

# Scene meets science: exploring the interactions between creative industries and knowledge institutions

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## Abstract

Ample attention has been paid in recent years to the relation between knowledge institutions, particularly universities, and urban and regional development. 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 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.

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## 1 Introduction

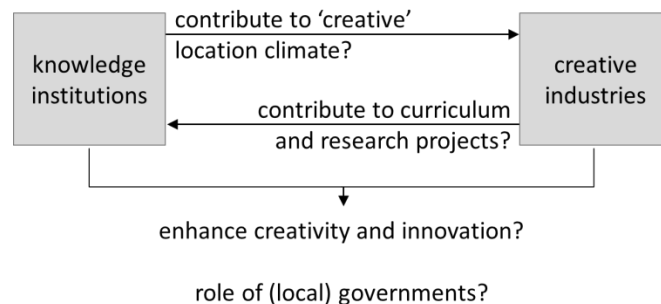
Ample attention has been paid in recent years to the relation between knowledge institutions, particularly universities, and urban and regional development. This relation often is phrased in terms of urban development, either by the involvement of knowledge institutions in urban development projects in the city, or the development of housing and other urban functions on the university campus (e.g. Wiewel and Perry, 2008; Den Heijer, 2011). It is also 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).

Richard Florida and other advocates of the creative city concept stress the importance of knowledge institutions also for the creative industries. The latter may also benefit from relations with knowledge institutions. At the same time, however, relatively little is known about the specific relation between creative industries and knowledge institutions. On the one hand, the

above debate on the relation between knowledge institutions, businesses and urban development focuses on technological (high-tech) rather than conceptual (high-content) innovation. Whereas creative industries such as serious gaming or audiovisual industries have a distinct technological profile, other subsectors such as design or advertising mainly focus on conceptual innovation. The creative city debate itself, on the other hand, for a large part tends to be inward-looking, focusing on definitions, employment data and creative clusters. In addition to this, the economy has been relatively 'invisible', being tied to occupations rather than branches, and partly connected to activities in the 'underground'.

From this perspective the current paper focuses specifically on the ties between knowledge institutions such as universities, polytechnics and academic research institutions on the one hand, and creative industries and entrepreneurs on the other. It 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 (Figure 1). 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.

**Figure 1:** Questions regarding the relations between creative industries and knowledge institutions.



The paper explicitly represents work in progress. It is mainly informed by, on the one hand, a series of in-depth interviews with creative entrepreneurs in Delft (Trip and Romein, 2010), and on the other hand by an expert meeting with policy-makers, creative entrepreneurs and representatives of knowledge institutions, organized by the authors in Bremen on 23 November 2011 as part of the INTERREG IVB project *Creative City Challenge*.

The following sections provide 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 2). A simple analytical framework results from this. This is then applied in an illustrative concise case study of Delft (Sections 3 and 4). Knowledge institutions and knowledge-intensive businesses constitute a substantial part of the local economy of Delft, 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 explicit connections to its knowledge infrastructure, making it an interesting case for the issue addressed here. A discussion on the results of the analysis, and the conditions for and circumstances in which successful cooperation between creative industries and knowledge institutions may evolve, concludes the paper.

## 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 education and research institutions.

Florida's quote refers, partly implicitly, to two dimensions that may be used to position the relations between knowledge institutions and creative industries in a more systematic way. 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.

The first of these dimensions refers to the three primary tasks of knowledge institutions:

- *teaching* and *learning* are particularly important for universities and other institutions of higher education. 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;
- *valorisation* of knowledge (Rodrigues, 2011; Barge-Gil *et al.*, 2011) has become much more important in recent years, due to a decrease in public funding, a more business-like approach and an increasing pressure to deliver 'value for public money'. According to Etzkowitz and Webster (1998:21) this third task of knowledge institutions implies a 'second academic revolution', defined as "translation of research findings into intellectual property, a marketable commodity and economic development".<sup>1</sup>

The second dimension refers to technology, talent and tolerance, Florida's '3 Ts'. This catchy term hides a lot of nuance, as each of the three terms is significantly broader than is being suggested by the indicators used by Florida in his (mostly quantitative) analyses. 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 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 'intangibles' such as social and cultural diversity, safety, authenticity, openness and progressiveness.

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. Accordingly, Table 1 presents a framework to position possible relations between knowledge institutions and creative industries, structured by way of

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<sup>1</sup> The first academic revolution in the first quarter of the nineteenth century added the generation of

the two dimensions elaborated above. It shows a number of different types of interaction, distinguished on the basis of a concise literature review. Although this is far from an exhaustive overview, it is noticeable that the relations between creative industries and knowledge institutions are clustered in four out of nine cells, leaving the other five cells empty.

One cluster concerns relations involving teaching and learning, aimed on the development of talent. Higher education institutes may attract creative talent to a city, but the extent to which graduates stay after their studies differs, graduates in the US generally being more mobile than those in Europe (Florida, 2002:292; Florida *et al.*, 2008:616; Krätke, 2011:85; Perry, 2011:4). The presence itself of students also tends 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 (Florida, 2002:292; Krätke, 2011:81-2). Furthermore, the cultural climate may also be enhanced by courses and cultural events supplied by knowledge institutions, but accessible to the general audience (Doyle, 2010). Many universities, for example, accommodate museums and a university theatre.

The research task of knowledge institutions is largely related to the 'pillar' of technology, design and other activities of creatives and creative industries. In this regard, knowledge institutions are considered important 'hubs' in networks of knowledge exchange (Krätke, 2011:115). The extent to which this is relevant to creative industries per se is likely to depend on the type of institutions involved.

**Table 1:** Framework of possible relations between creative industries and knowledge institutions.

<b>dimension 2: 'pillars' of creative economy (3 Ts)</b>			
	technology, design, creative activities	talent, education, entrepreneurship	tolerance, social climate
<b>dimension 1: primary tasks of knowledge institutions</b>	teaching and learning	<ul style="list-style-type: none"> <li>▪ higher education attracting creative talent (Florida, 2002:292) which largely stay in city after graduation in Europe (Krätke, 2011:85) but less so in US (Florida <i>et al.</i>, 2008:616; Perry, 2011:4)</li> </ul>	<ul style="list-style-type: none"> <li>▪ higher education as a factor of open social climate (Florida, 2002:292; Krätke, 2011:81-2)</li> <li>▪ 'open access' courses contributing to cultural life (Doyle, 2010)</li> </ul>
	research	<ul style="list-style-type: none"> <li>▪ public research institutions as 'hubs' in knowledge networks (Krätke, 2011:115)</li> </ul>	
	valorisation		<ul style="list-style-type: none"> <li>▪ higher education institutions providing incubation facilities (Arroyo-Vázquez <i>et al.</i>, 2010:66)</li> <li>▪ higher education institutions as source of spin-off firms (Florida, 2002:292)</li> </ul>

A final cluster concerns the valorisation of knowledge by knowledge institutions, a task that is of increasing importance. 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 start-ups. They may also stimulate near-graduates to start their own business (Florida, 2002:292; Arroyo-Vázquez *et al.*, 2010:66). What is required here is the kindling of ambition and drive for entrepreneurship and training of required entrepreneurial skills which 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). Again, the type of institutions involved is likely to determine the involvement start-ups in the creative sectors.

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 case of Delft <sup>2</sup>

Delft is a city of almost 97 thousand inhabitants in the densely urbanised western part of the Netherlands. 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 to and from (and 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 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 has all but disappeared from Delft. A last icon of manufacturing Delft, the Unilever peanut butter factory moved to Rotterdam in 2007.

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<sup>2</sup> This section has been partly based on Romein *et al.* (2011).

*Knowledge institutions*

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. 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 from DUT and TNO 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.

*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 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, creative entrepreneurs do not use them very often.

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.

**Table 3:** Creative entrepreneurs' assessment of Delft as a location for creative industries.

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

Source: Trip and Romein (2010).

#### 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. Starting point are the three main tasks of knowledge institutions: teaching and learning, research and valorisation.

##### *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 lecturership 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 renowned 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).

The presence of a relatively large number of students has a notable influence on the social climate in Delft. Even though a considerable amount of students actually live outside Delft, 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. STIP currently has one alderman in local government, responsible for knowledge economy (including creative industries), 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. 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<sup>3</sup> system (DUT/Gemeente Delft, 2011). This implies that businesses and knowledge institutions share knowledge in a reciprocal, non-competitive way.

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

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<sup>3</sup> 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).



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 start-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.<sup>4</sup>

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 points may be highlighted.

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.

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<sup>4</sup> Interview with Mr. Hans Huygens, director at YES!Delft (29 Nov. 2010).

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

<b>dimension 2: 'pillars' of creative economy (3 Ts)</b>			
	technology, design, creative activities	talent, education, entrepreneurship	tolerance, social climate
<b>dimension 1: primary tasks of knowledge institutions</b>	teaching and learning	<ul style="list-style-type: none"> <li>▪ education of future creative workers, particularly in large Architecture and Industrial Design faculties</li> <li>▪ creative business offer traineeships and apprenticeships, meanwhile scouting future employees</li> <li>▪ guest lectures by creative entrepreneurs</li> <li>▪ active architects and (to a lesser extent) designers hold chairs in Architecture and Industrial Design faculties</li> </ul>	<ul style="list-style-type: none"> <li>▪ impact of students on social climate and liveliness, mostly in inner city: pubs, student societies</li> <li>▪ engagement of students in local politics, notably in the field of knowledge economy</li> </ul>
	research	<ul style="list-style-type: none"> <li>▪ TIC science park as an environment for reciprocal open innovation (co-development etc.)</li> <li>▪ co-development on a B2B basis (e.g. in electronics)</li> </ul>	
	valorisation	<ul style="list-style-type: none"> <li>▪ TIC Creative City, incl. Glue &amp; Culture and former cable factory</li> <li>▪ possible expansion of Yes!Delft techno-starter incubator by Yes!Delft Creative</li> <li>▪ entrepreneurial training for students (Yes!Delft Students)</li> </ul>	

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 the higher-educated workers employed 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.

### *Scope of interactions*

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, while several fields of cooperation between knowledge institutions and creative industries may be distinguished, at the same time 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.

### *Mutual understanding*

'Scene meets science' implies not just creative entrepreneurs dealing with researchers, teachers or university managers. It is also about two communities that meet. 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.

To a certain extent science and creative industries share a common language and aims, but they differ for example in their conventions, appraisal system and institutional organisation. A relevant question is, then, how to encourage the evolvement 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?

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, 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.

#### *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. 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? 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? These examples, and the more detailed discussions we had with creative workers and entrepreneurs, learn that interaction between creative industries and knowledge institutions could, and probably should, be reciprocal, based on mutual benefits.

#### *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. Moreover, creative entrepreneurs stress the role of serendipity in establishing relationships with knowledge institutions. Networks of social relations, elusive and partly hidden from view, are crucial for this. First contact may occur in an informal or non-formal setting and may evolve as people discover a mutual benefit in cooperation. This is in contrast to many formal policies to foster cooperation between knowledge institutions and the creative sector, which tend to be based on a more top-down approach, including 'planned serendipity' by means of networking activities. The Technological Innovation Campus Delft is another example, although in this case there has been some opportunity for bottom-up influences from the creative sector itself.

A relevant question is what this means for the role of local government. The above factors suggest that it should be a facilitator and a mediator, rather than a director, and be careful to implement large-scale materplans that may easily develop a logic of their own. On the other

hand, if local government leaves the floor entirely to bottom-up initiatives, how could it be certain local or regional innovativeness benefits?

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