SCENARIO WORK AS AN INSTRUMENT FOR STRATEGIC ASSESSMENT OF URBAN PLANNING – CASE OTANIEMI

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Abstract

The scenario work methodology has been well developed in the context of strategic business management. As the strategic approach has recently gained interest also in urban planning, there have been attempts to apply the scenario work methodology in this context, too. However, in order to do so, further development of the methodology is needed, especially regarding considerations on spatiality and the public sector perspective. In this paper, the scenario work methodology is studied with a focus on developing it into an instrument of strategic assessment in urban planning. The scenario work consists of first identifying and analyzing local potentialities, development trends and driving forces, and then generating imaginatively and synthetically normative and explorative scenarios for the future development of the planned area. It opens a window for longer term visionary possibilities, but also less desirable developments, commanding strategic awareness in assessing the impacts of the planning alternatives in preparation. In the paper, scenario work is developed into a strategic assessment tool and, further, a platform for adjusting different interests in urban planning, by examining it through a case of planning the Otaniemi area, in the city of Espoo neighbouring the capital city of Helsinki, Finland. The area hosts the main campus of Aalto University, which, together with the local government, has high ambitions of developing the area as a world class hub of research and innovation. However, this planning scheme has been challenged by the local residents' association and the university's student union, which have initiated their own schemes.

1. Introduction

Recently, the so-called evidence-based knowledge has had an increasingly dominating role in societal decision-making. With the sustainability and climate change debates, and the related demands on impact assessments, its role has been heightened in spatial planning, too (e.g. Davoudi, 2012; Krizek et al., 2009) . However, in planning, the hegemony of evidence-based knowledge is problematic, as planning is largely about coping with the yet unknown future; that of which we cannot have evidence. This is especially true for strategic urban planning that incorporates the methods of scenario planning (Albrechts, 2005; Zegras & Rayle, 2012). The evidence-based approach addresses future as a continuation of the existing and known development paths. While, in scenario planning, there is indeed a need to project the future implications of the present development paths, we also need an ability to imagine such development trajectories of which we do not have evidence, yet, but which might emerge in the future. The future is conceived in terms of alternative *scenario stories.* According to Peter Schwartz (1991), scenario planning is not a science but an *art*.

Patsy Healey (2009) also recognizes the art dimension in strategic urban planning, in the form of design thinking. However, she claims that additional sensitivity is required that would surpass the limitations of both scientific analysis and design thinking. A degree of comprehension of the material and cultural history of the place or region is needed to enable one to perceive the potentiality and desirability of different development trajectories. According to Healey (2009), this kind of understanding builds *critical judgment skills* in assessing, how and to what extent positive resonance and transformative capacity can be gained among the actors to strategic initiatives. This entails experiential probing, as well as targeted analysis, imaginative learning as well as reliance on hard evidence.

In Healey's vein, it is thus a matter of critical judgment how scientific evidence and artistic creativity should be combined to gain wisdom and joint momentum towards a *desired* future. While alternative scenario stories would probe *possible* futures, building imaginatively and creatively on the evidence of existing development paths and local potentialities, critical judgment is about selecting the scenario that we value as desirable, and deciding on actions that are needed in striving for it.

So, with Healey's notion of critical judgment, we arrive to three distinct capacities that are essential in strategic urban planning:

- the capability to *provide scientific evidence* on that which *exists*;
- the capability to *create scenario stories*, stretching towards the *possible* future from that which exists;
- the capability to *critically judge*, which future scenario we value as *desirable*, and to *decide* on the actions to be taken in striving for it.

In this article, our intention is to elaborate on these capacities by drawing on Bent Flyvbjerg's (2004) reading on Aristotle's three 'intellectual virtues': *episteme*, *techne* and *phronesis*. We will start our account by first recalling the development of scenario planning and studying it as part of strategic urban planning. Then we will discuss how Aristotle's all three intellectual virtues can be distinguished as essential constituents of strategic urban planning. A case study in Espoo, Finland will illustrate the uses of the three intellectual virtues and the potential of scenario stories in assessing competing schemes of future land use.

2. Scenario planning

Scenario planning emerged during the Cold War as a method to contemplate over the "unthinkable", namely nuclear warfare. Herman Kahn, a military strategist, developed scenario planning to analyze the likely consequences of nuclear war and its survival techniques (Kahn, 1962). However, scenario planning did not become widely known until it was adapted to business with Royal Dutch Shell (Wack, 1985). In 1971, Pierre Wack started developing a more practical use of scenario planning with forecasts to guide strategies for Royal Dutch Shell. After the Oil Shock in 1973, scenario planning was welcomed in the commercial world, as a tool to include a spectrum of forecasts, also "unwanted" ones, in a business strategy. Still today, the scenario planning method thrives as a tool for looking into the future in the corporate world, being more popular than SWOT or Delphi (Konno et al., 2014) .

The method of scenario planning was not clearly defined until the 1980s. Until then it was dependent on the capabilities and imagination of the "scenario gurus" of the time (e.g. Kahn, Schwartz and Wack) (Ogilvy, 2005). A clear step by step process for novices was only published in Schwartz's 1991 book "The Art of the Long view", a key textbook for scenario planners, still relevant today. Urban planning as a field has been slow to incorporate all aspects of scenario planning (Chakraborty et al., 2011) . It is typically used by various public and private agencies to identify common regional issues and to formulate decisions that

serve multiple jurisdictions. The general goal of many such "vision documents" seems to be to develop large-scale regional or metropolitan visions and concurrent strategy directions. However, the practice is often still too focused on developing a single preferred scenario and it fails to adequately consider multiple uncertain futures (Chakraborty et al., 2011) .

The scenario planning method is about finding new opportunities, storytelling, questioning assumptions and pinning down the critical uncertainties. It includes a thorough analytical part for which an extensive amount of data is needed. This data includes recognizing global/local trends and drivers (social, technological, economic, environmental, political, value-related, spatial), identifying actors and their agendas (niches) and uncertainties. It is equally important to recognize the role of global forces as it is to determine the local forces to have, or willed to have, a key role in making each scenario happen. The related actors can range from individuals to businesses, organizations to public officials etc.

As a starting point, a central question for the area, a focal issue, is formulated. This can have quite a general form, as lack of vision, need of new functions, bad connectivity, etc. Additionally, a timespan is also decided, ranging usually from 5 to 50 years. A shorter timespan would make the outcome too predictable and a longer one usually makes the results too unpredictable. In terms of analysis, the scenario method assumes that there is never enough information on which to base such a decision that would require certainty about the future (Garreau, 1994; Ogilvy, 2005). Moreover, it assumes that the future is not predictable. If it were predictable, there would be no need for alternative scenarios, nor planners. Thus it emphasizes the necessity to prepare for multiple futures, not relying on deterministic predictability, because, as history has shown, we can rarely count on predictions.

> "*The fantasy of deterministic predictability lives on and lurks among the assumptions of those who regard scenario planning as insufficiently scientific. Connect these points together in any of several combinations and you will see that judging scenario planning against the standard of deterministic science is non-sensical, paradoxical, and ultimately absurd.*" (Ogilvy, 2005, 337)

It can be said that the strength of scenario planning lies in its ability to talk also about undesirable futures - in the end, this motivated the whole origin of the method. It concentrates on the 'unthinkable' and searches for critical uncertainties that influence the outcome of the problem that is being tackled. A critical uncertainty is something that exists in every plan and it is very much related to all the elements we think are predetermined. We can find these aspects of uncertainty by questioning our assumptions about the predetermined elements or facts. For example, we know that the population is aging, the oil reserves will be exhausted, global warming will accelerate, new technologies like 3D printing and augmented reality are emerging, but what we do not know is the willingness of people to change their habits in the face of these developments - and if so, how. It forces us to imagine the extreme situations, to find coping mechanisms we would not be able to conceive in safe and comfortable contexts. It can also make us understand better the outcomes of our actions, or even illustrate what would happen, if no action were to be taken at all.

Another key aspect of the scenario planning method is that it enables us to tell each other *stories* about how the world might work (Garreau, 1994). A key element of a great scenario is its capacity to captivate you as if you were a great character in a novel. The character of a good scenario might be a villain or a hero, but nevertheless it has a familiarity and credibility to it. A scenario is not a linear, mechanistic, number driven process; it is rather about the story and the assumptions, perceptions and imaginations that underpin it (Garreau, 1994). Like a good history lesson, it concentrates on explaining the forces that influence the outcome of events, rather than plain numbers and names. In this way it is easier for people to react to the scenarios, choose a desirable future and start discussing how to make it happen. Being stories, the scenarios can be integrated with the tradition of stories in planning (Albrechts, 2005; Forester, 1999; Throgmorton, 1996).

2.1 Scenario planning as part of strategic urban planning

In strategic urban planning, the main focus is not on the long term urban plan to be produced, in the sense of blueprint. The focus is actually on the here and now: how can we gain broad and long term insights to make strategically wise decisions in our immediate activity horizon? As John Friedmann notes, in strategic urban planning the object "is not to produce 'plans' (not even strategic plans), but insights into prospective change to encourage and promote public debates about them. […] It is a way of probing the future in order to make more intelligent and informed decisions in the present." (Friedmann, 2004, 56). What is needed is *strategic wisdom in planning practices*. The objective is then not to produce strategic plans *per se*, but to produce (and reproduce) such strategic plans that can be used as *tools* in strategically wise planning practices.

This is where the scenario planning method shows its relevance. Scenarios are not made to serve as forecasts of the future but to provide insights into plausible futures in order to inform our decision making today (Schwartz, 1991; Zegras & Rayle, 2012). According to Louis Albrechts (2005, 256), "[s]cenarios help us to think about how places/institutions will operate under a variety of future possibilities and they enable decision-makers/civil society to detect and explore all or as many as possible alternative futures in order to clarify present actions and subsequent consequences".

However, there is a lot of work to be done to fully utilize scenario planning as part of strategic urban planning. While there are quite a lot of step-by-step guides for scenario planners to start from, there are only few modified for urban planners (see Celino & Concilio, 2010; Mahmud, 2011; Petrov et al., 2011) . Today, the scenario planning method is often linked with urban planning in the cases of big regional and cross-border projects, through surveys compiled by experts, with a background in economic geography or public administration, in some cases also Think Tanks. In such cases, scenario planning is usually applied to generate background documents for visions and strategies. Those documents often concentrate on various processes, most notably on investments, business climate, transportation and governance, but they rarely have spatial implications or a spatial dimension to the scenarios. This means that future developments are described as a story, but often not played out on a map or a physical plan, which would offer a very different understanding and illustration of the impact of each of the scenarios. As noted by Petrov et al. (2011, 245): "Many stakeholders/policy-makers are familiar with scenarios work, but less with spatial modeling."

In adapting the scenario planning method to urban planning, we also have to address the issue of organizational complexity. The business world, where the method has been developed, provides organizational contexts of private enterprises and corporations that are considerably simpler in their goal-setting and distribution of duties than the world of urban planning, where the relationships between the public and private sectors and the civil society are complicated. Whose strategic practice are we talking about: the local or regional government that is in charge of making the strategic plans, or also the stakeholders (e.g. developers, investors, citizens, NGOs) who are needed in implementing the strategic decisions and in giving legitimacy to the decision processes themselves – but who also have strategic practices, and related motivations, of their own? Whereas in the business world the organizational boundaries are relatively clearly defined, urban planning has fuzzy boundaries involving multiple organizations, thus making it difficult to determine who and what is inside and outside. As noted by Christopher Zegras and Lisa Rayle (2012, 314), "given heterogeneous participants with different realms of influence, factors clearly external to one organization might be within the influence of another, making it difficult to separate scenarios that represent uncertainties from scenarios that represent possible strategies".

On the other hand, Zegras and Rayle (2012) emphasize the potentiality of scenario planning to overcome the difficulties of organizational complexity in strategic urban planning. At best, scenario planning becomes an educational and transformative exercise that may "persuade participants to dislodge pre-existing views, improve understanding of the organizational context, provide a common instrument of communication among disparate actors, and encourage relationships among participants. In particular, the scenario planning process may be a means of building networks and initiating collaboration." (Zegras & Rayle, 2012, 303). Scenario planning can thus also be a capacity building exercise, widening narrow perspectives, revealing the stakeholders' mutual interdependencies and inviting joint momentum towards an envisioned future. Zegras and Rayle regard such collaboration-inducing properties of scenario planning as its "second-order effects" (Zegras & Rayle, 2012, 305).

With her concept of *strategic framing*, Healey has such second-order effects in mind. In Healey's view, strategic framing brings together local resources and imaginative visioning into a setting that invites the actors to change their thought and action schemes and their approaches to each other. Following John Dewey, Healey perceives such a strategy work to generate around itself a *'community of inquiry'* which nurtures the collective intelligence of those brought within (Healey, 2009). In striving for this, critical judgment is key:

> "*A key area of judgment relates, then, to an assessment of the institutional moment, or "opportunity structure", for spatial strategy making. This leads spatial strategy makers to consider such questions as: what is the momentum for an explicit spatial strategy-making initiative? What forces and actors are driving this? What is the scope for the transformation of discourses and practices through such an initiative? How strong is the momentum? Can it be strengthened and what might weaken it? What kind of process is already underway, what might evolve and what could be created? What seems to be at stake and around which issues will critical judgments have to be made? How are the initiators situated in relation to this momentum, and how am "I" as an actor in such a process situated, in terms of role, skills, potential to exert influence and legitimacy?"* (Healey, 2009, 443)

Healey regards critical judgment as a "practical art" (Healey, 2009, 440), but here her notion of 'art' is different from Schwartz's notion of the "art" of scenario planning. Healey's "practical art" addresses the "second order" level of scenario planning, while Schwartz´s "art" remains at the "lower" level. Schwartz sees scenario planning as an art in the sense of being able to create coherent narratives of alternative futures, integrating existing and imagined driving forces in a given activity horizon. Healey, in turn, deals with the "practical art" of framing the produced palette of alternative scenarios, in the sense of identifying a desired scenario and probing on the initiatives, arrangements and decisions to be made, in order to gain consent and joint momentum behind this scenario. For Healey, this is less an art of creative production, and more an art of dealing with people in politically contentious contexts.

Next, we will elaborate these different types of capacities that are necessary in strategic urban planning utilizing scenario planning. For this purpose we will draw on the three 'intellectual virtues' that Aristotle identified in his *Nicomachean Ethics*.

3. Aristotle's three intellectual virtues in strategic urban planning

The first of Aristotle's intellectual virtues, '*episteme'* is familiar today as the etymological origin for the word 'epistemic'. *Episteme* concerns knowledge that is universal and invariable in time and space and achieved with the aid of analytical rationality. It corresponds to the modern scientific ideal as expressed in natural science. With the Enlightenment tradition, this scientific ideal has become dominant. According to Flyvbjerg (2004, 285), "[t]he ideal has come close to being the only legitimate view of what constitutes

genuine science, such that even intellectual activities like planning research and other social sciences, which are not and probably never can be scientific in the epistemic sense, have found themselves compelled to strive for and justify themselves in terms of this Enlightenment ideal". Accordingly, in the beginning of this paper we noticed the hegemony of the evidence-based approach in the production of knowledge in planning. In scenario planning, episteme would concentrate on knowledge regarding existing conditions and development paths and their projections to the future.

Aristotle's second virtue, *'techne'* can be translated into English as 'art' in the sense of 'craft' (Flyvbjerg, 2004, 286). Unlike episteme, techne does not deal with the universal truths of existence; instead, it has to do with goal-oriented production of new things. According to Flyvbjerg (2004, 286), "[p]lanning research practiced as *techne* would be a type of consulting aimed at arriving at better planning by means of instrumental rationality, where 'better' is defined in terms of the values and goals of those who employ the consultants, sometimes in negotiation with the latter". Regarding scenario planning, we associate the 'craft' of techne with the ability to produce imaginative, yet convincing, scenarios that are not merely projections of existing trends. However, we do not see them as instrumental in the sense of producing a scenario for a given goal, but rather *explorative* in their effort to generate plausible scenarios that can be deemed either desirable or undesirable. Such normative considerations bring us to Aristotle's third intellectual virtue, *phronesis.*

Phronesis concerns practical wisdom and ethics. It has to do with deliberation of how things should be done for the purpose of doing well, making ethical choices. It does not concentrate on the invariables of episteme, as you cannot deliberate and make ethical judgments on the eternal truths. Thus its concern is on the context-dependent variability of production - yet itself phronesis is not production in the sense of techne, but *action*. As Aristotle says, "production aims at an end other than itself; but this is impossible in the case of action, because the end is merely doing *well"* (Nicomachean Ethics, cited in Flyvbjerg, 2004, 287). Phronesis is closely associated with *political action*, which, according to Hannah Arendt (1958), was treated in ancient Greek political philosophy as an *art* among other arts. Contrary to the "productive arts", such as painting and sculpture, it was likened to such activities as healing or navigation, where, as well as in a dancer's or play-actor's performance, the "product" is identical with the performing act itself (Arendt, 1958, 207). As in dancing, where the dance is brought to existence and maintained by the very activity of dancing, the political community is created and maintained by people acting politically. Political action is an end in itself, and it is not instrumental to any external purpose. Regarding strategic urban planning, we associate Healey's notion of critical judgment with phronesis. It is a practical art of political action that aims to develop a 'community of inquiry' of strategic planning.

Thus, we can link Aristotle's three intellectual virtues to the three capacities of strategic urban planning, suggested in the Introduction, as follows:

- *episteme* - the capability to *provide scientific evidence* on that which *exists*;
- *techne* - the capability to *create scenario stories*, stretching exploratively towards the *possible* futures from that which exists;
- *phronesis* - the capability to *critically judge*, which future scenario we value as *desirable*, and to *decide* on the actions to be taken in striving for it.

For Aristotle, phronesis was superior to the other two virtues. Using Max Weber's distinction between instrumental and value rationality, Flyvbjerg reformulates Aristotle's argument by stating that "[p]*hronesis* is most important because it is that activity by which instrumental rationality is balanced by value-rationality" (Flyvbjerg, 2004, 285). Concerning strategic urban planning, we also regard phronesis as superior to episteme and techne, in the sense of "second-order" framing of plausible scenarios and judging critically, which scenario to hold as desirable and how political consensus and momentum could be gained behind it. Accordingly, in scenario planning, as a constituent of strategic urban planning, techne can be seen as superior to episteme. Through creating scenario stories it frames the relevance of evidence on existing local properties and resources, and development trends, integrating it narratively with imagined

future development directions and possibilities. Conversely, episteme can be seen as a knowledge resource for the techne of imaginative scenario stories, which, in turn, can be seen as a resource of providing alternative future development paths for the phronesis of choosing a desirable path.

Hence, all of Aristotle's intellectual virtues are essential for strategic urban planning utilizing scenario planning. Flyvbjerg's claim is that the phronetic approach is most appropriate in planning research, which in his interpretation would focus especially on detailed case analysis and normative reflectivity on power in planning (Flyvbjerg, 2004). We, however, emphasize that for understanding and learning strategic urban planning, whether as researchers or practitioners, we need to grasp the interplay of Aristotle's all three intellectual virtues: how phronesis frames techne, and how, in turn, techne frames episteme.

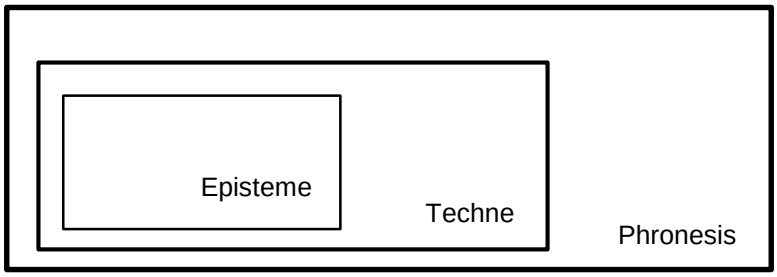

Figure 1. The nested hierarchy of Aristotle's three intellectual virtues in strategic urban planning utilizing scenario planning.

Next, we will examine a case of strategic urban planning, drawing on scenario work methodology, to illustrate the use of these three intellectual virtues.

4. Case study

Our case study area is Otaniemi, a peninsular district in the city of Espoo, Finland, roughly 7 km west of Helsinki city centre. The history and built environment of Otaniemi is closely related to Aalto University (until 2010 Helsinki University of Technology), whose campus and student community has been developed gradually since the 1940's in the previously rural peninsula. Today the Otaniemi district has around 4000 residents, most of them students. However, the daily population of Otaniemi is far greater with 14000 students and 11000 employees. The low-density campus structure, with lots of open space and listed buildings, is based on the plan by Alvar Aalto. Most of the land is owned by the real estate companies of the university and the Government of Finland. The planning of Otaniemi area by the City of Espoo has been done as a part of wider Southern Espoo master plan and with small scale detailed plans inside the campus area. However, with the university relocating activities from its two Helsinki campuses to Otaniemi, the West Metro line being under construction and general pressure for urban intensification, the need for a clearer land use vision for the whole Otaniemi area is increasingly acknowledged by the City of Espoo.

The current planning debate in Otaniemi has its origins in the plan of the new building for the School of Arts, Design and Architecture, which also houses the new metro station and forms the nucleus of the intensified campus. The architectural competition was followed by a process of detailed planning, which gave the main landowners an opportunity to envisage also wider area development in Otaniemi. The landowners prepared a strategic land use vision of the Otaniemi district, thus taking the role of the initiator in the planning process, ahead of the city. The publication of this "Kokokuva" ("The whole picture") vision in spring 2014 caused protest from the local students and other residents. The opposing groups did not

settle for a conventional reactive role in the process but started to prepare alternative plans for the area. The City of Espoo, now met with competing visions outside the legitimate planning system, asked the researchers of Aalto University to help in the planning discussions between the stakeholders.

An identification of the different actors and their roles, a crucial starting point for scenario work, is presented in Table 1. Obviously the actors are not homogenous or equal; they vary considerably by their size, composition, power, internal structure and mutual dependence. Single individuals can belong to and identify themselves with multiple actor groups. The actors who have developed their own land use vision are highlighted. The visualization of the students' and residents' visions has been assisted by Aalto University Built Environment Lab (ABE) personnel. It must be noted that both the ABE personnel and the authors of this paper are stakeholders in the case, belonging to the large and heterogeneous employee group.

Table 1. Actors in the area. The actors who have developed their own land use vision are highlighted.

Actor	**Actor group**	**Role**	**Voice**	**Position in the process**
City of Espoo	authority	municipality, planning monopoly	single	strong
Aalto University	stakeholder	main tenant in the area, synonymous with the area itself	single	strong
AYK and Senaatti	**landowners**	**majority landowners, real estate companies owned by the university and the government**	**homogeneous**	**strong**
AYY (Aalto University Student Union)	**stakeholders, landowners**	**officially sanctioned and compulsory student representation body, autonomous organizations and groups, minor landowner**	**heterogeneous**	**medium**
Non-student residents	**landowners, stakeholders**	**housing associations (minor landowners), residents' association**	**heterogeneous**	**medium**
The employees	stakeholders	researchers, teachers, administration, personnel in other companies	heterogeneous	weak
VTT	stakeholder	governmentally owned research company, major tenant	single	medium
Other companies	stakeholder	minor tenants	heterogeneous	weak
Helsinki Region Transport (HSL)	authority	public transport planning authority owned by the municipalities	single	strong
Centre for Economic Development, Transport and the Environment (ELY)	authority	government body controlling planning, especially conservation questions	single	strong
National Board of Antiquities	authority	authority in built environment heritage questions	single	strong

4.1 Utilization of a course in strategic urban planning in scenario work

As the debate of the future of Otaniemi land use was going on, a special course on strategic land use planning and planning cooperation was starting, in the autumn of 2014, in the Aalto University Department of Real Estate, Planning and Geoinformatics. This master's level course (5 ECTS cr.), mandatory for the students majoring in land use planning and urban studies, had 16 students from various backgrounds. The majority of the students had been studying planning or real estate economics for three to four years already. With an interesting case available in the campus itself and with a group of enthusiastic planning novices not tied to the routines and practices of the existing system, we decided, as the course teachers, to use the course as a test bed for strategic assessment with the scenario work methodology. In accordance with the threefold division of intellectual virtues, the students were asked, first, to provide evidence of the local

situation and general trends (episteme), second, to generate scenario stories (techne), and, finally, to utilize the scenario stories in critically reviewing the alternative planning schemes for the area (phronesis).

Epistemic evidence of the planning context

The path towards the final assessment of the alternative land use visions was guided through a few preliminary assignments. First, the students were asked to collect background information of the area and its environment. The students were split in four groups to cover specific themes: local planning history, the role of the area as one of the main business hubs of the Helsinki Metropolitan Region, the strengths and weaknesses of Espoo in promoting the area in the global competition of innovation centres, and challenges of sustainability, valued high in the official campus vision of Aalto University. The results of these assignments were shared among the other groups and they helped to orientate the students to the current challenges of strategic planning in the city of Espoo.

Moving on from the preliminary work, the students were introduced to scenario planning methodology, including extracts from Schwartz's seminal book *The Art of the Long View* (1991). Thus the next task was to identify relevant driving forces in Otaniemi and the adjoining Tapiola and Keilaniemi areas (previously branded by Espoo as "T3"). In accordance with Schwartz's instruction, a brainstorming method was used in the process. The students were once again split in groups, shuffling the groups so that experience from the previous assignment would be evenly distributed among the groups. Concentrating on specific driving force categories, the students were able to identify 23 driving forces, as shown in Table 2. As we can see, there is considerable overlap among the driving forces, a natural outcome from a rather freeform brainstorming process. However, we can see slight dominance of demographic and human forces. The students tended to see the overall growth and development of Otaniemi and surrounding areas as a predetermined force. Also their trust in relative competitiveness, internationalization and diversification was high. However, in their view, the critical uncertainty lies in the actual outcome, the rate, pace and timing of development, emphasizing the volatility of highly ambitious plans in Otaniemi.

Table 2. Relevant driving forces in Otaniemi, according to the student groups.

Driving force category	Relevant for Otaniemi/T3 area	Predetermined elements	Critical uncertainties	Anticipated effect on Otaniemi/T3 area
Sociocultural	population	overall growth, high demand in Otaniemi	new development locations and the pace of building	population growth in Otaniemi due to new student housing
	age distribution	students dominating	Scale of diversification due to the new development	diversification of age structure, need for new services
	internationality	growing immigration	share of students, share of permanent dwellers	diversification of cultures
	mobility	better accessibility	modal share, reliability	growing popularity of the area
	education	increasing educational level, greater business cooperation	popularity of the campus area, functionality of cooperation	growth in businesses and international cooperation
	household size	high share of single households, diversification	diversity of housing stock, price level	growing need for diverse housing policy, need for diverse services
	social problems and phenomena	diversification of population	loneliness, segregation of subareas	new social phenomena increasing
	subcultures	growing popularity of T3 area as a dwelling place, diversification of population	attractiveness of the area to other than technology students	technology student culture spilling over to nearby areas
Technological	telecommuting	new possibilities for employment	overall motivation of ageing population to stay working	less need for car commuting
	transport technology	ongoing projects, e.g. Metro, stability of public subsidies	automation, legislation, willingness to change behavior	investment in public transport
	building stock	cost of conversion	solutions in energy use	innovative solutions increasing
Economic	business environment	economic system fundamentals, entrepreneurialism	cycle effects, economic policy measures	continuing investment in the area
	sustainability	transport path dependence, infrastructure	innovativeness in real estate and transport solutions	social innovations in services
	globalization	remoteness, increasing internationalization	attractiveness of the area	popularity as a studying place
Environmental	climate change	increasing volatility	actual effects	wide preparation for extreme weather
	sea level rise and floods	new development near the coastline	weather, general sea level rise	preparation for floods in new buildings and infrastructure
	biodiversity	human presence, new development	green area maintenance	less work-intensive gardening but more animal control
Political	bureaucracy	organization hierarchies, legislation	political terms, administration changes	transaction costs in development
	political culture	decay of conventional political participation	new ICT-powered movements	local cooperation increases
	sustainability	national and international regulation	upper-level decisions	austerity-driven adjustments in public services
Spatial	geography	natural geography, location in wider spatial context	prioritization of natural environment over development	conflicts in building projects
	built environment	graded buildings, road network	flexibility in heritage norms	some of the uniqueness of the area lost
	new developments	ongoing projects	attractiveness of the area	new services

The technical art of making scenario stories

After the initial information gathering, the students were asked to create plausible scenarios of the development in Otaniemi. As Albrechts (2005) states, normative scenarios are essential to keep away from overt relativism. Thus the students were advised to form two scenarios, one normative (what ought to be)

and another explorative (what might be). The time frame was set to 30 years with 10 years' intervals. When building their scenarios from the elements formulated in the previous assignments, the students had to position their scenarios within the frame of two axes: local versus global networking and single-use versus multi-use functionality.

Table 3. Normative and explorative scenarios of the development of Otaniemi.

		Name	2025	2035	2045
Group 1	**Normative**	**Kelluva kampus ("Floating campus")**	intensive public transport, modal share away from private car, multi-actor cooperation generating start-ups, gradual improvement in services, English becomes the main language, ethnic services, new development honors the architectural heritage	Otaniemi international example of innovative built environment; new expertise in buildings next and on the water due to the effects of climate change; nature, culture and economy in balanced in development; support of different lifestyles and working habits	world leader in water and offshore buildings; hub of several world universities and research institutes; local autonomy complementing European federal government; increase in water transport
	Explorative	**UponnuT3 ("Sunk T3")**	problems in new development and transport; growth in population bigger than in services, dependence in other centres; turmoil both in regional administration and international relations causing uncertainty; silent revolution in studying habits	worsening usage of university facilities; disinvestment and demise of built heritage and natural areas; public transport development increasing but not meeting the needs; regional focus not in Espoo	shrinking importance of physical campus, no supplementing use; growth in population and services but uniqueness lost; regional role as a main employment and studying centre fading
Group 2	**Normative**	**24h campus**	gradual integration of both university schools and areas around Otaniemi; new development with flexible and effective space usage; traffic calming and transit oriented parking management; student lunch vouchers replacing canteens and spurring new services	flexible space management responsive to the change in studying and working habits; more social spaces available for anyone; university integration with shared identity; population and activity growth basis for new services around the clock; minimization of intra-area car use, innovative fringe parking and frequent rail-based transportation	withering away of conventional working hours, facilities and services fully supporting 24 hour lifestyle; no fundamental division in building use types; strong local community; innovative transport solutions
	Explorative	**8h campus**	continuous separation of schools despite common campus; modest new development along traditional lines; education still dominating the image; no new transport investments after the metro line, rigid space usage policies	eventual integration of university schools and identities; student housing and service needs met but otherwise problems in development; still car-based mobility, lack of parking and thus low attractiveness to businesses; bad municipal economy halting crucial projects	unified multidisciplinary university with modest international competitiveness; gradual diversification of population structure due to the location; growth in investments and services; slow modal shift away from the car

As there is practically an unlimited number of potential future paths even starting from the very same drivers, it was no surprise to see the two student groups to formulate four very different scenarios (Table 3). The groups had slightly different perspectives for both normative and explorative scenarios. The first group had more vivid future projections, finding officially unconfirmed strengths and possibilities in the normative scenario (e.g. floating building technology) and even dystopic outlooks such as dereliction of buildings in the explorative scenario. The second group had a normative scenario quite similar to the official municipal and university strategies. The explorative scenario of the group was not a dystopia but merely a "business as usual" development with failing ambitions and modest development. The interesting common features were the emphasis on transport investments and modal shift away from the car, and the effect of studying habit revolution on the space usage. What for students represented a clear risk for the success of the area, was sticking to the conventional real estate and transport practices.

Strategic assessment: critical judgment skills of phronesis

The last assignment for the students was to conduct a strategic assessment of the competing land use schemes with the help of each group's normative scenario. As the schemes, by the major landowners, the student union and the resident association, were still under development during the course, and as the time available for this task was limited, the students conceived this assignment the hardest of the course. The results of this last exercise were also revised after initial comments from the teachers, as the assessments were presented first to the City of Espoo and the summaries to the different stakeholders in a participatory event in December 2014. The students had slightly different approaches in the assessment, partly representing the differences in their normative scenarios. The main results drawing on the used criteria are however summarized in comparable Tables 4 and 5.

Table 4. Strategic assessment of the schemes by Group 1.

Criteria	Normative scenario: "Floating campus"	The landowners' scheme	The students' scheme	The residents' scheme
Transport	Emphasis on non-motorized and public transport, support for electric traffic and innovative solution, water transport	Generally similar to the normative scenario, greater emphasis on rail transport and shared space	Generally similar to the normative scenario, greater emphasis on rail transport and campus bikes, no vision of bus service	Support for non-motorized and rail transport, but centrality of car traffic
Residential development	Diverse and wide residential development for all groups, innovative floating housing	Wide residential development mixing with the other uses, but emphasis only on student and employee housing needs	Slightly less housing development than in the normative scenario, emphasis only on the current student housing needs	Only modest student housing development, no support for population diversification and increase needed for service development
Services and offices	More commercial services, coastal area as a meeting place, flexible space use, floating structure	Diverse service development with emphasis on local services, conventionally rigid space policy, no projection of service evolution	More local services, emphasizes the current surplus of office space	Calls for local service development based on existing real estates, new coastal cafe
Natural environment	Development based on existing recreational and conservation use, new floating routes, preparation for climate change effects	Developing the coastal area but keeping the existing conservation areas	Recreational use of coastal areas	Recreational use of coastal areas, strong emphasis on coastal path
Innovations	Supporting student-research-business cooperation, supporting start-ups, emphasis on water expertise	Emphasis on innovation environment, innovations in land use and aquatic environment, overtly advertising the world class university	Support for innovation environment, campus bikes helping intra-campus cooperation, overbranding of the university	Support for the existing studying and research environment, but less support for the innovation environment
Culture	Architectural heritage and new development, internationalization, vivid organization scene, student culture and year-round activities and events	Emphasis on built environment, urban culture complementing student heritage, coastal areas as a cultural hotspot	Internationalization, student heritage and leisure activities, vague image of cultural needs	Supports student culture heritage and development, neglects the needs of other groups

The first group was more interpretative in its assessment, weighing elements from each scheme according to their potentials and caveats in supporting the group's scenario. Especially the potentials for water technology development, strongly represented in their normative scenario, were carefully scrutinized in the assessment. The second group concentrated more on the internal flexibility and substance of the schemes, having a more refined mobility analysis than the first group.

Table 5. Strategic assessment of the schemes by Group 2.

Criteria	Normative scenario: "24h Campus"	The landowners' scheme	The students' scheme	The residents' scheme
Services	Open access for different services, diversity over quantity, based on demand	Emphasis on student services, great variety in leisure activities	Diversity in services similar to the normative scenario, also services run by the students	Service development based on the existing mall and conference centre
Residential development	Residential development in several sparsely used lots, flexibility in main use and sharing, including the office buildings	Emphasis on student housing, less residential development than in the normative scenario	Great emphasis on student housing	Only modest increase in residential development, mainly student housing
Coastal areas	A little new student housing, mainly recreational and nature reservation areas	Considerable development of the coastal areas	Recreational area	Strong emphasis on nature conservation and recreation, no new buildings except maybe a cafe
Car traffic, parking and road safety	Decrease in internal car traffic, shared parking, traffic calming measures	Similar to the normative scenario	No comments	No comments
Walking, cycling and public transport	More non-motorized routes, traffic nodes with cycle parking and sharing, internal bus circle line	Similar to the normative scenario	Emphasis on cycle lines and shared campus bikes	No comments

Both groups noticed the differing foci of the schemes. Especially the residents' scheme was clearly a defensive act supporting the existing coastal area arrangements and only modestly having opinions of the development in other areas. This corresponds to the small and spatially concentrated landownership of the housing associations. On the other hand, the student activists' scheme, representing the official student union point of view, was geographically more substantive, but the main message of the scheme was clearly the agenda of increased student housing development. The landowners' scheme was the most comprehensive and covered several themes while promoting the vast new development clearly in the economic interest of the landowners. The versatile nature of the landowners' scheme was no surprise, as it was created by a major architectural bureau, having been involved in the planning of Otaniemi on behalf of the landowners for more than 20 years. The comprehensiveness of the landowners' scheme was noticeable also in the time scale: the landowners' scheme mapped development all the way to the 2030's, whereas the competing schemes lacked explicit time scale, implicitly suggesting development only roughly 10 years in the future. Our students saw the landowners' scheme the most supportive for the normative scenario, although there were differences in the projections of the long term development pace. The students' and residents' schemes, with their shorter time frame, did not close out the normative scenarios, but especially the residents' reluctance towards new non-student housing was seen as a risk for service development.

Overall, there were surprisingly few major disputes between the interest groups. Every party endorsed the built environment heritage and the value of nature environment, although the landowners' version of coastal route was not welcomed by the other parties. Every scheme acknowledged the need for intensification, new housing and especially new services. Even the residents, commonly seen to be the most critical of intensification and new housing, did not rule that option out, merely expressing doubts of the attractiveness of the area for people other than students. The principles of mobility reform aroused also surprisingly little argument.

4.2 Analyzing the results

In the post-course feedback the students thanked the urgent topic and active pace of the course, but expressed also stress from the limited time afforded for the assignments (2-3 weeks per assignment), especially the last assignment. Regarding the latter, they also criticized the fuzzy and changing instructions and the hard-to-obtain data of the opposing schemes. The roles and connections of different actors, especially between the landowners and the City administration, caused some confusion. This course differed indeed from one-directional and in-advance framed conventional course works and resembled more real-life strategic planning and participation work. The course schedule was constant but the case situation developed slightly differently than anticipated in the beginning of the course. Especially the inactivity of the Espoo City Planning Office was not anticipated, as the planner in charge of the area suddenly resigned from the City of Espoo just before the beginning of the course, causing an unexpected delay in planning work. Not surprisingly, the landowners with their stronger position and superior resources offered a more consistent and better visualized scheme than the groups investing their leisure time in trying to communicate their alternative views in a visual and constructive way. Even with the help of ABE personnel the initial schedules of the competing schemes lagged behind and our students had to rely on scattered and sometimes contradictory data from the student activists and residents.

The landowners' scheme was not only technically superior, it also corresponded the normative scenarios the best. Actually, the very name of the scenario may reveal the reason for this connection. The students were not only participants of our course but also stakeholders in the case. Not undermining the critical potential of our students, they are likely to be influenced by the very same discourse of campus development that the major landowners or their superiors, the university and the government, are committed to. The position of the university and the landowners in relation to the City of Espoo is also something far from being simple administration subordinates. In other words, the students in our course partly managed to capture and reproduce the general normative discourse in their normative scenarios. This leads to a more technical notion of scenario planning. Our case suggests that two scenarios, one normative and one explorative, are probably not enough to open the imaginative horizons, and they run the risk of working simply as another tool for legitimation.

In Otaniemi, the role of each scheme in the official planning process is slightly ambivalent. The alternative schemes are not "shadow plans" in the sense recently witnessed in Finland. Not only do the alternative schemes fail to meet the standards of a comprehensive detailed or master land use plan, the scheme they challenge is not an official plan itself. Actually each of the schemes is a "shadow scheme", as they intend to cause discussion and steer the action of the City administration in official planning. Having de facto a strong position in the planning practice, it is the major landowners' argument that is by nature the loudest for the City. It is therefore noteworthy that the landowners decided to engage in such a public discussion. The spokespersons of the landowners claim openness of their scheme to other arguments, too, welcoming the discussion from the makers of the alternative schemes. The goals of a vivid and innovative campus, complementing the economic real estate interests, definitely call for openness and civic engagement. The future will tell how this agenda of common future creation will materialize in Otaniemi and beyond.

As the main principles have caused little friction between the stakeholders, the cordial co-creation seems quite a realistic option. But how did the need for alternative schemes then ever come to place? The answer may lie in the strategic assessment results. Although the schemes do not disagree about single details, they speak of somewhat different issues. That is partly obvious as the schemes are argumentative acts emphasizing the issues important for each group. But they may also visualize the likely difference in the way of experiencing the area of Otaniemi. For the residents, it is their daily place of residence, for the students it is the university campus as a locus of both studying and dwelling, for the landowners it is mainly measurable land mass, infrastructure and buildings. In other words, Otaniemi is the stage for

different discourses in which the concept of space can be either absolute or relational (Harvey, 1973; Massey, 2005). Or, utilizing Lefebvre's (1974/1991) terms: for many it is the commonsensical mode (perceived space) that is central; for others it is the expert view (the conceived space); while the fully lived space might remain out of reach. This does not mean that the actors could not understand each other's arguments. The problem arises from the ambiguity of which discourse they are contributing to. This is exacerbated by the problematic nature of strategic visualizations: the structural graphs and other strategic maps must balance between vague abstraction and overt details. Even a full detailed plan cannot grasp all the different aspects of space, but even the highly hypothetical visualizations of future development, such as the "Kokokuva" scheme, are enough to cause fears among the stakeholders that do not share the discursive context of its authors. This unintended imagination inducing power of maps could be balanced with rightly timed and positioned scenario stories.

5. Discussion

The scenario analysis and strategic planning share their origins in the military context and subsequently in business life. Both realms offer the planner clearly defined organizational boundaries, separating the planner from the enemy or competitor. An army or a company has also usually a single main goal. That setting offers an ideal starting point for scenario work – once the organization is ready to think of the unthinkable. The urban planner is not privileged with such clarity. The boundaries are fuzzy and the goals multiple with changing political priorities. The actors and their roles should be known: who is the adversary and who the ally? With challenging schemes and other planning-related arguments emerging from different directions, those questions should not be set aside.

When shadow plans and other alternative land use schemes are drafted, their emergence underlines the inadequacy of official participatory processes, but yet they seldom exceed the role as arguments for public discussion only. The legitimate planning process is strictly mandated and the challenging documents face extreme difficulties in influencing the ongoing planning process, not to speak of becoming legally binding plans.

Scenarios are most effective when the exact procedure is yet to be decided. Timing is therefore crucial for effective cooperation, but with the limited resources of informal groups, their actual contribution attempts tend to come too late. Another important issue is the nature of contribution. The Aristotelian classification of intellectual virtues may help us in this question. The epistemic knowledge type of sheer facts is quite often in the focus of debates. True, without any solid base, the projection of future lacks all credibility. The 'facts' should therefore be agreed upon quite early. Another virtue that is hard to share is the phronetic action, quite naturally fitting the planners' ethos. The legal responsibilities and duties of planners and representative bodies structure the phronesis in planning.

However, the third Aristotelian virtue, techne, is by definition open for several interpretations and actors. The number of possible scenarios is unlimited and the imaginative power of scenario stories can bring different parties together. The planner, phronetically framing the process, must gather an adequately representative and open scenario group together in an early enough phase of the planning procedure.

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