyoglu and S. Baum (eds) *Knowledge-based urban development. Planning and applications in the information era*. Information Science Reference, Hershey/New York, 21-40.
- Rae, D. (2007): *Creative industries in the UK: cultural diffusion or discontinuity?* In: C. Henry (ed.): *Entrepreneurship in the Creative Industries*. Cheltenham (UK) & Northampton (MA, USA), Edward Elgar, 54-71
- Rodrigues, C. (2011): Universities, the second academic revolution and regional development: a tale (solely) made of "techvalleys"? *European Planning Studies*, 19(2), 179-194.
- Romein, A. and J.J. Trip (2010a): *The creative production and consumption milieu. Framework Report 6.1, written within the framework of the NSR INTERREG IVB project Creative City Challenge*. Delft University of Technology, Delft.
- Romein, A. and J.J. Trip (2010b): *The creative economy in CCC cities and regions. SWOT Analysis Report 6.2, written within the framework of the NSR INTERREG IVB project Creative City Challenge*. Delft University of Technology, Delft.
- Romein, A., A.M. Fernández-Maldonado and J.J. Trip (2011): Delft blues: the long road from university town to knowledge city. *International Journal of Knowledge-Based Development*, 2(2), 148-165.
- STIP (2011): *STIP in English*. See <http://stip.live.valentnet.nl/stip-in-english/93-77.aspx> (Oct. 2011).
- Taylor, C. (2007): *Developing relationships between higher education, enterprise and innovation in the creative industries*. In: C. Henry (ed.): *Entrepreneurship in the Creative Industries*. Cheltenham (UK) & Northampton (MA, USA), Edward Elgar, 178-196.
- Trip, J.J. and A. Romein (2010): *Creative city policy: bridging the gap with theory*. Paper presented at the 8th EURS Conference 'Repositioning Europe in an era of global transformation', 15-17 September 2010, Vienna.
- Van Geenhuizen, M., P. Nijkamp, H. Rijckenberg (1997) Universities and knowledge-based economic growth: the case of Delft (NL), *GeoJournal*, 41 (4), 369-377.

Wiewel, W. and D.C. Perry (eds.) (2008): *Global universities and urban development; case studies and analysis*. M.E. Sharpe, Armonk NY/London.