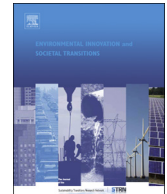




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Positioning of systemic intermediaries in sustainability transitions:
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ABSTRACT

How do systemic intermediaries obtain legitimate roles for themselves in innovation systems and transition processes? This is still an understudied question in the study of systemic intermediaries. We start from the observation that roles, or positions, are not given, but emerge in interactions as a negotiated set of rights and obligations. Inspired by positioning theory, which has its roots in symbolic interactionism, we analyse how positions are invoked in the actors' various actions and statements ('speech acts') and how they draw from the mutually constructed narratives ('storylines') that enable and constrain the range of possible positions. We analyse, over time, the positioning of three Dutch systemic intermediaries in agriculture, energy production, and healthcare. We conclude that systemic intermediaries move together with the promise of the field and, as a consequence, have to reposition themselves. In different phases, they both profit and suffer from the dilemma between initiating and sustaining innovative systemic changes.

1. Introduction

Innovation intermediaries, defined as "an organization or body that acts [as] an agent or broker in any aspect of the innovation process between two or more parties" (Howells, 2006, p.720), are increasingly seen as fulfilling crucial roles (Kivimaa, 2014a). Despite their importance, their role in innovation systems and networks is not given. Intermediaries operate, by definition, amidst a large range of other organisations and need to justify their contribution, in particular when new technologies and new networks emerge (Bessant and Rush, 1995; Howells, 2006). Typically, new technologies have ill-defined technical characteristics that become more specific over time; the same holds for the concomitant regulations, standards and roles of actors (Nelson and Winter, 1982; Rip, 1995). Likewise, the often tentative visions in sustainability transitions in which innovation intermediaries operate, like 'moving to renewable energy' or 'stimulating metropolitan agriculture' make that roles and positions of innovation intermediaries are often ill-defined and volatile as they operate in unknown territory (Berkhout, 2006; Bakker et al., 2012; Agogu e et al., 2013). The indeterminate and uncertain character of new technologies and system changes raises questions about which actors will be involved and how they will relate to one another (Markard and Truffer, 2008; Van Lente et al., 2011). While this holds for all actors, the questions are more pronounced for innovation intermediaries, as they need to balance accountabilities and conflicting interests to remain credible to the actors between which they mediate (Williams, 2002; Klerkx and Leeuwis, 2008a; Boon et al., 2011; Klerkx and

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Leeuwis, 2008b; Van der Meulen, 2003; Åm, 2013; Manders et al., 2020; Mignon and Ebers Broughel, 2020).

The analytical challenge, then, is to account for the negotiation processes that constitute positioning and the emergent coordination of activities. This paper examines and evaluates how innovation intermediaries organizations seek to establish their roles. To do so we empirically focus on so-called ‘systemic intermediaries’: organizations that intend to contribute to innovation systems and networks as opposed to one-on-one mediation, and who often operate in the context of sustainability transitions (Van Lente et al., 2003; Klerkx and Leeuwis, 2009; Kivimaa et al., 2019a; Kanda et al., 2020). The paper builds on several theoretical strands. The first intellectual background is related to the innovation systems and sustainability transitions literature, in which various actor roles have been studied and classified. The innovation systems literature emphasises the learning processes between firms, government agencies and research institutes, and underlines the importance – but not the dynamics – of innovation intermediaries (Lundvall, 1995; Edquist, 1997), which is now well explained in the sustainability transitions literature. This broadens the original perception of innovation intermediaries as bridging agents between two actors (Bessant and Rush, 1995; Debackere and Veugelers, 2005) to include interactions between a large array of system actors, as well as the explorative and tentative character of their work (Agogué et al., 2013; Williams et al., 2005; Pollock and Williams, 2016). The second theoretical starting point concerns positioning theory (Harré and Van Langenhove, 1999), a dynamic version of sociological role theories, which studies the construction of roles within the analytic triad of speech-acts, positions and storylines. We present three case studies in different domains in the Netherlands. We chose to study systemic intermediaries active in environmental transitions, i.e. agriculture and energy provision. As a comparison we included a non-environmental, health-related case which is still linked to sustainability transitions as ensuring healthy living and promoting well-being for all at all ages is part of the Sustainable Development Goals. We ask: 1) How do systemic intermediaries obtain legitimate roles in transitions?, and 2) How can the emergence of roles, strategies and coordination and the concomitant modes of governance be explained from a discursive perspective?

This article aims to contribute to the expanding literature on systemic intermediaries whose position has been studied from different perspectives and questions (Van Lente et al., 2003; Van der Meulen et al., 2005; Kivimaa et al., 2019a; Kanda et al., 2020; Manders et al., 2020), mainly looking at their contributions and roles in transition processes. However, what is less understood is the way intermediaries find and maintain their roles within the wide range of potential roles and positions in governance that they may take across different domains. Notable exceptions include Åm (2013); Kearnes (2013); Agogué et al. (2013); Parag and Janda (2014), and Manders et al. (2020), who study this for specific technology development and transition processes in nanotechnology, synthetic biology, energy systems and mobility systems. By exploring positioning theory, we also contribute to the strand of research focussing on discursive strategies and interactions in innovation systems and sustainability transitions (Leitch and Davenport, 2005; Pesch, 2015; Rosenbloom et al., 2016). Moreover, we aim to contribute to the challenge posed by Van der Meulen et al. (2005) to study intermediaries in a longitudinal way and how their activities may differ in different domains.

This research is also relevant from a policy perspective. As the research and innovation system is more proactively involving different groups in society, and more institutes, roles and boundaries have to be bridged, new intermediating activities are required (Wieczorek and Hekkert, 2012; Meyer and Kearnes, 2013; Schlierf and Meyer, 2013; Kivimaa et al., 2019a). This article provides lessons on how to deploy systemic intermediaries and how to anticipate their contribution to sustainability transitions.

The rest of the paper is structured as follows. In the next section, we delve more deeply into the literature on systemic intermediaries in innovation systems and sustainability transitions and explain positioning theory. Section 3 describes our methodological approach, and Section 4 presents the results of the three case studies in the domains of agriculture, energy, and healthcare. We conclude the paper with a comparison of the cases and with conceptual and practical lessons.

2. Theoretical framework

2.1. Systemic intermediaries and their positioning in innovation systems and sustainability transitions

The literature on innovation systems emphasises that innovation is a collective and cumulative process stemming from interactions between different kinds of actors (Carlsson and Stankiewicz, 1991; Markard and Truffer, 2008). The basic idea is that the innovative capabilities of firms, but also regions and nations depend, to a great extent, on manifold relations and conditions that have been shaped by local, historical factors. The approach places emphasis on the learning processes between firms, government agencies and research institutes (Lundvall, 1995) and the possibilities for profiting from them (Edquist, 1997). However, to study learning processes within overall changes is a tough empirical and explanatory challenge (Hyysalo, 2009; Miettinen, 2013).

Due to the occurrence of so-called system failures, interactions in innovation systems are often suboptimal (Jacobsson and Johnson, 2000; Klein Woolthuis et al., 2005; Wieczorek and Hekkert, 2012; Weber and Rohracher, 2012) and hinder the unfolding and support of sustainability transitions. In order to optimise interactions in innovation systems and reduce system failures, and thus enhance innovation systems performance and foster sustainability transitions, growing attention is being given to innovation intermediaries. Innovation intermediaries facilitate interactions and transactions in international, national, sectoral, regional and/or technological innovation systems. A wide range of studies have focused on developed countries (Boon et al., 2011; Hassink, 1996; Howells, 2006; Johnson, 2008; Klerkx and Leeuwis, 2009; Meyer and Kearnes, 2013; Pollard, 2006; Smits and Kuhlmann, 2004; Van Lente, 2003; Hargadon, 2002; Smink et al., 2015). Other authors have studied intermediaries in developing and emerging countries (Bell and Juma, 2007; Kilelu et al., 2011; Intarakummerd and Chaoroenporn, 2013; Klerkx et al., 2015; Shou and Intarakummerd, 2013; Theodorakopoulos et al., 2012, 2014; Watkins et al., 2015). Furthermore, there are intermediaries working on cross-border linkages (Ma et al., 2014; Manning and Roessler, 2013; Termeer et al., 2010). Traditionally, innovation intermediaries in innovation systems have been perceived as ‘knowledge brokers’ or ‘technology brokers’ at specific interfaces in the system, such as between

producers and users of knowledge, or between firms, patent agencies and funding agencies (Bessant and Rush, 1995; Benassi and Di Minin, 2009; Meyer, 2010; Polzin et al., 2016).

Particularly for the context of sustainability transitions, so-called *systemic intermediaries* mediate on a systemic or network level (Van Lente et al., 2011; Kivimaa, 2014a; Kivimaa et al., 2019a; Kanda et al., 2020), and reflect that knowledge and innovations are increasingly produced and sustained by networks of firms and private and public institutes, (Smits and Kuhlmann, 2004), as well as the recognition that in sustainability transitions actors from multiple realms need to be connected (e.g., connecting niche and regime actors, making connections between different geographical scales – Kivimaa et al., 2019a; Kanda et al., 2020; Manders et al., 2020). There is by now ample literature giving detailed overviews of their many functions (see Agogu e et al., 2013; Gassmann et al., 2011; Hakkarainen and Hyysalo, 2016; Howells, 2006; Katzy et al., 2013; Von Nell and Lichtenthaler, 2011; Kivimaa et al., 2019a). Klerkx and Leeuwis (2009) distinguish three main areas of work of systemic intermediaries: (i) articulation of visions, ambitions and demand for research, funding and other resources for innovation; (ii) convening networks of actors from across domains and levels in the innovation system; and (iii) managing and facilitating productive relationships between these different actors. Systemic intermediaries have to deal with several tensions and dilemmas, because they depend on several actors (e.g. for funding, for adequate connections) (Klerkx et al., 2009; Klerkx and Leeuwis, 2009), and because their freedom to manoeuvre is highly determined by the contexts in which they operate ( m, 2013). In the context of sustainability transitions, Manders et al. (2020) state in this sense that “intermediaries, especially in transition context, have to operate in highly complex environments. They have to deal with the long-term character of the change process, and cope with uncertainties, interdependencies, and diverging interests. Simultaneously, while acting in such dynamic and ambiguous circumstances, intermediaries form a part of these structures themselves; they are affected by the same dynamics they attempt to mediate.”

Because systemic intermediaries need to align with many different actors with distinct interests and expectations, and operate in a transition context characterized by uncertainty, they face several legitimacy dilemmas ( m, 2013; Klerkx et al., 2012; Kivimaa, 2014a). These dilemmas pertain to balancing between taking too much credit and not having their contribution recognised; between steering processes too much and acting as a champion with a strong normative interest and being too laissez-faire; between having sufficient expert knowledge to obtain a legitimate position in a network and acting too much as an expert and overruling contributions of network partners; between empowering non-powerful actors in the network and starting to act as a spokesperson for them (Williams, 2002; Klerkx et al., 2012). Systemic intermediaries in innovation system and sustainability transitions, by the very nature of their work, will have to cope with these legitimacy tensions. Systemic intermediaries may also actively take a position ( m, 2013; Goldberger, 2008; Agogu e et al., 2013; Kivimaa, 2014a), but this may imply that their existence may be limited to the lifecycle of the issues they represent in societal debate (Davenport and Leitch, 2005), as this active positioning affects their legitimacy; or it may imply that they are regarded as activists (Boon and Broekgaarden, 2010).

These legitimation concerns run parallel to the dilemma that follows from systemic intermediaries being mandated to initiate and sustain innovative and transformative systemic changes (Hargreaves et al., 2013; Kivimaa, 2014a; Klerkx and Leeuwis, 2009; Kivimaa and Kern, 2016), mobilising and complementing change agents in innovation and transition trajectories (often denoted as institutional entrepreneurs or champions – see Klerkx et al., 2010; Farla et al., 2012; Westley et al., 2013; Klerkx and Aarts, 2013; Westley et al., 2014; Smink et al., 2015; Kukk et al., 2016), and also interacting with other intermediaries such as niche intermediaries and regime intermediaries (Kivimaa et al., 2019b). This mandate to initiate and sustain innovative and transformative systemic changes presents the dilemma that these intermediaries partly depend on existing structures *and* are supposed to disturb existing structures and to overcome system lock-in (Laschewski et al., 2002; Smits and Kuhlmann, 2004), in line with ideas of ‘niche support’ and ‘regime destabilization’ as forwarded in ideas on policy mixes to support transitions (Kivimaa and Kern, 2016) and ideas on ‘dedicated innovation systems’ or ‘mission oriented innovation systems’ (Schlaile et al., 2017; Hekkert et al., 2020; Pigford et al., 2018). Regarding the dilemma of balancing dependence on existing structures and at the same time having the intention to disturb them, Hung and Whittington (2011) argue that innovation systems by their organisational and institutional set-up enable certain innovations but constrain others, and they state that this requires going against the ‘logic’ of the innovation system. Given all the legitimacy dilemmas noted in this section, it has been argued that systemic intermediaries need to have a certain fluidity over time and adapt to constantly changing circumstances in sustainability transitions, which also mean that at some point they may no longer have a useful role and thus legitimate position (Kivimaa et al., 2019b; Manders et al., 2020).

2.2. Positioning theory as a way to understand the positioning of systemic intermediaries in innovation systems and sustainability transitions through storylines and speech acts

Positioning theory is relatively new, although its roots, social constructionism and discourse analysis, have been in place for several decades (Harr e and Van Langenhove, 1999). In positioning theory, roles are not taken for granted; rather, they are the outcome of implicit negotiations in face-to-face interactions. Within conversations, understood in a broad sense, social reality is constructed and altered. The basic idea is that, within conversations, ‘positions’ are put forward that are embedded in a moral universe with rights and obligations – which may be accepted or not. The example that Harr e and Van Langenhove (1999) give is helpful. When Jones asks Smith “Could you please iron my shirt?”, Jones positions Smith as someone who can be asked such a thing, and the question positions the questioner as someone who has the moral right to do so. Smith might accept these positions (“Yes, I will do it in a moment”), or reject them (“Why should I do that? I am not your maid”). In this conversation, the moral universe is invoked and altered.

Positioning theory can be seen as a dynamic version of role theory in social psychology; it draws on the work of Erving Goffman and Harold Garfinkel and has been applied in the study of autobiography and cultural studies. Rather than being a well-articulated

and elaborated theory, positioning theory is a framework or explanatory scheme to study social phenomena. The basic idea is that social life can be understood from the positions that people have with respect to one another and with respect to available *storylines*. Social acts can only be meaningful against a background of moral rights, embedded in accepted storylines. For instance, if someone positions herself as an expert, and this positioning remains uncontested, her opinion about sustainable energy production is more likely to be considered as legitimate – the moral right is obtained to contribute to decision-making processes on energy production. “Positioning can be understood as the discursive construction of personal stories that make a person’s actions intelligible and relatively determinate as social acts and within which the members of the conversation have specific locations” (Harré and Van Langenhove, 1999, p.16).

What is important in the analysis is the insight that, in conversations, utterances do not provide information only, but serve multiple goals. In his classic study, Austin (1962) investigated so-called performative statements, which shape social reality. A promise, or an acknowledgement, for example, does not provide a factual description, but it creates a reality of mutual obligations and rights. Whereas in a descriptive statement something is claimed about reality ‘out there’, in a performative statement something in reality is altered. When one says “I do” in a wedding ceremony – at the right time and place – the factual social condition has changed. John Austin distinguishes between locutionary acts (making an utterance), illocutionary acts (intending a message) and perlocutionary acts (affecting the behaviour of others). Searle (1979) has coined the term *speech-act* to capture the performative force of language; he distinguished five classes: assertives, directives, commissives, expressives and declaratives.

Performative statements abound in ordinary conversations, not only at special occasions such as weddings. Technological developments are also shot through with them; expectations have been studied as performative statements that appear to be powerful as they may lead to bandwagon effects and self-fulfilling prophecies (Van Lente, 1993; Van Lente and Rip, 1998). Van Merkerk and Van Lente (2008) and Boon and Van Merkerk (2009) applied positioning theory to the emergent technologies of Lab-on-a-Chip and theranostics. Although not explicitly referring to positioning theory, recently performative work and discursive strategies have also been applied in studies on innovation intermediaries (Åm, 2013; Kearnes, 2013). Also in geopolitical studies speech acts have been used as vehicles to trace changing international relationships (Duffy and Frederking, 2009). These studies argue that, when positioning theory is extended beyond face-to-face interaction, the notion of speech act should be extended as well, to public statements and public acts. In doing so, they thus stretch the original concept of speech act of John Austin, and lose the focus on conversations between individuals. What they keep is the focus on the performative force of statements, which then also include acts that will be received as meaningful by others. The act of giving a subsidy, for instance, can be ‘heard’ or ‘read’ in multiple ways. In a technological area that nurtures storylines about promising future possibilities, the act of giving a subsidy for technology X will be ‘read’ as “we, the government, also think that technology X is promising”. It is, thus, a speech act as well.

So, performative statements, or speech acts, are powerful, but not by themselves. Two other elements are needed: a position to ensure the credibility of the utterance and a storyline to provide meaning and salience. The mutually determining triad of position, storyline, speech act is the basic methodological framework of positioning theory (see Fig. 1).

By combining the innovation systems and systemic intermediaries literature with positioning theory, we are able to trace how the interactions between storylines, positions and speech acts of systemic intermediaries support their transformative ambitions. In the following sections, we study the efforts of systemic intermediaries to obtain and maintain their position in three innovation systems that have come under pressure.

3. Methodology

In this paper, we study, over time, the positioning of systemic intermediaries in three fields: agricultural innovation (TransForum), new energy technologies (Novem), and R&D in healthcare systems (Dutch Steering Committee Orphan Drugs). We chose these fields because they contain established parties and traditions who seek to respond to societal pressures to change, as such addressing Sustainable Development Goals on clean energy, non-polluting food production, and good health and well-being. The systemic intermediaries that we chose to follow are representative or typical examples of organisations that have sought a central role in stimulating sustainable transitions, overcoming market and systemic failures inherent to the innovation systems involved. To allow

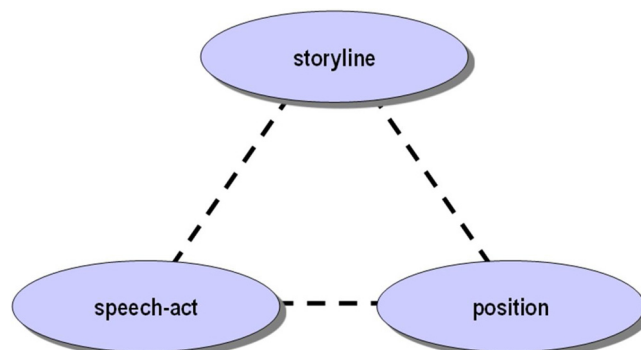


Fig. 1. the triad of positioning theory (source: authors’ elaboration based on Harré and Van Langenhove, 1999).

Table 1
Operationalisation of the six aspects of positioning.

Aspects of positioning	Indicators
(i) storylines to which actors refer	Reasons given on the initiation of systemic intermediary; narrative sketching sector-specific problems and the rationale for innovation and transition
(i) expectations and voiced objectives	Objectives provided in mission statements and related documents; repeated on other occasions
(i) positions within storylines	Speech acts provided by systemic intermediary in which a particular role is proclaimed or contested
(i) positions others attributed to them	Speech acts provided by other actors in which a particular role of the systemic intermediary is proclaimed or contested
(i) the resulting positions (including legitimacy and mandate)	Specific statements that confirm or reinforce the position of the systemic intermediary in the (changing) innovation system
(i) further strategies based on the position gained	Proposed courses of action, in particular relating to changing or maintaining the organisational and institutional set-up of innovation systems

This approach allows us to trace how key actors intentionally position themselves, *and* how they are eventually, and sometimes even incidentally, positioned by others. The next section presents the findings of the three cases; they are summarised and compared in Section 4.4.

as a systematic comparison of three fields, we adopt a meta-analysis (Stake, 2005) of data gathered in interviews, reports, newspaper articles and observations during several years (see Appendix). We used positioning theory in our meta-analysis in the following steps:

- 1 *Identification of the main storylines employed by the systemic intermediary*: in all three case studies, the major activities were identified during a quick scan, using introductory interviews and reading (annual) reports. This led to discerning interesting topics relating to new technologies and systemic innovation.
- 2 *Data collection inside the systemic intermediary organisations*: data were obtained from the intermediaries' archives, using sources such as minutes of (board and committee) meetings, letters, reports and evaluations. Other information sources included open-access data, such as public websites. In addition, we conducted interviews with several representatives of the intermediary organisation, ranging from the chairman and committee members to the secretariat staff.
- 3 *Data collection from actors in the immediate environment of the systemic intermediaries*: representatives of the organisations with which the systemic intermediaries interacted were interviewed through semi-structured open interviews. Through these interviews geared towards studying the innovation process in which the systemic intermediaries and other organisations were involved, relevant knowledge was derived on the position of the systemic intermediary.
- 4 *Data analysis*: tracing how interactions storylines, positions and speech-acts result in legitimated and mandated positions as well as in further strategies, see Table 1. The *storyline* (i) is the collective narrative that provides the normative and relational background and sets the stage for actors to function. Actors will relate to the storylines in different ways, pursuing different (organisational) objectives and *expectations* (ii) pertaining to the storyline. Actors will thus *position* (iii) themselves and others within the storyline and will try to align this with the positions that other actors attribute to them (iv). In this interplay, actors implicitly or explicitly negotiate their position through *speechacts*, in the broader sense as stipulated above. Ultimately, we followed how the interplay of storyline, positions and speech-acts will result in more or less established positions (v) with respect to novel technologies and systemic innovations. Consequently, systemic intermediaries and others will use this condition for further strategies (vi). Table 1 shows how these six aspects are operationalised; they form the codes used in the data analysis.
- 5 *Presenting the results*: the coded data were used to build a historical account of each case and to compare concepts across cases.
- 6 *Triangulation of results*: in the healthcare case and the energy case, representatives of the systemic intermediary, their interacting partners and other independent experts gave feedback that led to only slight qualifications. In the agriculture case, the results were triangulated by comparing them with reflexive and evaluative papers on the same organisation (Regeer, 2009; Fischer et al., 2012).

4. Results: positioning systemic intermediaries

4.1. Case 1: agricultural systemic intermediary TransForum

TransForum was set up in 2004 (and dissolved in 2010) to stimulate and champion sustainable development in the agri-food system and the corresponding knowledge infrastructure, and to some extent reconstruct the existing agricultural innovation system. TransForum funded projects but also increasingly provided support in building linkages between system actors, facilitated interaction, and provided spaces for reflection. The *storyline* to which it connected was that a locked-in, highly industrialised agricultural sector raised wicked ecological and social problems (Fischer et al., 2012; Veldkamp et al., 2009; Van Latesteijn and Andeweg, 2012a), which in its turn reduced the societal acceptance of the Dutch agricultural sector. The idea was that TransForum would be a systemic intermediary between policy, business, civil society and science, to connect and stimulate cooperation. It had a considerable budget for co-financing practical innovation projects and supportive science projects. Over the years, TransForum staff developed a vision of supporting 'metropolitan agriculture' by developing what it called 'new value propositions' (aspect ii).

In 2010, TransForum will have developed a more sustainable perspective for the Dutch agri-sector. This perspective is a suite of various ways of production that strengthen one another. Together, they constitute a strong base for the production of a sufficient

variety of products, under conditions and forms that vary sufficiently to adapt to changing societal norms. The common factor in all these manifestations is their metropolitan character; they are all agricultural activities that fit in the metropolitan setting, which is characterised by a high population density and a high pressure on space. This leads to very specific market opportunities, ranging from highly effective production to combinations of care and wellness that can only develop in such circumstances. (TransForum Website, 2005).

Although TransForum initially used this vision tentatively, the explicit use of ‘metropolitan agriculture’ became stronger as the programme evolved as well as TransForum’s direct involvement in projects.

Yet, at the start of the programme in 2004, TransForum took a distant position, as a funder of projects, and was not actively involved in the projects. Recipients of funding observed that TransForum spoke through its application forms, which did not lead to the desired interaction between knowledge users and producers (Horlings and van Mansfeld, 2007), nor to the envisioned champion’s role. The so-called ‘process monitors’ that were engaged by TransForum to provide critical reflection, noted that TransForum staff did not challenge project partners to fundamentally question their assumptions. It managed project proposals on ‘automatic pilot’ mode, instead of requiring reflexivity to constantly adapt the project to changing circumstances and readjust the contribution of different partners and foster learning (Regeer, 2009). However, when projects failed and the desired change was not happening, TransForum staff gradually sought a more active position in projects (self-positioning, aspect iii; further strategies, aspect vi) and thus more actively positioned itself as a ‘meta-facilitator’ supporting the different local facilitators in projects, as expressed in a later statement on its now defunct website:

The cooperation between parties that jointly define the unique Dutch position, the so-called KOMBI-parties (Knowledge institutions, Governmental authorities, Societal organisations and the Business community) is essential for the realisation of the perspective. That is why TransForum invests in facilitating and realising these forms of cooperation. TransForum also works on having its example followed, by delivering proof of principle (“see, it’s possible!”) and proof of practice (“and it’s viable, too”) in many of its projects.

In its adapted role, TransForum staff urged the project partners involved to accept the meta-facilitation of TransForum, to enhance the reflexivity of the innovation projects (Regeer, 2009). Project partners, however, increasingly complained about TransForum ‘bureaucratising’ the projects and draining the stamina from project champions (Klerkx and Aarts, 2013). Project leaders saw TransForum as ‘easy money’ and were not convinced of the added value of TransForum staff’s involvement. So, the position as meta-facilitator was contested. As meta-facilitator, TransForum aimed not to be involved with day-to-day management issues. Instead, it actively positioned itself as an access provider to broader and unknown networks, out of the scope of the more local facilitators and project champions. The latter, however, were often very active, rendering TransForum superfluous. Thus, TransForum staff constantly had to decide what it could do with regard to network formation and facilitation, and what it had to leave to the networks themselves.

An additional position that TransForum sought to establish was that of an arbitrator in conflicts within the innovation network, and between the network and its environment. However, TransForum staff’s position vis-à-vis the roles of local facilitators and champions was not made clear and did not stabilise, as the explicit positioning as arbitrator was not clear enough, and, again, conflicts arose about TransForum’s added value (Horlings and Van Mansfeld, 2007). A weak positioning may be dysfunctional but exposing a strong normative position may not help either. In some projects, the increasing prominence of TransForum’s mission to stimulate metropolitan agriculture did not affect its position as a relatively neutral facilitator, as project partners took it for granted and made their own mission fit with TransForum’s mission. However, in other cases it became so strong that the TransForum staff alienated itself from its project partners, and value conflicts arose, which resulted in the ending of innovation projects (see Klerkx and Aarts, 2013). In these cases, TransForum as an organization started to act as an innovation champion with strong interests of its own, and this reduced its legitimacy in the eyes of project participants to act as a trusted mediator and arbitrator (aspects iv and v).

Despite the drawbacks to champion the concept of metropolitan agriculture, TransForum left the concept of metropolitan agriculture as its legacy and also put a lot of effort into producing documents on the TransForum Model (e.g. Van Latesteijn and Andeweg, 2012b). Given the certainty of its ending in 2010, it did not need to bother about a continued legitimate position. Its main concern had been to provoke changes in the Dutch agricultural innovation system that instilled new thinking and new action on the part of innovation system actors, and the so-called TransForum Model has been picked up in other countries (e.g. New Zealand, see Botha et al., 2014; Turner et al., 2016).

4.2. Case 2: energy systemic intermediary Novem

One of the oldest systemic intermediaries in the Dutch energy innovation system in the 1990s was Novem, an organisation for energy and the environment initiated by the Ministry of Environment, until it merged with Senter in 2004, an agency of the Ministry of Economic Affairs. It was active in energy subsidy management and in coordinating research programmes on sustainable energy. A substantial number of government subsidies for technological development in the Netherlands were distributed through Novem. In 2000, Novem was seen as an important intermediary organisation in the Netherlands. It had over 400 permanent and temporary members of staff, the majority of whom worked in one of four theme areas: building & working, energy production & conversion, production techniques & processes, and mobility. Novem’s position amongst the other players in the Dutch energy innovation system was ambiguous and volatile.

Initially, Novem gave itself a central position in the energy innovation system and sought to be a sustainability champion. Yet,

Table 2

Novem in search of a position.

Source: interviews and observations

Possible positions discussed within Novem	
consulting function	standardisation and certification
integrating policy measures	protocols
general policy advice	certification
development of policy instruments	verification of standards
advising and assisting with permission	development function
analysis function	development of concepts
analysis of bottlenecks	development of tools
solving bottlenecks	development of strategies
market analysis	development of methods
analysis of potential of technologies	programme management
process management	development of programmes
supporting trajectories	support of trajectories
innovation function	project management
international knowledge transfer	organisation of demonstration projects
international position	feasibility studies
cooperation with foreign organisations	supporting experiments
stimulation of international cooperation	assessment of projects
knowledge function	policy measures
knowledge transfer	management of subsidies
organising conferences	preparation of policy measures
knowledge development	cooperation function
education	network building
monitoring function	development of platforms
coordination of monitoring	technology clusters
analysis of monitoring	stimulation function
	initiation
	supporting developers

what this entailed was not even clear within Novem. Some staff members were especially interested in providing Novem's specialised knowledge and experience in various dedicated fields, whereas others stressed that Novem should facilitate processes of innovation and change (aspect ii). Others, in their turn, saw the best possibilities in services around standardisation and certification. Many other positions were the result of an in-depth discussion within Novem; Table 2 gives a summary of this discussion.

When around 2000 the notion of sustainable transition became fashionable with its storyline of a long-term, broad, systemic, socio-technical change (aspect i), Novem saw possibilities to better clarify its position. After all, in the transition storyline, a key part of society is being transformed, and this societal change includes technological, social, economic and institutional reconstruction. Novem appointed itself as a central player in the transition to make an inventory of technological and societal options, and to address new questions about the contributions of different stakeholders, both incumbents and new entrants to the field. Who will benefit from energy subsidies? Who will monitor and assess demonstration projects? What will be the role of the ministries of economic affairs and of the environment? What new expertise will be needed and who will be the experts? These questions needed to be addressed in a transition storyline of a society that was trying to alter fundamentally its modes of production and consumption.

For example, in a session in 2001 between possible future stakeholders in the transition towards a more sustainable energy system, organised by the Ministry of Economic Affairs, the various positionings that followed from the transition storyline were discussed. Some firms, research organisations and intermediaries acted more or less in line with the exigencies of the transition ('platoons'), whereas others gave important examples and explored the possibilities ('forerunners'). Furthermore, there were actors who resisted any adaptation ('laggards'). One of the consequences of the metaphor was that the participants started to prove that they belonged to the forerunners. In terms of the triad of position theory: the speech-act of introducing a typology of actors, together with the transition storyline, provided the fertile soil for various positions in the novel cluster of renewable energy technologies. Here, Novem positioned itself as a 'transition manager' (aspect iii, self-positioning). It put effort into showing that it was capable of actions that fitted with the actions that followed from the transition storyline. As a Novem official argued in 2002:

In transition management, various functions have to be fulfilled and roles to be played. The fulfilling of these roles by one organisation will have advantages, in terms of coordination and efficiency. An intermediary organisation [like us] can do this better than government, because it has more contacts with market players and because it will provide more freedom in policymaking.

The central position that it envisioned with the related strategy of acting as a knowledge provider and process manager (aspect vi, strategies), however, was eventually not granted to Novem. Other actors (aspect iv, other positioning) did not perceive Novem as a valid process manager; some thought of Novem as a competitor of commercial advisors, others as a policymaker in disguise. For two years, it remained disputed, and eventually Novem was given the position of governmental 'agency' after the merger with Senter in 2004.

4.3. Case 3: healthcare systemic intermediary Dutch Steering Committee Orphan Drugs

The Dutch Steering Committee Orphan Drugs (WGM) was an intermediary organisation that aimed to stimulate the development of drugs for rare diseases, so-called orphan drugs. The committee was initiated by the Dutch Ministry of Health in 2001 and was eventually abolished in 2011; it consisted of representatives of a wide range of actors in the field of medicine and pharmaceuticals, such as industry, doctors and pharmacists. WGM's mission was: "to make an inventory, coordinate and stimulate the development of orphan drugs; advance knowledge and information provision on orphan drugs and rare diseases; and serve as information centre on these subjects". Pharmaceutical companies, scientists and other parties are not overly interested in developing orphan drugs, because of the low number of patients. The *storyline* to which WGM connected - aspect (i) in Table 1 - was that this market failure asked for public, systemic instruments. At the same time, the field of orphan drugs was seen as typical of many problems in the current healthcare system; solving problems for orphan drugs thus would signal the route towards a more sustainable healthcare system (Moors et al., 2014).

From the beginning, members of the steering committee WGM stressed solidarity and patients' needs: "Rare disease patients have the same right to quality of care" (interview). This objective or expectation about the future of rare disease healthcare (aspect ii) dictated the issues that were selected, such as ensuring access to, and sufficient development of, orphan drugs. However, WGM's objectives were heavily influenced by external stakeholders in two ways (aspect iv). First, a government report that formed the basis of WGM's initiation was authoritative. Second, on its initiation, WGM organised a series of invitational conferences and workshops during which stakeholders, together with WGM members, articulated ideas about the topics and roles WGM could address. The stakeholders strongly advised WGM to take an architect role and to focus on creating favourable conditions in the final stages of the innovation process. The issue of, for example, reimbursement resonated strongly with then-current topical and urgent debates in the field of orphan drugs, even permeating discussions in the media and the Dutch Parliament.

Almost inescapably, WGM became involved in discussions about reimbursement for expensive orphan drugs in hospitals. Orphan drugs are relatively expensive because pharmaceutical companies claim that small markets lead them to ask high prices to recoup their investments. The then-current system required that orphan drugs prescribed inside hospitals should be paid for from the hospitals' budgets and not by, for example, insurance companies. This led to looming inequalities between hospitals that allowed their prescription and hospitals that threatened to abstain from using these drugs. WGM actively propagated the problem and presented a solution in the form of a separate reimbursement rule for orphan drugs.

The WGM members actively articulated and *positioned* the organisation's independence and objective stance vis-à-vis the storyline presented (aspect iii). Its independence was inspired by the public character of the organisation and by the fact that its members formed a balanced and multidisciplinary representation of the healthcare system. It would be difficult for WGM to form a more activist opinion about a subject because each of its members would have had to agree on it. WGM struggled to become a full participant in the debate and frequently reflected on its position: "The invitation to take part in the consultation shows that we are regarded as valuable members of the field" and "He stated that we should get a more dominant role". Also, the reimbursement discussion was regarded as a "way to strengthen the role of WGM". Other stakeholders began to (re)create their ideas about, and position, WGM: there were parties who warned that "WGM may bite off more than it can chew [...] and should not strive to be the sole problem owner". The founder of WGM, the Ministry of Health, also questioned its neutrality during the reimbursement discussions because the ministry was opposed to the position WGM had taken as a critic of government policy. However, WGM increasingly became involved with other stakeholders, such as the representative bodies of hospitals and insurance companies, who valued WGM's empowerment and took its message seriously. They increasingly attributed an agenda-setting and coordinating position to WGM (aspect iv).

After four years, WGM was evaluated by the Ministry of Health: it was allowed to continue its work, but the emphasis shifted to R & D. Increasingly however, other parties took WGM as an authority in rare disease policy, a "spider in the web" (interview), in a position to take action. "At the start, the Steering Committee did a lot of sowing and rousing [awareness raising and stimulating], but now a lot of actors come to us. Expectations also increased" (interview). The new position became clear in WGM's engagement with the lack of research and development of orphan diseases in the Netherlands, specifically including *emerging developments*, such as gene and stem cell therapy (aspect v). WGM wanted to take a "proactive role", which translated into hiring an "orphan drug developer" who would actively visit companies, university groups and so forth, and ask whether they needed assistance with orphan drug development. However, "time and money are too short to develop a specific drug, so it should rather aim to influence the climate and the people" (interview); so, during this period the ambitions of WGM gradually became more modest. The Ministry of Health and other actors did not agree with a leading or coordinating role for WGM in R&D. Yet, on the issue of reimbursement policy, WGM took a more robust and explicit stance. Given that other stakeholders valued these activities and despite pressure from others, most notably its founder, it could maintain its central position in the discussions. Its strong views, however, lead to the criticism that WGM was becoming an activist. Especially in subsequent debates and stages of its organisational existence, other parties could hold that against it. Regarding R&D, during the first period of WGM's existence, the *strategy* was to become a research champion. Later, as a result of pressure from other actors, most notably its principal the health ministry, WGM's role changed to innovation catalyst in a central position in the network. This was not an individual strategic decision, but the outcome of self-positioning and positioning by others. With orphan drug R&D, WGM took a rather modest position, being unable to coordinate R&D efforts and focusing on facilitation (Table 1, aspect 6).

Table 3
Characteristics and elaboration of the six aspects of positioning for the three systemic intermediaries.

	Agricultural intermediary TransForum	Energy intermediary Novem	Dutch Steering Committee Orphan Drugs
Duration	2005–2010	2000–2004	2001–2011
Initiator	Ministry of Agriculture	Ministry of Environment	Ministry of Health
Organisational set-up	R&D and innovation fund, connected to a coordinating office of six people who acted as project facilitators. Also, there were five coordinators for the connected scientific programme	Subsidised organisation of advisors specialised in energy technologies	Committee consisting of diverse range of actors (medical specialists, researchers, industry, civil servants, etc.)
Main activities	Stimulate sustainable agriculture	Stimulate energy efficiency in industries	Stimulate orphan drug R&D
(i) the storyline to which the intermediaries connected	Dutch agriculture is locked into unsustainability	A national transition is needed in energy production and use	Industry, science and others are not interested in orphan drug R&D
(i) expectations and objectives voiced by the intermediaries	Dutch agriculture should embrace 'triple P' thinking and develop sustainable value propositions	At the start: providing know-how about energy solutions. Later: process management is needed	Patients with rare diseases have the same right to treatment; therefore, adoption of, and R&D for, orphan drugs should be stimulated
(i) positions within storylines	At the start: prompting and powering R&D. Later: supporting different kinds of activities needed to enhance innovation Developing its own concept of 'metropolitan agriculture'	At the start: many different positions (internal competition). Later: process manager of the national energy transition	At the start: be an architect of solutions for reimbursement issues. Later: prompting and powering R&D. Moving towards more independence; more leading actor; not becoming too much of an activist
(i) positions others attributed to the intermediaries	Funders, bureaucratic entity, facilitators	Knowledge providers, competitors of commercial advisors, policymakers in disguise	Agenda setter, connecting stakeholders, research catalyst (instead of research champion)
(i) emerging positions regarding novel technologies and systemic innovations	New value positions for sustainable agriculture, and novel integrated agricultural production and marketing concepts	A coherent cluster of novel renewable energy technologies	Emerging technologies, like gene and stem cell therapy, were monitored
(i) their strategies	Financial support for innovation; brokering networks; facilitating M&E in innovation networks. Initially: being a meta-facilitator overseeing the activities of other project-based facilitators and enhancing programme coherence. At the end: leaving a legacy through promoting concepts such as 'metropolitan agriculture' and the 'TransForum Model'	From knowledge provision to network building and process management. Seeking a central position in the energy transition discourse	No direct financial support; focus on network building and coordination through making an inventory and becoming a source for information on R&D; by this becoming central node in network

4.4. Summary and comparison

The three case studies provide numerous examples of positioning of systemic intermediaries in innovation systems and transitions, over time. The systemic intermediaries targeted their efforts and their proclaimed roles in terms of the functioning of the innovation system. TransForum tried to render agricultural production more sustainable; Novem hoped to bring about a transition in energy production and use; and the WGM sought to change the system using problems in the development of orphan drugs as a precursor for future challenges in pharmaceutical healthcare. These ambitions were rooted in circulating storylines of promising new options, and their speech-acts were firmly based on this. The cases also testified to the ambiguities and confusion about positions (see, for instance, Table 2). The tension between established and new agendas was prominent in all cases; positioning was framed in these tensions as well. Typically, when the positions of other, often more established parties in the innovation system, such as governments or incumbent firms, were undermined, the positions of the systemic intermediaries were in danger. The systemic intermediaries had to accommodate these tensions, and they did so with different degrees of success: whereas the WGM endured as an innovation catalyst and TransForum was generally seen as an important vehicle for system change, Novem was tamed and abolished in due course. The results of the three cases are summarised in Table 3. In the concluding section, we further reflect on these findings and implications.

5. Discussion and conclusion

Systemic intermediaries are part of innovation systems supporting sustainability transitions, and thus encompassing and addressing complex networks of linkages, and the main questions this paper aimed to address were: 1) How do systemic intermediaries obtain legitimate roles?, and 2) How can the emergence of roles, strategies and coordination and the concomitant modes of governance be explained? The perspective of positioning theory, with its triad of speech-act, position and storylines, appears to be an interesting perspective to complement the interest of the innovation systems literature in systemic intermediaries' roles. In this perspective, positions are seen as negotiated sets of rights and obligations, invoked in the various actions and statements of players

(*speech acts*) and draw from the mutually constructed *storylines* that structure the range of possible *positions*. Originally, positioning theory was developed to analyse face-to-face interactions; in this paper, it has been extended to aggregated actors such as organisations. We longitudinally studied and systematically compared three Dutch systemic intermediaries in innovation systems under pressure: two cases relating to environmental sustainability and one comparison case related to another sustainable development goals in health provision.

The analysis of mutually reinforcing speech acts, positions and storylines helps to explain the fate of intermediaries. Firstly, the case studies underlined that systemic intermediaries, as they have to operate between parties, have to be explicit about their position and their credibility to operate, especially in promoting sustainability transitions. In the introductory section, it was noted that the question of role and legitimacy is more pronounced for systemic intermediaries than for other actors. There is often a lot of ambiguity about what intermediaries do and about their complementarities to other actors in innovation networks and innovation systems (Klerkx and Leeuwis, 2008a, 2009; Åm, 2013); this requires the management of expectations through which the systemic intermediary works to explain what it intends to contribute (Beemer and Boer, 2003). Apparently, this is a confusing and challenging task.

Secondly, we found that, in being explicit about their positioning, systemic intermediaries both profit and suffer from the dilemma between initiating and sustaining innovative systemic changes. Sometimes, a strong articulation of ideas and taking an active transformative position help to overcome a deadlock in the interactions between system actors, as has also been found by other authors (Åm, 2013; Kearnes, 2013), and may even be actively exploited to pursue system deconstruction when intermediaries are deployed as a systemic innovation policy instrument (Kivimaa and Kern, 2016). At the same time, those claims may be perceived by other actors as being too forceful, leading to unwillingness to accept the putative positions. Yet, actors can never be sure that ignoring such positioning is effective, because there might be other actors who take the ideas seriously and are prepared to act upon them. An example in the comparison case of orphan drugs is that the health ministry was piqued whereas other organisations followed WGM's ideas. In contrast to strong articulation, systemic intermediaries can also have too few ideas about how to deal with the issues at hand. To continue the same example, WGM appeared to be rather incapable of dealing with orphan drug R&D. It took a few years before the organisation had re-positioned itself, and even then, it confined itself to facilitating interactions between parties and studying hurdles and opportunities. Following earlier observations by Kivimaa and Kern (2016) and Turner et al. (2016), this shows the difficulty of manoeuvring between a facilitative position focused on fostering networks in the existing innovation system, and a more transformative and provocative ambition.

Thirdly, consequently, positioning should be regarded in the context of prolonged interactions and collaborations. The same actors typically will meet each other in new events and new 'rounds' of positioning. The practical implication is that organisations should not only be sensitive to the current concerns of other actors but also take possible future positions into account. TransForum, for instance, had not just one project but a sequence of accumulated projects to take care of, while the constellation of actors gradually evolved as well. This implication resembles the findings of Teisman (2000) about the importance of sequential and interrelated 'rounds' of negotiations in large infrastructure processes, of Miettinen (2013) about the continuity in learning processes in collective change, of Kivimaa et al. (2019b) about the evolution of the 'ecology of intermediaries' during a transition process, and of Manders et al. (2020) about their 'fluidity'. Being too opportunistic or too focused on throttling other parties at one point in time might be counterproductive, as most actors will meet one another again in future events.

Fourthly, on a speculative note, we found that, although positions and roles are volatile in a basic sense, systemic intermediaries in sustainability transitions seem to follow a particular pattern of going through several stages. Initially, the organisation is cautiously looking for its position in a new field or new development that is driven by a promise or concern, in a generally accepted storyline. Other parties perceive it as a fresh 'young thing' or a 'new kid on the block', often seen as interesting because the organisation has money to spend or has a powerful principal or initiator. In a next stage, the intermediary organisation starts to unfold its plans and increasingly becomes involved in ongoing practices and questions. Its mistakes and boldness are accepted by others as part of its youthfulness; it is forgiven for doing 'rebellious' things. The organisation becomes increasingly outspoken about its role and starts to take proactive action. Other actors respond to this assertiveness with mixed reactions: they applaud its enterprising character but may find the organisation 'overstating' its mission, or becoming 'overinvolved' in some practices. Questions arise about whether it favours one group of actors (giving rise to the suspicion that the intermediary is 'glued' to, or 'captured' by, one part of the sector), or whether it is to remain in the middle as a neutral organisation. Indeed, the possibility of 'capture' by other actors is well-known, in particular in the context of public agencies, such as the Food and Drug Administration (Carpenter, 2004). Eventually, the intermediary organisation is confronted with 'competitors' or even 'enemies', amongst which probably also its principal or financier. This eventually plunges the organisation into a state of crisis and overt vulnerability. The organisation needs to reinvent itself and to recover its mandate in the network. Then a new wave may start: freshness – assertiveness – resistance. Explicit temporality is an alternative strategy, confirming Davenport and Leitch's (2005) observations that outspoken systemic intermediaries tend to be connected to a limited lifespan. Again, in light of innovation policies and systemic intermediaries' ambitions to contribute to sustainability transitions, the temporal character of systemic intermediaries relates to a broader question. Are these intermediaries by definition temporary and needed only when directionality and reflexivity failures (Weber and Rohracher, 2012) are prominent in innovation systems, and when mission oriented innovation systems need to be enacted and supported (following Hekkert et al., 2020)? Or do transformative and provocative roles of systemic intermediaries need to be embedded permanently in innovation systems (Kivimaa, 2014a; Kivimaa and Kern, 2016; Kanda et al., 2020)? In the latter holds true, sustaining systemic intermediation may be crucial to transition, and the reinvention of systemic intermediaries may be of wider significance.

It is evident that we cannot evaluate the robustness of this pattern based on two cases and one comparison case, but we can conclude that the pattern expresses a general ambiguity. Although actors in innovation systems will seek to improve their current performance – and welcome systemic intermediaries in a particular role – ideas may also exist about adapting the system (including

modes of governance and forms of intermediation) to the challenges of sustainability. Such ambitions and promises were clearly visible in our three cases: making agricultural production more sustainable, making a transition in energy production and consumption, making the health system more responsive to orphan diseases. Such ambitions circulate as storylines, as narrative structures, in which individual parties may position themselves and others. Systemic intermediaries emphatically do so and eventually hope to gain a robust position in envisioned future systems across various domains. We also saw that this dual effort of positioning - altering the governance of the system *and* gaining a favourable position - is a vulnerable strategy. Given this vulnerability, and the inherent balancing act that systemic intermediaries need to perform, there is no single recipe for systemic intermediation. However, systemic intermediaries in sustainability transitions may benefit from earlier experiences of tentative positioning and from learning amongst systemic intermediaries through a community of practice.

Appendix A. data collection

Cases	Period of study	# of interviews	Document analysis	(Participant) observations
Agriculture: TransForum	2007 to 2011	21 internal to TransForum and 57 external (staff, project leaders, civil servants, banks, consultants, policy makers)	Meeting minutes, newspaper articles, communications with ministries, business plans	Attending and observing at 10 meetings
Energy: Novem	2001 to 2004	Six internal interviews and three external (staff, academic researchers, professionals, policy makers)	Minutes of meetings, newspaper articles, communications about the energy transition.	Investigator of Novem; national meetings on energy transition 2001–2004.
Healthcare: Dutch Steering Committee Orphan Drugs	28-4-1997 to 19-10-2006	13 internal to the committee and 24 external (medical professionals, academic researchers, patient groups, regulators, reimbursement bodies, policy makers)	Minutes of (board and committee) meetings, letters, reports and evaluations, data from public websites (in total: 131 documents)	Researcher participated at the bureau of the Steering Committee for several weeks; was present at four meetings

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