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Author(s): Lundström, Niklas; Mäenpää, Antti

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Wicked Game of Smart Specialisation: A Player's Handbook

Niklas Lundström, Regional Studies, University of Vaasa, niklas.lundstrom@uva.fi

Antti Mäenpää, Regional Studies, University of Vaasa, antti.maenpaa@uva.fi

Abstract: The objective of this article is to explore the theoretical foundations of a wicked game. The theoretical part is based on the notion of wicked problems, which is developed further. It is also illustrated that the latest innovation strategy of the European Union called smart specialisation, resembles a wicked game. Comparison between the two revealed several similarities and gives new insight to the theory of wicked problems and to the process of smart specialisation.

Keywords: Wicked problems, Wicked games, Smart Specialisation, Regional development policy, Regional innovation

INTRODUCTION

Ever since Rittel and Webber (1973) published their seminal article, wicked problems have attracted growing interest in the realm of planning and policy related research. Although the original article was published over 40 years ago, countless articles on wicked problems can be found especially in the twenty-first century (e.g. Candel, Breeman & Termeer, 2016; Levin, Cashore, Bernstein & Auld, 2012; Balint, Stewart, Desai & Walters, 2011; Camillus, 2008; Mason & Mitroff, 1981). It seems that the theme is more interesting than ever (McCall & Burge, 2016).

However, as Xiang (2013) has noted, most of the research on wicked problems is repetitive in nature and lacks well-grounded theoretical explorations. The usual case is to prove that the problem observed is a wicked one, and to add descriptions of the stakeholders and their views. At the same time, Raisio and Vartiainen (2015) share the concern over repetition, and they call for more empirical research.

This article addresses Xiang's (2013) point by presenting the theoretical foundations of a wicked game and explores how the players resolve the wickedness from their own subjective perspective. This is done in the context of smart specialisation strategy (S3), the latest approach to innovation policy by the European Union. The wicked game perspective envisages a more active role for stakeholders in creating and resolving the wickedness. The second objective is to view S3 as a wicked game and utilise the concept in order to gather new knowledge regarding the challenges in the S3 process. S3 has increasingly attracted the interest of policy practitioners recently and its wickedness has even been identified to some extent in the smart food industry and the university sector (Cavicchi, Rinaldi & Corsi, 2013; Kempton, 2015). The authors argue that elaborating on and demonstrating the wicked gaming element of the strategy will raise the awareness of its profound challenges and spur new solutions. The awareness of the wicked situation is also emphasised by Xiang (2013) as one tool for working with wickedness. The concept of a wicked game has been touched upon before from the citizens' perspective (Lundström, et al. 2016, 2013; Lundström, 2015; Lundström & Raisio, 2013), but the concept will benefit from an examination of strategy to illustrate how it functions on a multi-scalar level.

The main idea of S3 is to enhance regional specialisation by finding new ways to utilise its existing strengths. This requires collaboration among universities, companies and public actors (Foray et al., 2012). Each of these different actors and their 'multi-level interplay' (Magro & Wilson 2013)

with various agendas provide an interesting framework for 'regional innovation games' but surprisingly, there have not been any major publications regarding S3 itself as a wicked problem. The results of this article benefit both the wicked problems orientated research, by demonstrating a multi-level case from the wicked games perspective, and the understanding of S3 as a process, by adding the gaming element and the highlighted role of the players to the discussion regarding its implementation challenges.

This article continues by presenting the idea of regional innovation and research strategies for smart specialisation (RIS3) as approaches in regional development policy, and then makes theoretical observations on a wicked game. Next, the wicked game perspective is contemplated conceptually under the S3 approach. This stems from the notion that regional development policy and public policy in general are very sensitive to wicked problems (Head & Alford 2015; Rittel & Webber, 1973). RIS3 is a practical approach to regional development policy and similarly involves many different stakeholders, or players, from different spatial levels, so it is inevitably complex (Lundström, 2015). This is also the case with S3, although the number of players is more restricted as the direct participation of ordinary citizens can be more limited (due to lack of innovation knowledge/interest) than in regional development policies in general. Therefore, S3 gives practical opportunities to conduct research as the key players are known. After establishing the theoretical background the similarities between the wicked game and S3 are explored. This is done by combining the main elements (players, playing fields, objectives and rules) of the wicked game into the S3 process.

The notion of game has been used quite often in planning and policy related research (e.g. Head & Alford, 2013; Leino, 2012; Sotarauta et al., 2007). Even Healey (2006, p. 92) speaks about 'local games being played' among a mix of key players and their viewpoints. Van Bueren et al. (2003)

have come closest to the concept of a wicked game. They used also the gaming aspect in describing ‘policy games’ but from a network perspective. According to them, ‘wicked problems are dealt with in policy games’ (p. 194). This interpretation is shared here but developed to fit the context of wicked problems in a more suitable way. The novelty here is the use of the wicked gaming perspective on wicked problems and policy issues, which adds a new aspect to both literatures: the role of the players in resolving but also in creating the wickedness. The notion implies that we are all part of the game and can discover some new and interesting ways to understand the wickedness. Wicked problems are usually seen as ‘something out there’.

The authors want to emphasise that to play the wicked game does not mean that the players or the game are suspicious, murky, unprincipled or anything similar. On the contrary, if the wicked game is played as if it was a tame game, the results are worse and the players do not address the reality of the ‘regional innovation game’ (RIG). The wicked game is necessary if we are to acquire a better understanding about the wickedness and to re-formulate or resolve a wicked problem.

SMART SPECIALISATION IN THE CONTEXT OF REGIONAL DEVELOPMENT POLICIES

Regional development policies can generally be seen as aims to improve conditions in a certain region. They can be seen as a process and usually refer to economic growth intentions, but are here viewed as a wider ensemble. In addition to the economic aspects, they also refer to the aims for welfare broadly, directly and indirectly. In this, the economic side is only one part but includes the operations of universities, firms, various officials (e.g. local, national, EU levels), various public or semi-public development agencies, the third sector and citizens, to name but a few. The

paradigm of regional policies has shifted from central government to different levels of stakeholders (Sotarauta, 2010; OECD, 2010). Overall, according to Bentley and Pugalis (2014), regional development policies are ‘a constellation of social, cultural, political, economic and institutional attributes’ (p. 292). In the European Union, the main regional development activities are conducted under the cohesion policy, which focuses on reducing the differences between regions and tries to ensure growth across Europe by providing structural funds for regional development (European Commission 2017).

The smart specialisation strategy (S3) is the latest approach to the innovation policy of the European Union and was originally developed in the Knowledge for Growth group to offer solutions for the European economic crisis and growth issues (McCann & Ortega-Argilés, 2013; Foray, 2015). The practical formulation of the S3 takes place through developing RIS3 (Foray et al. 2012). These local strategies try to achieve the objectives of the overall S3 and their role has been highlighted by tying them with the structural funds programme; that is, with the cohesion policy. RIS3 is an ex ante condition and thus regional actors have to form their own strategy in order to receive structural funding.

The main focus of S3 is on regional specialisation which should be evidence-based and thus focus on the genuine strengths of the local community. The use of the term *specialisation* however, does not only imply cherry-picking from existing activities but should also involve serious thinking about how to combine existing regional assets in new ways and either finding new markets or even creating them for future economic growth. The inclusion of the word *smart* in the term indicates research-driven and evidence-based specialisation where local research actors utilise global research networks, and thus assume a central role in getting the innovation activities flowing and growing (McCann & Ortega-Argilés, 2013; Foray et al., 2012).

The overall idea of S3 is that regions act almost like regional entrepreneurs as they try to locate and utilise their local assets (personnel, education, products, services, etc.) to attract maximum interest on global markets. This process of identification has been named the Entrepreneurial Discovery Process (EDP) and regional cooperation is central when these strengths are sought after (Foray et al., 2012). Emphasis is put on the process, as the idea is to monitor and evaluate the work and its outcomes in order to ensure development is constant. The role of companies has been highlighted in particular, as they have the knowledge of the global markets and ability to spot new market potentials (Foray, 2015).

Interestingly, S3 presents the triple helix (3H) theory by Etzkowitz and Leydesdorff (2000) as one framework useful for identifying these important local actors (universities, companies and public actors) but places more emphasis on the proactive role of the public sector in generating EDP via its control of strategy work and other local actors (Foray et al., 2012). Originally 3H theory focused on the role of universities as regional connectors and innovation agents, but now S3 introduces a new major player group to the game (Rodríguez-Pose, di Cataldo & Rainoldi, 2014).

Several studies have established that implementing this sub-national strategy is challenging, and there has even been discussion on the vagueness of some key concepts (Iacobucci, 2012; Cooke 2016). The whole S3 concept has recently been challenged by Capello and Kroll (2016, p. 3-4) who ask how it 'could provide a common political rationale for a socio-economically and territorially diverse set of regions and nations facing different place-based challenges and different innovation modes, hence, quite legitimately, different policy agendas'. One reason for these difficulties might be the lack of understanding regarding wicked problems and especially the fact that S3 might be seen as one form of a wicked game.

According to Sotarauta (2010) policy making and implementation are now understood as multi-agent, multi-objective, multi-vision and pluralistic processes. Forsberg and Lindgren (2015) describe the regional policy of the EU as strongly influenced by the governance model, and therefore by the network orientation (see also Adshead, 2014). This means that the policies are constantly changing and that the players come and go. Therefore, the notion of a tame game and tame problems must be irrelevant to actual policy making. The notion of a wicked game helps to understand the above multi-processes and networks in a more systematic way, as it explains how they are founded. In addition, it is of course always good to know what kind of game is being played.

WICKED DEVELOPMENT ISSUES CALL FOR A WICKED GAME

Rittel and Webber's 'Dilemmas' has been widely used to describe wicked policy issues (Head & Alford, 2015; Head, 2008; Australian Public Service Commission, 2007; Freeman, 2007; Durant & Legge Jr., 2006; Rittel & Webber, 1973). Rittel and Webber (1973, p. 155) also recognise this aspect: 'Policy problems cannot be definitely described'. The notion of wickedness is becoming ever more useful as we enter 'the era of complexity' (Lundström, 2015; Raisio & Lundström, 2014, 2015). This notion refers to present-day societies becoming more complex, a situation that results from publicity and openness and from the options the current forms of communication offer, and from the fact that information is more open than it used to be; but the social side of problem solving has its effect, which cannot be ignored. In addition, the citizens want better justified decisions. It also calls for a new kind of leadership that embraces the complexity and the

wickedness instead of suffocating it (Raisio & Lundström, 2014, 2015). Regional developers (Sotarauta, 2010) are not in a different situation.

Mason and Mitroff (1981) described tame problems through three dimensions. They can be separated, reduced, and the right solution can be defined. Conklin (2006) added that the solution is objective. He also noted that tame problems belong to a class of similar problems and all of them can be solved in the same similar way. It is also noteworthy that tame problems have a stopping point. This means that the problems stop when the solution is found. The term tame should not be read as signifying that the problem is easy to solve, but the question is about the repeatability and lucidness of the process (Lundström & Raisio, 2013).

Wicked problems contrast with tame ones. They are problems that cannot be solved, and are impossible to define in a clear and acceptable manner. Finding a durable solution is difficult owing to the contending stakeholders and their views, concerns, value systems and beliefs (Rittel & Webber, 1973; Lundström et al., 2016, McCall & Burge, 2016). It all comes down to the interactions present as everyone owns a part of the truth (Roberts, 2000). A number of different lists have been presented claiming to summarise the properties of wicked problems (Rittel & Webber, 1973, Conklin, 2006, Norton, 2005, 2011). Norton (2005, 2011) reduced the original aspects presented by Rittel and Webber into four subgroups: 1) *Problems of problem formulation* due to value-ladenness; 2) *noncomputability of solutions*, that is, the decisions become operational only after the decisions have been made; 3) *nonrepeatability*, because the desire for one-size-fits-all solutions should be buried; 4) *temporal open-endedness* means that the new resolutions lead us to only a temporary state of equilibrium. This means that the lucidness and repeatability of tame problems is absent in wicked problems.

According to Rittel and Webber (1973) every wicked problem is a symptom of another wicked problem. McCall and Burge (2016) identify this as the central theme of wicked problems. This matches with complexity point of view and the concept of emergence (Richardson, 2008).

Rittel and Webber (1973) compared tame problems to a chess game. As we all know, a normal game of chess has a set of rules which all players know and accept. Usually the rules concern the number of the players, the playing field, who wins and how, if there is an opportunity to tie, what kind of moves are allowed or how the players move on the playing field, the playing time, etc. Sports games and such like are tame games; they might be difficult to play, but everyone knows the objective of the game and the rules are familiar to the players. Such games also have no impact on another game; they concern only the players.

It is clear that these kinds of problems call for engineered solutions (Lundström et al., 2016). They also enable the visualisation of an all-knowing planner (Morçöl, 2005). This kind of a worldview is considered quite common in the public sector (Raisio & Lundström, 2015). To the all-knowing planner, it is of course always possible to describe the wicked game as a tame one in retrospect. In other words, people tend to simplify the wickedness especially when time has passed and the situation is not as wicked as before: everything is clear in hindsight.

Wicked games reveal the processes behind the wickedness

The terms researchers use reveal something of their view on wicked problems, especially in how researchers are sensitive to the language used to describe them. A brief overview of the different ways to grasp the wickedness would note how Raisio (2010) *embraces*, Norton (2012) *lives with*, Houghton (2015) and many others *tame*, the Australian Public Service Commission (2007) *tackles*, Conklin (2006) and Jentoft and Cuenpagdee (2009) *address*, Camillus (2008) *resolves*, Roberts

(2001) *cope*s and many others *try to deal with* (e.g. Termeer, Dewulf, Breeman & Stiller, 2013; Van Bueren, Klijn & Koppenjan, 2003) wicked problems. The gaming perspective differs from these in that it is more focused on the dynamic part of resolving and formulating these kinds of problems. They are not just out there. Van Bueren et al. (2003) have aptly stated in the context of wicked problems that the differences in the perceptions of the problem cannot be solved by more research.

Rittel and Webber (1973, p. 161) stated that ‘it becomes morally objectionable for the planner to treat a wicked problem as though it were a tame one, or to tame a wicked problem prematurely, or to refuse to recognise the inherent wickedness of social problems’. It is good to note that Rittel’s understanding of a designer was quite broad: ‘Everybody designs sometimes; nobody designs always’ (Rittel, 1987, p. 1) or as, ‘the making of plans to bring about desired situations in the world’ (Protzen & Harris 2010, p. 14). Therefore, planning or design is not restricted only to planners or designers and the morally objectionable concerns everyone who is part of the wicked problem. If a tame game is morally objectionable in the context of wicked problems, Rittel and Webber call for something else.

It would be tempting to illustrate tame and wicked games through the ten-point list provided by Rittel and Webber (1973). However, as has been noted, the items of the original list overlap somewhat (Conklin, 2006; Norton, 2005, 2012; McCall & Burge, 2016). This is why the gaming perspective follows it only partially. The gaming characteristics are presented in Table 1. below.

Table 1. Tame and wicked games (Modified from Lundström et al., 2016).

	Tame game	Wicked game
Rules	Strictly defined set of rules for all situations that can occur, rules are known by every player Rules are mechanical	No coherent set of rules, everybody can play the game by their own rules Rules are organic
Players	Limited number of participants recognized by everyone	Players change all the time, everyone who is involved in the game is a potential player
Playing field	Can be defined precisely	Networked and complex, the spatial scale is relative and can vary
Practice	Repetition can help one to develop skills The more you play the better you get There is often the possibility of a return tie	No one can master a wicked game because the game, the rules, and the players change constantly There is no possibility of a return tie
Ending point	The game has a clear end point Answers are right or wrong	The game does not end Answers are better, worse, satisfying or good enough

One cannot say that there are any rules in a wicked game apart from the law or good manners. This assertion is based on two facts: First, because of their own perceptions of the problems and the potential solutions the players have different ambitions for what should be done and how based on their own subjective strategies (Bueren et al., 2003). The second reason stems from the fact that the players change constantly. Although some of the players can be considered to have a permanent role in the game, some evidently do not. According to Rittel and Webber (1973, p. 163), the players have an equal role because no one has the power to set formal decision rules to determine correctness. From the perspective of the wicked game, the players are not truly equal. Some of them have a greater power to dictate to others, for example, the state has the role of a legislator and oversees budgetary decisions. Such roles make it possible to influence the aims of the game.

Therefore, one player might have more power and can even produce somewhat forced solutions, but it does not mean that those solutions are more or less correct than other options. It must however be recognised that they do change the game.

All players are part of the game even though they might have stronger or weaker connections to it which vary as the game changes. The complexity arises not only from the number of the players, but also from the quality of their connections to other players (Dooley, 1996). Van Bueren et al. (2003) have acknowledged the strategic side of the game in addition to the volume of the players. They described the cognitive and strategic uncertainties that result from the players' strategic and institutional factors but also from the volume of players. The rules are organic; they change as the players come and go.

The players are part of the game whether they want to be or not. Sometimes they can be strong and at other times they can almost vanish. Sometimes the players are unaware of their potential stake and remain silent (Healey, 2006). They can intensify if the game evolves in a direction which demands actions from a certain player with weak links to the game. Each player possesses the capability to influence the game (Camillus 2008) and according to Rittel (1972) the information needed is distributed across many people.

Players are of course dependent on each other. This stems from counter actions taken by some players as they react to the moves of others, and some also form alliances. The moves do not always have an immediate impact, the impacts might become apparent only after a longer period, but they cannot be traced to specific moves. Of course, the actual impacts are joint effects between the actual moves and the counter moves from other players (Rittel & Webber, 1973). These can also emerge as undesirable effects.

Playing a wicked game can lead to different kinds of gaming behaviour; enemies might be thrown together and friends find themselves in conflict, and this situation changes constantly. The situation can cause people to think they are competing against parties who do not necessarily consider themselves to be competitors in that particular situation. Therefore, the notion of the enemy becomes vague. The situation can be the total opposite too. In that case a player expected to be a member of one team defects to play for the opposite side. There is always a third way where the players consider themselves to be on the same side. This can lead to alliances or a team game (Lundström et al. 2016).

The wicked game is played at different spatial levels ranging from the local to the international as the decisions are made in different places and by different players. Local decisions for example are made by local citizens, but international regional development policies are made at the level of the EU; and of course, there are many levels of players in between (Benz & Eberlein 1999). This implies that in addition to players' interconnectedness, the regional level is scaling as well. The wicked game is being played at many regional levels (or regional arenas as in van Bueren et al., 2003) at the same time. The game is scaling horizontally and vertically, in just the way Rittel and Webber (1973) described the poverty problem. Some players are local and interested only in local issues, some other players in the regional issues and still others in multinational issues, while others operate on many different levels at the same time. The levels interact; the local influences the regional and vice versa directly and indirectly through the region and directly through players from different levels. This is represented in Figure 1 below.

In Figure 1, the players operating on the same playing field or regional level interact with each other directly or indirectly. The system also contains feedback-loops that influence the players and very often the national level interferes with the local level.

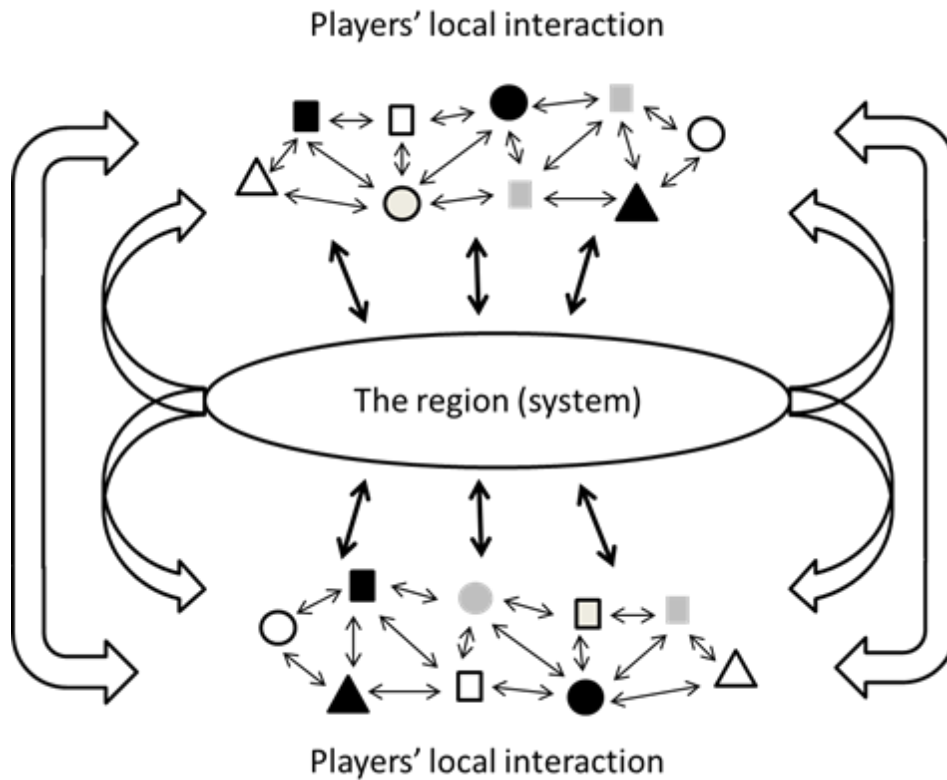


Figure 1. Interaction of players and two playing fields in a wicked game (Inspired by Lewin, 1993).

To master a wicked game is a quite impossible task. There is just too much going on at the same time; too many players entering and leaving, too much self-organisation, too many feedback-loops and also the emergence of new players. This explains why there is confusion among the players involved in regional development. The players cannot make moves so as to test their impact. Instead, once a move is made, it resonates through the system, sometimes with bigger impacts and

sometimes with lesser ones; the system is not the same once a move is made (Rittel & Webber, 1973).

The search for the end point of the wicked game will be in vain. The region will not stop, it will not be ready. This notion stems from the characteristics of development. For some, the results are good and for others they are awful, which form will be based on the players' subjective mindsets. This kind of juxtaposition is the engine that perpetuates the wickedness. There are no right or wrong answers in wicked problems (Rittel & Webber, 1973), so the answers are something in between to all the players.

S3 THROUGH THE WICKED GAME CONCEPT

Playing fields and the players

RIS3 formulation is interconnected on three geographical levels: local or regional, national and international (Mäenpää 2014; Rodríguez-Pose, di Cataldo & Rainoldi, 2014). However, this should not be seen to denote a strict segmentation of the playing field, for some players like small firms or individuals may play the game on the local level, whereas universities often involve all of the levels (Etzkowitz & Leydesdorff, 2000; Kempton, 2015). These playing fields are also contradictory, as the national level is not based on the regional level alone and the international level is not based only on the national, etc. According to Magro and Wilson (2013) it is 'the mix of rationales, domains and instruments from different administrative levels' that creates a challenge for proper innovation policy formulation (p.1655). The state, for example, is a player with a strong influence on all levels. To illustrate the challenges of this innovation game all three levels and their connections are examined below. The main focus is directed to the regional level.

The regional innovation game

The local level in S3 is probably the most chaotic in nature and interestingly forms the most vital field for the players. The regional innovation game (RIG) here means the part of a wicked game of S3 which is played at the local or regional level, even though players from various fields participate in it. Obviously different actors have different roles in the RIG and it is beneficial to define these player groups in order to understand the complexity of formulating RIS3. The 3H classification is used here because it is typical classification of the various stakeholders in S3 (Ketels et al., 2013). It should be noted that these roles may clash and even become contradictory or overlapping.

One important aspect is also the overall inclusiveness of different actors and the wider acknowledgement of the local micro-level connections. Benner (2014) elaborates the idea of smaller networks and even single actors as innovators instead of region-wide constructs. As he states, 'examples for innovations developed in formalised coordination arrangements are much more difficult to find' (Benner, 2014: 40). Overall Benner (2014) encourages wide participation within the local level; including employees as well as directors, and students as well as professors. The authors agree on the local complexity and the role of the individual actors, but still progress to highlight the 3H differentiation between the key players of the RIG in order to build a framework for it.

Although the public sector's role at the regional level is crucial, it does not step into the RIG from the start. Companies and universities already have a built-in need to create something new in order to reach their objectives. Naturally, they have done this for a long time, and for example, many specialisation fields have taken decades or even centuries to form. However, it is the public sector

in S3 that is interested in boosting regional specialisation and especially EDP (Rodríguez-Pose, di Cataldo & Rainoldi, 2014). The public sector, in other words, has the motivation, if not the skill. Obviously, this interest is limited to the relevant public actors who have a legal mandate to address development issues, such as regional councils. From the S3 point of view, the role of these public actors is quite similar in every region. Their overall objective is to act as a mediator or as a negotiator and to formulate the discussions, analysis and negotiations needed to provide the vision and goals for the regional strategy (Rodríguez-Pose, di Cataldo & Rainoldi, 2014). Public actors also act as enablers, as they produce the main strategy document (RIS3) and present it at the EU level (Figure 2).

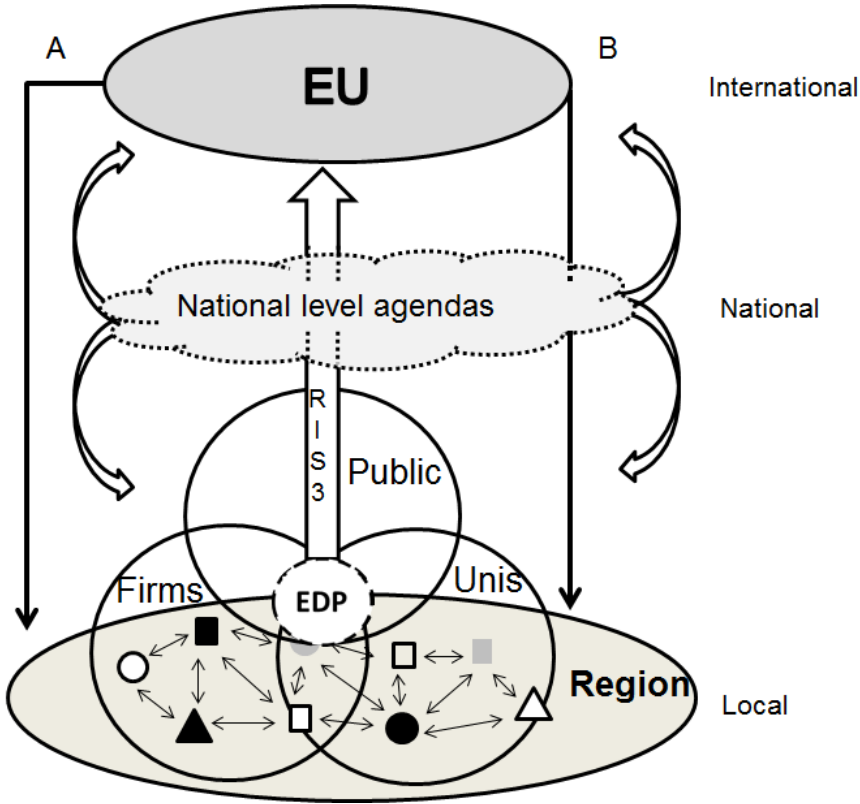


Figure 2. Smart Specialisation as a wicked game. One region as an example.

Universities are an indispensable part of regional innovation systems and are local innovation actors that connect other local actors *via* research, and provide global links to the region through universal research connections (Pugh, 2016; Etzkowitz & Leydesdorff, 2000). They are thus crucial for formulating a successful RIS3 in regions with few connections or low levels of entrepreneurial knowledge (Pugh 2016, Kempton, 2015). Local universities usually have a genuine interest in regional development, especially if funding or a project is included. However, there are obvious differences between the universities and different faculties (Etzkowitz & Leydesdorff, 2000, p. 117). This is what makes the role of universities individual; the focus areas of universities are different.

Understandably, most companies are primarily interested in making profit and do not have explicit interest in regional development per se. Their interest should be seen as implicit; they are usually interested in regional wellbeing (infrastructure etc.), but only participate when they must. Alternatively, they may even completely lack a culture of engagement (Georghiou et al. 2014, p. 428). Indeed, the involvement of the companies in the RIS3 process has been distinguished as one of the major challenges. Several studies indicate that public and university actors have participated more strongly in strategy formulation than companies (Virkkala, Mäenpää & Mariussen 2017, Sörvik, Midtkandal, Marzocchi & Uyarra 2016, p.23, Georghiou et al. 2014, Mäenpää 2014). This is a challenge for the public actors who somehow have to involve companies, because their entrepreneurial knowledge is one of the central issues in the creation of a solid EDP which translates into a strong RIS3 (Foray 2015; McCann & Ortega-Argilés 2013, Foray et al. 2012). According to Benner (2014) there is also a high risk of favouring established companies, who often have connections within the local development network. These *insiders* may favour the current development while it is often new *outsiders* who contribute the new ideas. There are also

differences between small firms and large companies, as the smaller, ‘sunrise’ industries are hard to find and usually have fewer opportunities to participate. This is especially true in S3 as it promotes evidence-based specialisation, which can be seen as a deterministic view on established industries, even though they may represent a ‘sunset’ trend (Benner, 2014; Johnson, 2014; Rodríguez-Pose, di Cataldo & Rainoldi, 2014) or do not even bother to apply for development funding because of the associated bureaucracy involved (Pugh, 2016).

The decision to take part in RIS3 planning can also be affected by the lack of knowledge, individual timetables or even chemistry between people. As previously mentioned, finding the right people may prove to be challenging and this problem has been highlighted recently by studies indicating that individuals may indeed play quite large role in regional growth (Wixe & Andersson, 2016; Georghiou et al., 2014; Benner, 2014). If these individuals are not identified, or do not wish to participate, the chosen specialisation may lose its relevance.

RIG, is however not only internal and vertical, but is also played horizontally between regions. In S3, this competition is encouraged on a global level. The idea is that similar regions might learn from each other (for example in peer-review sessions on the S3 platform) to become better in their chosen specialisation (Rodríguez-Pose, di Cataldo & Rainoldi, 2014; Midtkandal & Hegyi, 2014; Foray et al., 2012). However, the regions are also competitors, and local companies in particular might not be interested in sparring with their international counterparts, especially if doing so includes sharing some business insights. This creates an interesting mix of local/international and public/company incentives and agendas and creates even greater complexity around the RIG.

Finally, there is no way to determine the ‘winner’ of this game. Regions do their best to prosper and even though EU benefits from potential successes, these competitions can also hinder

cooperation between regions and create local issues. Companies might want to stay away from public actors they deem too bureaucratic and focus on the international markets themselves (Mäenpää 2014). The fact that bigger companies already know their global competitors and do not need RIS3 to determine where the future lies, adds to this issue. Especially, if the structural funding is not sufficient to provide an incentive.

National level blessing

In S3, the state is the most powerful player in the national playing field, and interestingly, its role is not clearly defined in S3 concept. Even though some nationally based company headquarters may also influence the local specialisation, the state can take a strong role in the game as a controller or adapt to a subtler role of enabler (cf. Lundström, 2015; Raisio & Lundström, 2013, 2015). The role of a controller is generally mandatory for the state as it accompanies the role of legislator. However, when it comes to S3, the state is not compelled to undertake that role. The main intention of S3 is to promote the role of the regions (Barca, McCann, Rodríguez-Pose, 2011) and thus bypass any possible national agendas that may not take the local conditions into account. However, this direct local–EU interaction (see line A in Figure 2) may never really happen as the state gets involved either wholly or partially (line B in Figure 2) for example through budgetary decisions (Johnson, 2014). One could even argue that the state is the judge in RIG as it is always able to remove important players from the game (even the EU, as would seem to be the case in UK). In a way, the state thus affects the game by its mere presence as the overall goals of local RIS3 must be thought out in the national context. This forms “clouds” over the local playing field (Figure 2) and the regional councils need to monitor “the weather”. Regions with low levels of structural funding are especially vulnerable to the whims of the state as they rely more on national support (Johnson, 2014).

International level influence

It is understandable that the EU acts as the most important player in the international playing field in S3. It is the ultimate enabler of local RIS3 as it provides the mandate, guidelines and support for RIS3 formulation (see, Foray et al., 2012). In exchange, RIS3 provides local results for the EU, which tries to spot and finance the innovation sweet spots and thus support overall European innovation efforts (line A in Figure 2). However, the EU also controls the process and through the guidelines and funding, it states what is acceptable specialisation. Even though the EU promotes the idea of evidence-based strategies, it is still *de facto* joining the local innovation field and forcing its objectives. When one adds national goals into this same mix and considers what the local actors are trying to accomplish, the overall wickedness of the game starts to become more evident (see Table 2). Indeed, so evident, that the need to elucidate the first two levels is justified.

Main Players	Main objectives outside S3	Main objectives in the context of S3	Desire to take part in S3	Role in wicked game of S3	Interested S3 participants within the player group
Public Sector	Uphold law and prosperity of the region	Boosting regional development & specialisation	High	Mediator, negotiator, enabler / controller	Regional Councils, Development agencies, stakeholders acting as respondents
Universities	Research, education and societal impact	Creating networks and issuing project funding, fulfilling third mission	Medium	Partner, connector	Depends on the faculty/unit and on the focus areas of the university
Companies	Making profit	Creating profitable networks and	Low	Partner, market knowledge	Export-oriented companies

		issuing project funding			
The state	Uphold law and prosperity of the nation	To enable or to control	Depends on the chosen specialisation (if adds to national specialisation then high, otherwise low)	Enabler, controller	Ministries, National innovation programmes
EU	European development, integration, cooperation	Regional and economical development, influence	High	Enabler, controller, creates the wicked game of S3	Internal networks, especially actors in structural funding

Table 2. Players and their roles in the wicked game of S3.

CONCLUSIONS

This article presents the wicked game as a course of action that creates the structure of regional development policies. This viewpoint stresses vertical and horizontal interaction from a regional perspective. This has not been emphasised enough in the literature on wicked problems. The people as players are a necessary part of the search for the resolutions to wicked problems, but they also create the wickedness.

The current article indicates that there are three main lessons regarding the wicked game perspective in S3. First, the identification of the consensus-based strategy that does not recognise the role of individual players. Second, the role of the state in the RIG which is not yet fully

recognised. Last, and as one solution to the issues above, the importance of dialogue and the possibility of wider audience participation in the S3 process.

One could argue that the S3 concept stems from a view and assumption that there really are unified specialisation goals that benefit the whole region. Of course, some sort of consensus is needed and therefore EDP is vital, but one must still ask how much of the contribution is used to evaluate other possibilities. The majority of the regional strategies list the participants/stakeholders at least by categorising them through a 3H dialogue (Virkkala, Mäenpää & Mariussen 2017, Sörvik, Midtkandal, Marzocchi & Uyarra 2016, p.23, Georghiou et al. 2014, Mäenpää 2014), but are there any lists of potential stakeholders who could not participate in RIS3? Perhaps this might be one future research avenue that could help to strengthen the implemented RIS3: to put its assumptions to the test and see how well it works. This could also benefit from a wicked game analogy by introducing a citizen perspective to bolster the mutual regional strategy.

One big challenge to the consensus-based strategy is the idea of individual players, which must be acknowledged. The notion of a wicked game in S3 helps the players to understand the wider framework and that their subjective point of view is only one part of the wicked game. That understanding in turn encapsulates the idea that other players might even have diametrically opposed objectives, despite having the same ultimate goals. Therefore, it helps the players to understand their role in the game. Moreover, it stresses that the players involved are contributing to the wickedness. When they define their own subjective limitations in the process, they reshape the problem to make it a different kind of a problem. This is the reason wicked problems are so hard, or even impossible, to get to grips with, and why their recognition is so important. The key players involved with S3 must therefore recognise the wicked side of their own actions. When they participate in the game and thus bring their own restrictions to it, they contribute to the wickedness.

Therefore, they do not only try to resolve the problems. One possible route to mitigating this challenge is to raise the awareness of the wicked game and problems among the key players of S3. This seems to be a good way to get better results when the wholeness of the wicked game of S3 is observed. It is possible that the idea of the wicked game is already in the minds of the players but is only intuitive or implicit. The notion of a wicked game tells the story in a more concrete way.

The wicked game perspective also illustrates the interplay of regional levels and the challenges the different levels bring to regional development policies. The current article classifies the main types of players on the local level. Besides these local players, the state is a formidable player operating between the local and international (EU) level. However, the role of the state is quite often dismissed in the S3 literature, which seems problematic according to the wicked gaming viewpoint. By using existing literature, we were able to identify the state's role as controller or enabler. This is one major issue regarding the future of S3, as national entities can clearly affect the outcome of the process and are not directly involved in many local RIS3 formulation processes. This means that one major player is sitting on a bench and it may even be the decisive player. The authors suggest that this issue might be a good subject for future studies and would like to see more S3 implementation examples where the national level has been included in the process.

Overall our findings emphasise the role of public actors, who are seen as important mediators between the local will, national aims and international influences. The findings therefore help verify the S3 policy framework regarding public interference. We thus return to the meaning of communication and dialogue in formulating a successful RIS3.

Indeed, our findings emphasise the significance of communication and dialogue. When the players understand the wickedness of the game and their role in it, the only remedy is communication. If

every player plays just their own game without any awareness of the wickedness and without communication, the outcomes are worse. In the S3 setting, the wicked game adds an emphasis on stakeholder activation and proper consultation. It also adds the notion of games into the S3 policy mix and promotes the idea of large-scale cooperation in order to avoid the traps of its complexity. According to previous literature, collaboration is seen as the best way to address the wickedness. The notion of a wicked game confirms this view, and gives weight to the role of public sector, which is the key player in the context of S3.

The citizen aspect of S3 also merits more reflection. Interestingly, it was the fourth helix in the original S3 guidebook (Foray et al. 2012) but its practical use has been minimal. The authors do not say that citizens should be considered the "fourth wheel", but their importance cannot be bypassed. Citizens can bring some interesting elements to the strategy formulation, for example, ensuring that 'sunrise' industries or companies are included in the strategy, because they may have more knowledge of these smaller, local actors. They can also challenge the interpretation of strategies by giving their own insights into the chosen specialisations. At a bare minimum, the strategy formulators need to justify the chosen direction and this can be a real eye-opener for the strategy process. It is all about who is invited to the venue; who gets to pick the insiders from the outsiders (Benner 2014). The inclusion of civil actors is of course challenging. According to previous studies, the citizens are not always too keen to play the wicked game even if it is about their own neighbourhoods (Lundström et al., 2016), let alone when the game is about abstract EU-driven policies.

Overall the authors argue that the notion of a wicked game is a realistic portrayal of the policy-making process. The idea of the wicked game also recognises the focus on the process of S3, as it suggests that the development is in constant motion. This highlights the importance of

tools for monitoring and evaluation in the S3 policy process. Sometimes good intentions can lead to undesirable outcomes if the players do not comprehend that they are playing a wicked game. In addition, the notion depicts the contradictory viewpoints within a certain region.

While all geographical levels are vital, the most challenging part of the game is played at the regional level. This stage was named the RIG as it forms the most vital – and the most vulnerable – part of S3, since it is the point where the future direction is set. This emphasises the need for complexity-based research in the S3 setting – especially in the RIG context. For example, what kind of leadership permits the system to develop without the need for too rigid, and therefore too restrictive, guidance? After all, future possibilities may lie just beneath the surface. This type of leadership would also recognise the importance of the different viewpoints of all players.

The lesson regarding the importance of all players raises the important issue of local connections and highlights the role of public actors as experts in this matter. Indeed, some of the latest results seem to verify the important role of individuals as promoters of regional growth (Wixe & Andersson 2016) and this leaves the challenge of finding the right people to the public actors. Interestingly, the EU seems to recognise the local challenges, as it promotes the idea of local cooperation and evidence-based solutions. However, it also seems to be rather vague on the specific tools available and to focus on the goals rather than the rules, which leaves room for different playing styles and thus adds complexity, especially between various regions.

REFERENCES

Adshead, M. (2014). EU cohesion policy and multi-level governance outcomes in Ireland: How sustainable is Europeanization? *European Urban and Regional Studies* 21(4), 416–431.

Australian Public Service Commission (2007). *Tackling wicked problems: A public policy perspective*. Australian Government.

Balint, P.J., Stewart, R.E., Desai, A. & Walters, L.C. (2011). *Wicked environmental problems: Managing uncertainty and conflict*. Washington, DC: Island Press.

Barca, F., McCann, P. & Rodriguez-Pose, A. (2011). The case for regional development intervention: Place-based versus place-neutral approaches. *Journal of Regional Science*, 52(1), 134–152. doi:10.1111/j.1467-9787.2011.00756.x.

Benner, M. (2014). From smart specialisation to smart experimentation: Building a new theoretical framework for regional policy of the European Union. *Zeitschrift für Wirtschaftsgeographie* 58 (1): 33–49.

Bentley, G. & Pugalis, L. (2014). Shifting paradigms: People-centered models, active regional development, space-blind policies and place-based approaches. *Local Economy* 29(4), 283–294.

Benz, A. & Eberlein, B. (1999). The Europeanization of regional policies: patterns of multi-level governance. *Journal of European Public Policy* 6(2), 329-348.

Camillus, J. C. (2008). Strategy as a wicked problem. *Harvard Business Review* 86(5), 99–106.

Candel, J., Breeman, G. & Termeer, C. (2016). The European Commission's ability to deal with wicked problems: an in-depth case study of the governance of food security. *Journal of European Public Policy* 23(6):789-813.

Capello, R. & Kroll, H. (2016). From theory to practice in smart specialization strategy: emerging limits and possible future trajectories. *European Planning Studies*, 24(8), 1393–1406. doi: 10.1080/09654313.2016.1156058.

Cavicchi, A., Rinaldi, C. & Corsi, M. (2013). Higher Education Institutions as Managers of Wicked Problems: Place Branding and Rural Development in Marche Region, Italy. *International Food and Agribusiness Management Review*, 16 (A): 51-68.

Conklin, E.J. (2006). *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. Hoboken, N.J.: Wiley.

Conklin, E.J. & Weil, W. (1998). *Wicked problems: Naming the pain in organizations*. Available [<http://www.leanconstruction.org/pdf/wicked.pdf>].

Cooke, P. (2016). Four minutes to four years: the advantage of recombinant over specialized innovation – RIS3 versus ‘smartspec’. *European Planning Studies*, 24(8), 1494–1510. doi: 10.1080/09654313.2016.1151482.

Dooley, K. (1996). A nominal definition of complex adaptive systems. *The Chaos Network* 8(1), 2–3.

Durant, R.F. & Legge Jr., J.S. (2006). Wicked problems, public policy, and administrative theory: Lessons from the GM food regulatory arena. *Administration & Society* 38(3), 309–334.

Etzkowitz, H. & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research Policy*, 29(2), 109–123. doi:10.1016/S0048-7333(99)00055-4.

European Commission (2017). Smart Specialisation. Available at: <https://ec.europa.eu/jrc/en/research-topic/smart-specialisation>.

Foray, D., Goddard, J., Beldarrain, X., Landabaso, M., McCann, P., Morgan, K., Nauwelaers, C., Ortega-Argilés, R. (2012). *Guide to research and innovation strategies for smart specialisation (RIS3)*. Europe: European Commission.

Foray, D. (2015). *Smart specialisation: Opportunities and challenges for regional innovation policy*. Abingdon: Routledge.

Forsberg, G. & Lindgren, G. (2015). Regional policy, social networks and informal structures. *European Urban and Regional Studies* 22(4), pp. 368–382.

Freeman, D.M. (2007). Wicked water problems: Sociology and local water organizations in addressing water resources policy. *Journal of the American Water Resources Association* 36(3), 483–491.

Georghiou, L., Uyarra, E., Saliba Scerri, R., Castillo, N. & Cassingena Harper, J. (2014). Adapting smart specialisation to a micro-economy – the case of Malta. *European Journal of Innovation Management* 17, p. 428-447.

Head, B. (2008). Wicked problems in public policy. *Public Policy* 3(2), 101–118.

Head, B. W., & Alford, J. (2013). Wicked problems: Implications for public policy and management. *Administration & Society*, first published on March 28, 2013. doi:10.1177/0095399713481601

Head, B. & Alford, J. (2015). Wicked problems: Implications for public policy and management. *Public Administration* 47(6), 711–739.

Healey, P. (2006). *Collaborative Planning. Shaping Places in Fragmented Societies*. Houndmills, Basingtoke, Hampshire, New York: Palgrave MacMillan. 2nd edition.

Iacobucci, D. (2012). Developing and implementing a smart specialisation strategy at regional level: some open questions. 15 *c.MET Working Paper*, pp. 1-19.

Jentoft, S. & Chuenpagdee, R. (2009). Fisheries and coastal governance as a wicked problem. *Marina Policy* 33, 553–560.

Johnson, J. (2014). The Role of Smart Specialisation Strategies in Regional Strategies. In S. Virkkala, A. Mäenpää & Å. Mariussen (Eds.), *The Ostrobothnian Model of Smart Specialization* (pp. 15-20). Proceedings of the University of Vaasa, Reports 196.

Kempton, L. (2015). Delivering Smart Specialisation in Peripheral Regions: the Role of Universities. *Regional Studies, Regional Science* 2(1), 488-495. <http://dx.doi.org/10.1080/21681376.2015.1085329>.

Ketels, C., Nauwelaers, C., Cassingena Harper, J., Lindqvist, G., Lubicka, B. & Peck, F. (2013). *The Role of Clusters in Smart Specialisation Strategies*. Luxembourg: Publications Office of the European Union.

Leino, H. (2012). Boundary interaction in emerging scenes: Two participatory planning cases from Finland. *Planning Theory and Practice* 13(3), 383–396.

Levin, K., Cashore, B., Bernstein, S. & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences* 45(2), 123–152.

Lewin, R. (1993). *Complexity: Life at the Edge of Chaos*. New York: Collier Books.

Lundström, N. (2015). *Aluekehittämisen pirullinen peli* [The wicked game of regional development]. Academic dissertation. Acta Wasaensia 326. Aluetiede 14. Vaasa: Vaasan yliopisto.

Lundström, N. & Raisio, H. (2013). Kansalaisraadit aluekehittämisen pirullisissa peleissä. Deliberaation mahdollisuuksista muuttaa näkemyksiä alueen kehittämisestä [Citizens' Juries in the wicked game of regional development. How deliberation changes the views on the development of a region]. *Hallinnon tutkimus* 32(3), pp. 179–196.

Lundström, N., Raisio, H., Vartiainen, P. & Lindell, J. (2016). Wicked games changing the storyline of urban planning. *Landscape and urban planning* 154, pp. 20–28.

Lundström, N., Raisio, H., Lindell, J. & Vartiainen, P. (2013). Wicked games of urban planning: How deliberative practices can help us create a collaborative playing field? Seminar paper in: *Proceedings of the Wicked Problems in Socio-Ecological Systems symposium on October 26-27, 2013, Berkeley, CA*.

Magro, E. & Wilson, J.R. (2013). Complex innovation policy systems: Towards and evaluation mix. *Research Policy*, 42(9), pp. 1647–1656. <http://dx.doi.org/10.1016/j.respol.2013.06.005>.

Mason, R.O. & Mitroff, I.I. (1981). *Challenging Strategic Planning Assumptions: Theory, Cases and Techniques*. New York: John Wiley & Sons.

McCann, P. & Ortega-Argilés, R. (2013). Transforming European Regional Policy: A Results-driven Agenda and Smart Specialisation. *Oxford Review of Economic Policy* 29:2, 405-431.

McCall, R. & Burge, J. (2016). Untangling wicked problems. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 30(2), 200–210.

Midtkandal, I. & Hegyi, F. (2014). *Taking Stock of S3 Peer Review Workshops*. S3 Working Paper Series 07/2014. Luxembourg: Publications office of the European Union.

Morçöl, G. (2005). A new systems thinking: Implications of the sciences of complexity for public policy and administration. *Public Administration Quarterly* 29, 297–320.

Mäenpää, A. (2014). Methodology and Research Design. In: S. Virkkala, A. Mäenpää & Å. Mariussen (Eds.), *The Ostrobothnian Model of Smart Specialization* (pp. 49–65). Proceedings of the University of Vaasa, Reports 196.

Norton, B. G. (2005). *Sustainability: A Philosophy of Adaptive Ecosystem Management*. Chicago: University of Chicago Press.

Norton, B. G. (2012). Norton, B. G.(2012). The ways of wickedness:Analyzing messiness with messy tools. *Journal of Agricultural & Environmental Ethics* 25(4), 447–465.

OECD (2010). *Regional Development Policies in OECD Countries*. Available: [http://www.eukn.eu/fileadmin/Lib/files/EUKN/2013/regional_development_policies_in_oecd_countries.pdf].

Protzen, Jean-Pierre & Harris, David, J. (2010). *The Universe of Design: Horst Rittel's Theories of Design and Planning*. London and New York: Routledge.

Pugh, R. (2016). Universities and economic development in lagging regions: 'triple helix' policy in Wales. *Regional Studies*. DOI: 10.1080/00343404.2016.1171306

Raisio, H. (2009). Health care reform planners and wicked problems: Is the wickedness of the problems taken seriously or is it even noticed at all? *Journal of Health Organization and Management* 23(5), 477–493.

Raisio, H. & Lundström, N. (2014). Managing chaos: Lessons from movies on chaos theory. *Administration & Society*, DOI: 10.1177/0095399714541269

Raisio, H. & Lundström, N. (2015). Real leaders embracing the paradigm of complexity. *Emergence* 17(3), 1–5.

Raisio, H. & Vartiainen, P. (2015). Accelerating the public's learning curve on wicked policy issues: results from deliberative forums on euthanasia. *Policy Sciences* 48(3), 339–361.

Richardson, K.A. (2008). Managing complex organizations: Complexity thinking and the science and art of management. *Emergence: Complexity & Organization* 10(2), 13–26.

Rittel, H. (1972). On the Planning Crisis: Systems Analysis of the 'First and Second Generations'. *Bedriftskonomen*, 8, 390–396.

Rittel, H. (1987). The Reasoning of Designers. *Article presented at the International Conference on Engineering Design, ICED 87, Boston, August.*

Rittel, H.W.J. & Webber, M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences* 4, 155–169.

Roberts, N. (2001). Chapter 20. Coping with wicked problems: The case of Afghanistan. In Lawrence Jones, James Guthrie, Peter Steane (eds.) *Learning from International Public Management Reform: Part B (Research in Public Policy Analysis and Management* 11(2), 353–375.

Roberts, N. (2000). Wicked problems and network approaches to resolution. *International Public Management Review* 1(1), 1–19.

Rodríguez-Pose, A., di Cataldo, M. & Rainoldi, A. (2014). *The Role of Government Institutions for Smart Specialisation and Regional Development*. S3 Policy Brief Series 04/2014. Luxembourg: Publications Office of the European Union.

Sotarauta, M. (2010). Regional development and regional networks: The role of regional development officers in Finland. *European Urban and Regional Studies* 17(4), 387–400.

Sotarauta, M. & Beer, A. (2015). Government, agency and place leadership: Lessons from a cross national analysis. *Paper presented at the Global Growth Agendas: Regions, Institutions and Sustainability*. Regional Studies Association Annual Conference 2015. Piacenza, Italy.

Sotarauta, M., Kosonen, K.-J., & Viljamaa, K. (2007). *Aluekehittäminen generatiivisena johtajuutena. 2000-luvun aluekehittäjän työnkuvaa ja kompetensseja etsimässä* [Regional development as a generative leadership. In search of the competencies of regional development officers of the 21st century and the nature of their work]. Sente-julkaisu 23. Tampereen yliopisto. Alueellisen kehittämisen tutkimusyksikkö.

Sörvik, J. Midtkandal, I., Marzocchi, C. & Uyarra, E. (2016). How Outward-looking is Smart Specialisation? Results from a survey on inter-regional collaboration in Smart Specialisation Strategies (RIS3). S3 Policy Brief Series 16/2016. Luxembourg: Publications Office of the European Union.

Van Bueren, Ellen, M., Klijn, Erik-Hans, Koppenjan, Joop F.M. (2003). Dealing with wicked problems in networks: Analyzing an environmental debate from a network perspective. *Journal of Public Administration Research* 13(2), 193–212.

Virkkala, S., Mäenpää, A. & Mariussen, Å. (2017). A connectivity model as a potential tool for smart specialization strategies. *European Planning Studies*. DOI:10.1080/09654313.2017.1283391.

Wixe, S. & Andersson, M. (2016). Which Types of Relatedness Matter in Regional Growth? *Industry, Occupation and Education, Regional Studies*, DOI:10.1080/00343404.2015.1112369.

Xiang, W.N. (2013). Working with wicked problems in socio-ecological systems: Awareness, acceptance, and adaptation. *Landscape and Urban Planning* 110, 1–4.