ILLUSTRATING HOW RESEARCH-BY-DESIGN CAN INSPIRE A TRANSITION WHEN DREAMS ARE IN CONFLICT WITH REALITY

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ABSTRACT
Flanders is facing a conflict between the traditional housing dream and the need for a more sustainable land use model. In order to address this conflict, an integrated, multi-sphere approach is necessary. Referring to the Quadruple Helix innovation model, we claim that this will entail working at the same time on adjusting people's housing dream, re-orienting spatial policies, providing valid alternative housing typologies and developing new strategies and typologies and educating the professionals of the future. As landscape architects are to be pre-eminently involved in the realization of the necessary transition in thinking about and dealing with space, at the Erasmus University College Brussels, the course of landscape and garden architecture and the Centre of Expertise tuin+ are focusing strongly on the interaction between research & education and between academia & practice. In this contribution we are presenting three cases of research-by-design carried out with students and relating them to the Quadruple Helix innovation model. We are showing how introducing questions from the field into the design studio and using the theoretical frameworks developed in the Centre of Expertise as a basis in the search for innovative and future-oriented spatial design and management solutions with the students, can help addressing our conflict.

Keywords: Quadruple Helix innovation model, sustainable land use, academia, gardenscape, landscape architects

INTRODUCTION

Context

Flanders is facing a conflict: as the majority of the Flemish still cherish the ideal of a detached house with a garden in the countryside (Pisman et al., 2011), we understand today that this traditional housing dream is becoming harder and harder to realise. From a financial point of view rising labour costs, new (energy performance) regulations and scarcity of building plots are increase the building costs and also rents are rising significantly. From a spatial point of view Flanders can be considered as one large (sub)urban area (Kesteloot, 2003), finding a piece of 'genuine countryside' in this 'nebular city' becomes harder and harder. However, not only is the traditional housing dream becoming more and more difficult to realise, we are also starting to see that it is even irresponsible to keep on 'consuming' our landscape in this way. Apart from causing mobility as well as logistic problems, our current land use model also endangers the functioning of the ecological system and the performance of green and blue networks. Amongst others, this is leading to a loss of biodiversity, water management problems, urban heat-island effects and it is even being related to health issues such as respiratory problems, an increasing number of allergies and phycological issues, like the 'nature-deficit disorder' described by Richard Louv (2005). As the population density of urbanised areas in the Flemish region is rather low compared to that in other Northwest-European regions (Kesteloot, 2003), the problem is not so much that there are no open and green spaces left, but that the remaining open and green spaces are very scattered and that these green shreds are seldom recognised as natural areas, leaving them unprotected form further allotment. We have reached a point where we do not have big cities, nor compact villages and almost no nature left (Vilt, 2015). And, while striving to realise the traditional housing dream, residents tend to continue further and further shredding our landscape.

To get rid of this conflict and make the transition towards a more sustainable land use model, an integrated, multi-sphere approach will be needed. Contemporary society becoming more complex, the number and scope of spheres to be included in innovation-generating processes are increasing (Cavallini et al., 2016). This complexity forms the basis of the Quadruple Helix model of innovation (van

Winden and de Carvalho, 2015; Cavallini et al., 2016) (Fig. 1). The thesis of this model is that, in order to realise innovation, industry, academia, government and civil society, while still fulfilling their traditional roles, also need to collaborate dynamically and structurally with each other. The helix (referring to the structure of DNA strings) is used as an image to illustrate the complex network of relationships between these different spheres in this trans-disciplinary, more reflexive, non-linear, complex and hybridized mode of knowledge creation (Yawson, 2009).

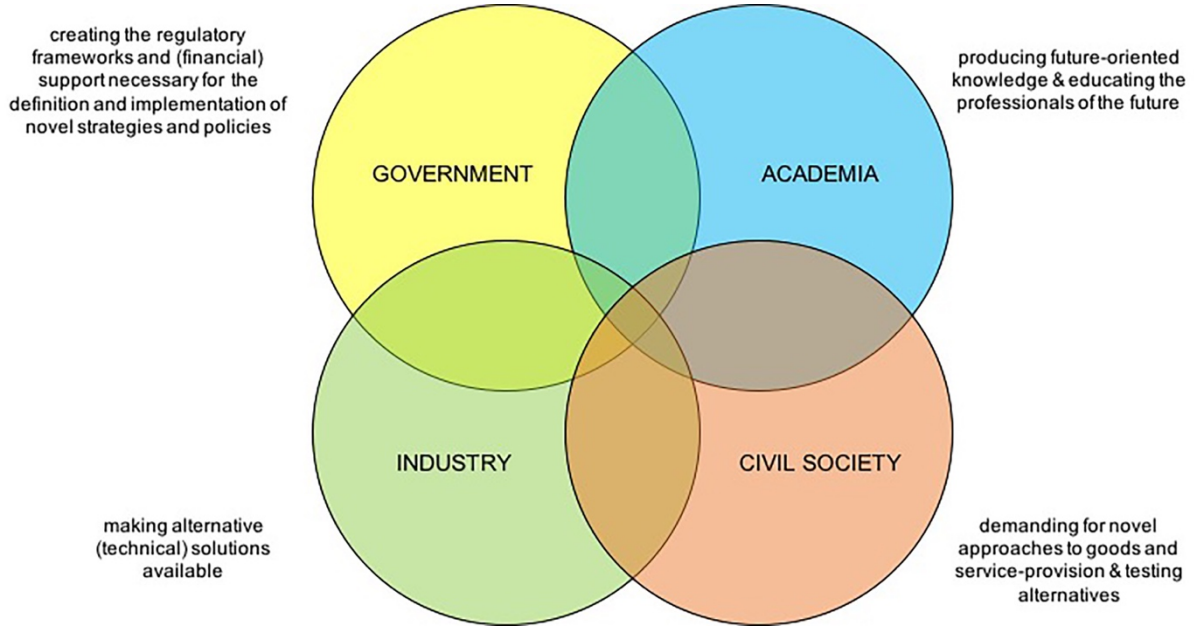

Figure 1. The Quadruple Helix innovation model: an integrated knowledge creation system in which all four spheres are taking up active roles. Image adapted from Cavallini et al. (2016).

Applied to the issue at hand in this paper, in order to address the conflict between the traditional housing dream and the need for a more sustainable land use model, we will need to focus at the same time on: adjusting the traditional housing dream (civil society sphere), gathering the political courage to re-orient the spatial policies that supported suburban sprawl ever since the 19th century (governmental sphere), providing valid alternative housing solutions (industrial sphere) and developing new visions and strategies and educating the professionals of the future (academic sphere).

Focus

In this paper we are zooming in more closely on work to be done in the academic sphere (in relation to the other spheres). Moreover, we are specifically looking from the perspective of garden and landscape architecture. All too often open space is seen as 'what remains besides and in-between the built-up space', as 'the surplus' (Van Damme et al, 2017). But actually, the landscape is the very basis we are working on. And we should therefore instead take this as our starting point. We have to start thinking from within the open space and take into consideration the natural systems and structures in all our interventions. Based on this idea, we claim that garden and landscape architects have an important role in addressing the conflict between the traditional housing dream and the need for a more sustainable land use model and that they are thus to be pre-eminently involved in the realisation of the necessary transition in thinking about and dealing with space. One of the aims at the Erasmus University College Brussels is to educate garden and landscape architects who are aware of the crucial role they can play in planning, shaping and managing the semi-public, semi-private and private open and green spaces - or the gardenscape - of the future. Therefore, within the course of landscape and garden architecture, together with the Centre of Expertise tuin+, we are focusing strongly on the interaction between education, research and practice. In this contribution we are presenting a number

of cases of research-by-design projects carried out with students, that fit in this interaction, and we are situating these within the afore-mentioned Quadruple Helix innovation model.

MATERIAL AND METHODS

Based on the finding that 9% of the Flemish land is used as private gardens (Dewaelheyns, 2014; Van Gossum et al., 2016), the research at the Centre of Expertise tuin+ is focussing on the 'gardenscape', which is consisting of the diversity of private, semi-private & semi-public open and green spaces so omnipresent in the Flemish 'nebular city'. We start from the idea that - if the energy of all the individual gardeners, owning, using and/or maintaining these spaces, would be steered towards a 'resource by small actions' (Dewaelheyns, 2014) - the gardenscape could, play a significant role in the transition towards a more sustainable land use. In order to activate this resource, tuin+ is developing innovative and future-oriented design and management strategies for private, semi-private & semi-public open and green spaces, through practice-oriented design research. The focus of the Centre of Expertise tuin+ is on (1) increasing knowledge on the gardenscape, (2) evaluating and defining which role exactly this could play, (3) formulating strategies and recommendations to realize this and (4) testing and illustrating these strategies and recommendations though pilot projects and action research. The final aim is to improve the ecosystem-services delivered by gardens (in terms of biodiversity, climate, water, ... but also on a social level e.g. through shared and multiple use of space). In this light we defined three priority categories of 'gardens with a plus', namely: 'eco-shreds' (*eco-snippers*), 'institutional gardens' (*institutionele tuinen*) and 'collective gardens' (*collectieve tuinen*) (note that for each of these several sub-types can be identified).

Within the course of landscape and garden architecture at the Erasmus University College Brussels, several initiatives are being taken to link research & education and academia & practice. Examples are the practice-oriented research lectures that are regularly organised on the campus by the Centre of Expertise and that are open to both students and professionals and the possibility for students to do an internship at the Centre of Expertise. In addition, the theoretical framework developed by the Centre of Expertise tuin+ is also integrated in the curriculum of the course of landscape and garden architecture. This means for example that the above-defined priority categories are used as themes in design studios, in bachelor's theses and/or in theoretical assignments and that the knowledge gained through research projects is translated into the courses. When possible and relevant, questions from the field (government, business & civil society) are also integrated into the curriculum, in order to conduct the search for innovative and future-oriented design and management solutions for the gardenscape together with the students and the tutors. In what follows we will present 3 examples of this type of interaction and integration.

EXPERIMENTAL RESULTS AND DISCUSSION

The cases presented below are chosen to represent a variety of interactions: between academia and the government sphere (case 1), between academia and the industry sphere (case 2) and between academia and the civil society sphere (case 3). Each of these fits in one of the three priority categories of 'gardens with a plus' defined by the Centre of Expertise (eco-shreds, institutional gardens and collective gardens). All of the cases also include a relation to the 'housing' theme.

Case 1

The first case is that of the 'Tarzanboskes' in Hoboken (Antwerp). This case is an example of an eco-shred. The issue at hand was brought to us as a question from the Antwerp government.

The subject of this exercise was the redesign of a residual urban greenspace, under great urbanisation pressure. The site is surrounded by transport infrastructures on three sides (2 busy roads in the North and West and a big crossroad, including the 'Hoboken P+R Schoonselhof' tram stop in the East). In the South it is delineated by a row of private parcels, with terraced houses. The ownership of project-area

is divided amongst a number of private parties (including the NPO Natuurpunt, which owns and maintains a small part of it). The City of Antwerp also owns a small part of the site, but over the years owners of the adjacent private parcels have claimed parts of this area, expanding their backyards onto it. Besides this, inhabitants of the surrounding neighbourhood also claimed an area in the north-eastern part of the site for car parking. As there are also some 'shady activities' (like illegal dumping and drugs dealing) going on, the place is a bit a nuisance to the neighbourhood, hence name: Tarzanboskes (Fig. 2). The larger study-area (mainly the sports infrastructure situated in the northwest of the study area) is facing some water management problems due to improper handling of the natural run-off of water in the environment. Although, as a typical residual area, the site has few qualities today, it could potentially play a role as a 'green link' between the large and green Schoonselhof cemetery and the Sorghvliedt park and programmatically, it could also play a role for the nearby school.

Figure 2. Current situation of the Tarzanboskes (study-area marked in yellow, project-area marked in red, city owned part marked by striping). Image from Google Maps, adapted by the authors.

The aim of the research-by-design with the students was to formulate a future oriented vision for the study-area and to make a realistic design proposal for the project-area. The design had to take into consideration the expectations of the different stakeholders (the city, the site owners, the inhabitants of the surrounding neighbourhood, the school and the users of the nearby park, cemetery and sports infrastructure), the highly dynamic context (with roads, crossings and the tram stop) and the

relationship between private and public use of space (specifically regarding the claimed public space areas).

Some student designs recognised and valued the site's role as a ' transitional zone'. In these projects, particular attention is payed to the circulation to, from and through the site. The core of these designs is often a path, to which some additional functions such as education, resting or playing might be linked (Fig. 3). In some proposals the informal zone between the private gardens and the public green space is included as part of the design. With the aim to facilitate various types of 'semi-public' uses in this area, it is upgraded through design, clever use of materials and strategic planting.

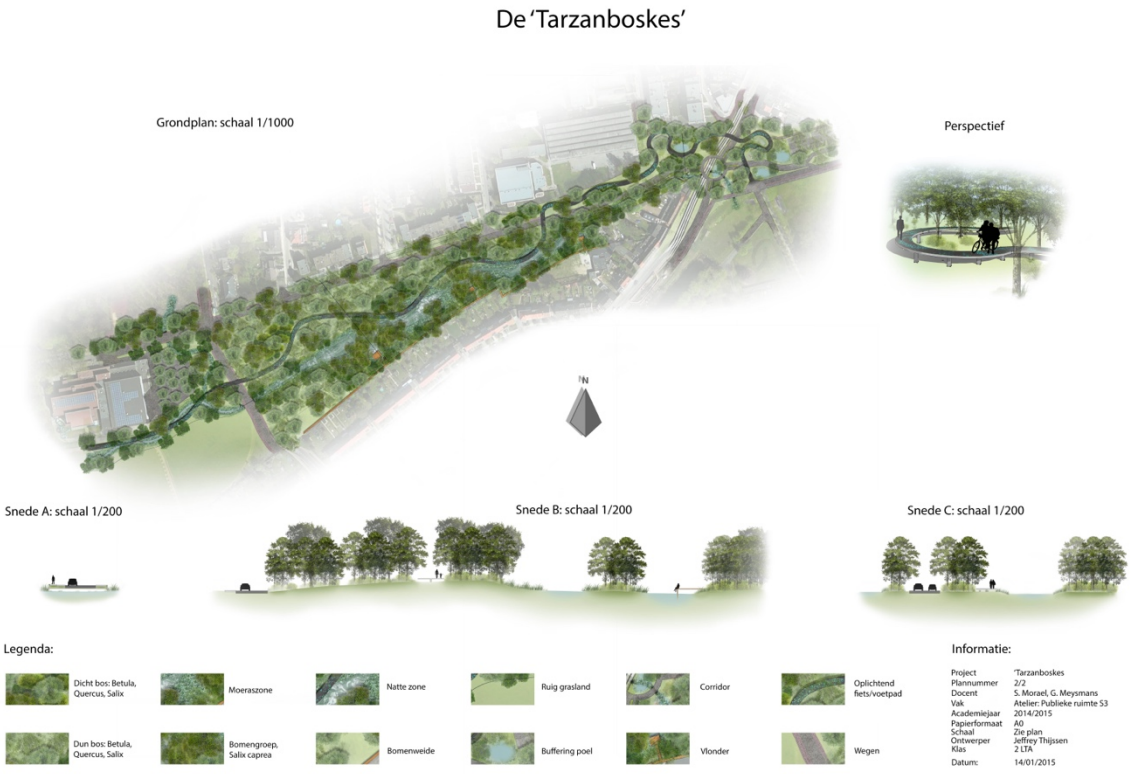

Figure 3. Student design proposal for the Tarzanboskes: integration of a water element and a cycling and walking path, constituting a separation between the semi-public zone along the private gardens and the completely public wooded zone along the road. Image by Jeffrey Thijssen.

The result from this case is the development of an innovative and future-oriented vision on, and design proposals for 'eco-shreds', as a specific category of the gardenscape. The designs show how residual open space shreds can be protected from further allotment by upgrading them to green stepping-stones, linking other existing (private and public) green spaces.

Case 2

The second case is that of the garden surrounding a service flats complex in the Fonteinstraat, in Borgerhout (Antwerp). This case is an example of an institutional garden. The issue at hand was brought to us as a question from the OCMW (the Public Centre for Social Welfare), who is the owner and manager of the space and who in this context we could thus classify as an actor from the 'industry sphere' of the Quadruple Helix innovation model.

The subject of this exercise was the redesign of this garden, situated in a densely populated neighbourhood, with a shortage of both private and public open and green spaces. The current garden

is a very green but largely functionless space (Fig. 4). Although the place is in se a private property, there is currently an unofficial public use, as the OCMW tolerates young people from the neighbourhood who hang out in the garden looking for a place to meet and relax. However, this is creating a conflict with the service flat residents who (as co-owners and/or tenants) are the ones paying for the maintenance of the garden and are sometimes experiencing the loitering youngsters as a nuisance. The OCMW and the city of Antwerp are open to solve this conflict by making more official arrangements for sharing part of the OCMW garden with the neighbourhood, but they are in doubt about how this could be organised (spatially and practically).

Figure 4. Current situation of the garden surrounding the service flats complex in the Fonteinstraat, in Antwerp (project-area marked in red). Image from Google Maps, adapted by the authors.

The aim of the research-by-design with the students was to study possible ways of creating a balance between a private and a public use of the garden and to formulate a realistic landscape design proposal, integrating the expectations of the different stakeholders (the site owner, the city of Antwerp, the residents of the flats and the inhabitants of the surrounding neighbourhood).

Starting from this question, all students tried to preserve and integrate as much as possible the existing greenery, while at the same time introducing more (bio)diversity and structural variation. Some students choose to create a rather clear distinction between more public and more private areas of the garden. These designs often consisted of a more private zone at the core, surrounded by a public outskirt (Fig. 5). The central private garden is often enclosed by a nicely designed fence and well-integrated fence or by a green buffer. But also, other design solutions are sought to separate public and private zones without fencing them, for instance by creating raised private terraces, overlooking the more public garden below. Also, practical suggestions were made on obtaining support for the maintenance of the garden by the city in return for opening (part of) it to the public.

Figure 5. Student design proposal for the garden surrounding the service flats complex in the Fonteinstraat. Design of a public outskirt and creation of a semi-private character at the core (flower garden). Integration of the site in the surrounding urban fabric through reorientation (the back becomes the new front) and connection to the local bicycle network. Image by Björn Bracke.

This case shows a shift from the traditional garden design - usually oriented towards privacy and individual use - towards an approach, focussed on shared and multiple use of space. A result from this case is that the OCMW, as the owner and manager of the space, is offered suggestions on how to keep a balance between sharing their garden with the neighbourhood, while at the same time keeping enough privacy for their residents. It is also interesting that, through this exercise, students are trained to become competent professionals, able to deal with the current challenges in the field.

Case 3

The third case is that of the Regentpark apartments in Berchem (Antwerp). This case is an example of a collective garden. The issue at hand was brought to us as a question from the inhabitants of the apartments, as such it is a question raised by civil society.

The subject of this exercise was the formulation of a vision and design for a former castle domain, redeveloped to a modernist housing area in the 60's (including the division of the garden into seven private gardens, each in shared ownership of the resident of one of the seven housing blocks) (Fig. 6). The reason behind the question is that the community of owners is in need of a clear vision and management plan for the historic trees (out of security concerns, but also due to the need for an unambiguous basis for answering questions from individual residents regarding to perceived 'nuisances' by the trees). Moreover, an underlaying reason is that here too there are some conflicts arising in relation to the garden. On one hand there are tensions between the 'older' and 'newer' residents (as the formers see the gardens rather as aesthetic greenery, while the latter see it more as functional) and on the other hand also between the private ownership and management of the

gardens and the, up until now, tolerated public co-use (as on the neighbourhood level the gardens are seen as a 'soft mobility link' to the nearby tram stop and the school).

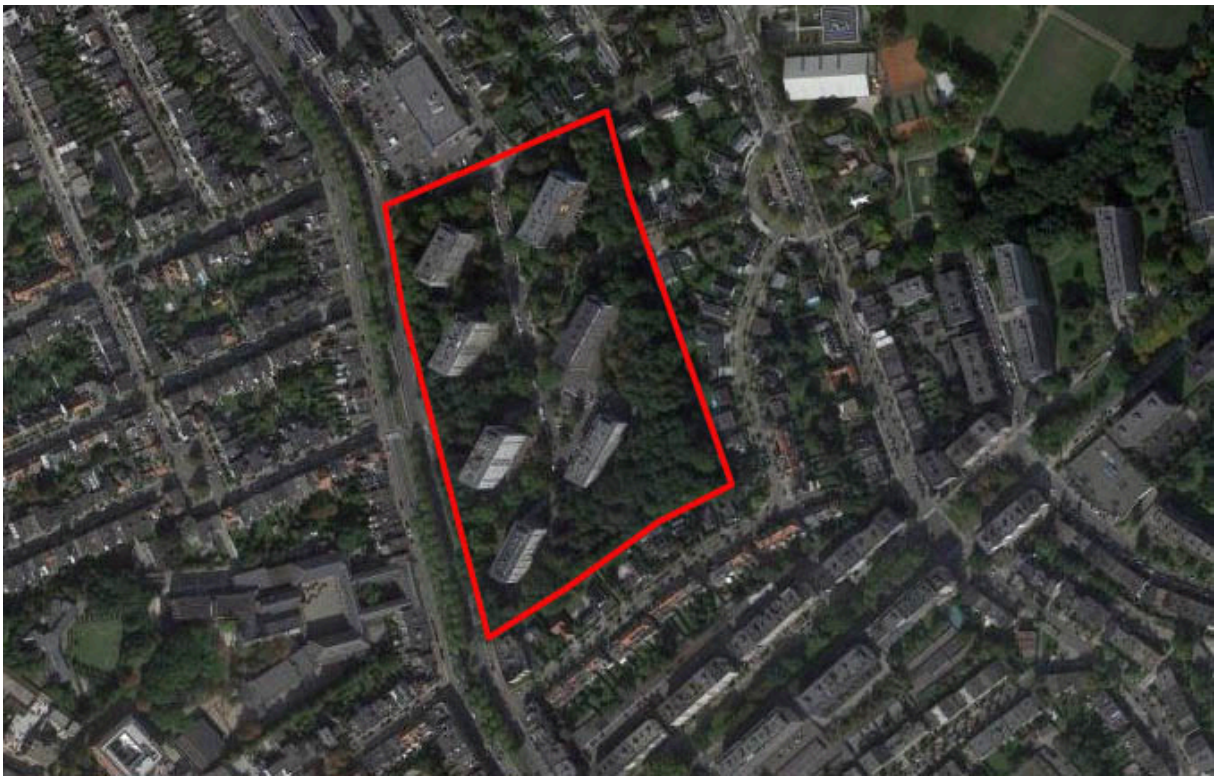

Figure 6. Current situation of the gardens surrounding the Regentpark apartments in Antwerp (project-area marked in red). Image from Google Maps, adapted by the authors.

An important objective of all student designs was to restore unity in the former castle domain by formulating an integral vision for the seven gardens. Each in their own way, the designs were spatial translations of the search for a balance between the private and public use of urban green spaces, surrounding tall residential buildings. Some students carefully designed this balance by providing, often more enclosed, private zones for the residents, semi-private in-between zones and a number of public zones, either scattered throughout the site, or concentrated around a central axis. Planting design, use of materials and varying widths of the (walking) paths are of example used to create a gradient between public and private zones (Fig. 7). As such, in the design proposals the typology of apartment buildings in combination with a lush park that leaves semi-private space for appropriation by the inhabitants is forwarded as a valid alternative to the traditional detached house with a garden.

Figure 7. Two student design proposals for the gardens surrounding the Regentpark apartments. Left: demarcation of private zones for the residents (the functional infill is left up to them), replacement of the above-ground car parking by terraces and gardens and accentuation of a public passage, resulting in a more (semi-)private character for the rest of the terrain. Right: provision of private gardens, situated close to the apartment buildings, surrounded a public (walking) park, separated from the private gardens by planting masses. The private gardens are not programmed and can thus be used freely by the residents and only a minimum of paths is defined (some are only marked by mowing). Images by Ulrika Schouteren (left) and Wolf Rysbrack (right).

The result from this case is that society is offered inspiring alternative visions and proposals for their housing environment, inviting them to think outside of the traditional boxes and reconsider their housing dream.

CONCLUSION

The above-described cases show that interaction between education & research results in a mutually reinforcement and that introducing questions from the other spheres in the academic sphere helps developing and testing new strategies and approaches. This approach can thus indeed feed the debate around the necessary transition towards a more sustainable land use model.

The design proposals for the Tarzanboskes illustrated how residual open space shreds can be protected from further allotment by upgrading them to green stepping-stones, linking private and public green spaces. Case 1 thus shows how our approach can provide the government with novel strategies and frameworks for the planning and management of the gardenscape, in the context of the necessary transition towards a more sustainable land use model.

The design proposals for the OCMW garden in the Fonteinstraat showed a shift from the traditional garden design towards an approach focussed on shared and multiple use of space. Case 2 thus illustrates how our approach can contribute to the professionalisation of the field through the development of novel design approaches and innovative expertise.

The design proposals for the park surrounding the Regentpark apartments are inviting society to think outside of the traditional boxes by offering inspiring alternative visions and proposals. Case 3 thus illustrates how our approach can directly contribute to the adjustment of the traditional housing dream.

Figure 8 summarises these conclusions, linking them back to the Quadruple Helix innovation model.

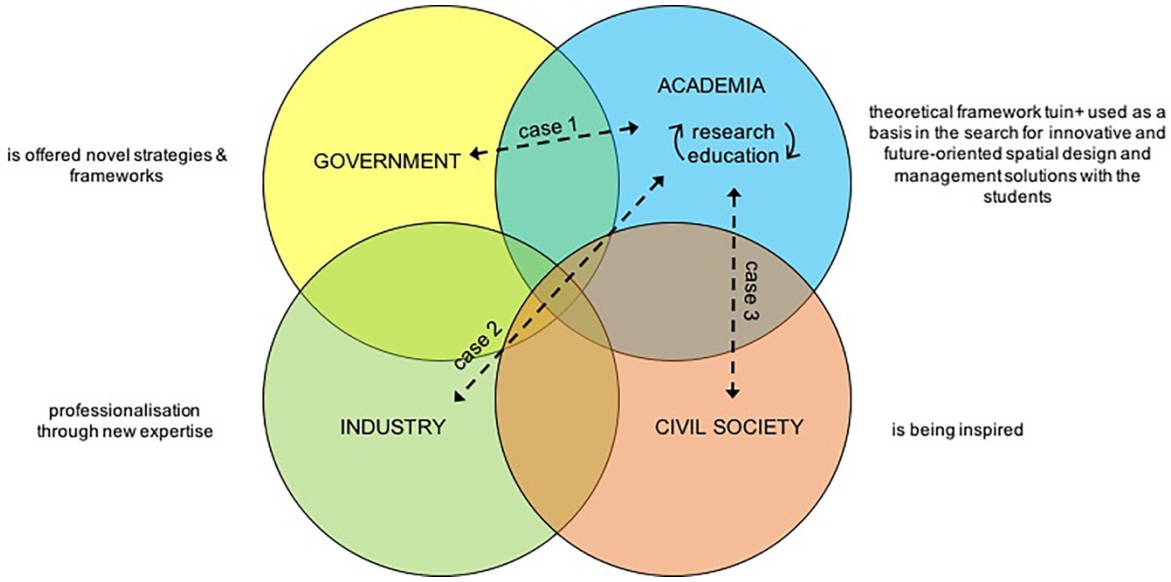

Figure 8. Results of the interaction of the academic sphere with the other spheres of the Quadruple Helix innovation model, in the context of the examples presented above. Image adapted from Cavallini et al. (2016).

Finally, we can conclude that our approach is indeed resulting in the education of garden and landscape architects who are aware of the crucial role they can play in planning, shaping and managing the open and green spaces - or the gardenscape - of the future and who will be able to help addressing the conflict Flanders is facing today.

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