



Theoretical Insights

The significance of Luhmann's theory on organisations for project governance

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ABSTRACT

The aim of this paper is to lay out a novel analytical perspective for project governance. Applying two elementary concepts of Luhmann's organisation theory, distinction and autopoiesis, as well as Luhmann's decision-making model offers a deeper comprehension of the project, which renders a novel classification of projects. These project classes are associated with a certain influence relation between organisation and project, which determines the modality of how organisations steer their projects. These are labelled as governance mode and management mode. Fleshing out the decision-making approach of Luhmann, a detailed operational framework for the steering modality governance mode is advanced, as in this case the organisation faces elevated steering challenges and limitations. It is reasoned when and why governance can be effective and positively impact on the project. These contributions offer an enhanced understanding of project governance and new perspectives for developing its practice.

1. Introduction

Turner (2020a) supports the view that project governance may contribute to project performance but points out that the mechanism that mediates this performance impact is unknown. In a related paper (2020b), looking for a deeper theoretical anchoring of project governance, he explores how it may affect decision-making in projects. Indeed, the seminal contributions to the field in the past two decades primarily deal with the composition, contents and structures of project governance. Project governance is often defined as a framework. Too and Weaver (2014) define it as the framework that comprises the management of project-management. Müller (2017a,b) emphasises the framework aspect but distinguishes between (board-level) governance of projects and project governance, the latter referring to the active involvement of governing entities in individual projects. Ahola et al. (2014) conclude that two streams are present in the literature on project governance, one stream considering the governance framework to be a stable one across projects, whilst the other one represents the view that governance frameworks should be flexible and adapted to the particular project. Regarding the critical contents of any governance framework, approaches and viewpoints also vary. Müller and Lecoivre (2014) differentiate between governance aimed at controlling outcomes versus governance aimed at controlling behaviour; furthermore, they discriminate between stakeholder-oriented versus shareholder-oriented

governance. Kujala et al. (2016) propose six dimensions of governance, which are further detailed into over twenty elements. Out of these six dimensions, Lappi and Aaltonen (2017) elevate the criticality of decision-making authority, and transparency of organisation structure. Young et al. (2020) operationalise project governance into six constructs. Yesudas and associates (2020) note there is need for integrating of governance approaches and propose a framework based on Systems Engineering. The contributions of Brunet (2019), who focusses on the actual governance practices, and that of Zwikael and Smyrk (2015), who focus on the active contribution of a project owner to project governance, both rather address the aspect of governance as action.

Although these contributions offer a stimulating variety of approaches, what they have in common is that their analytical conceptualisation of the project stops at the level of what organisations label as projects. It is true, that several studies deal with specific types of projects like large, complex projects, public sector projects or IT projects (Brady and Davies, 2014; Brunet, 2021; Ahola and Davies, 2012; Johnstone and Tate, 2017; Miller and Hobbs, 2005; Williams e.a., 2010; Brunet and Aubry, 2016). These studies do not result in a taxonomy based on a coherent theoretical frame and thus do not provide any further development of the concept of the project relevant for project governance. It can be concluded therefore, that apart from the need for looking into the mechanisms that produce the workings of project governance as pointed out by Turner, the very concept of the project

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may benefit from a similar deepening.

Applying Niklas Luhmann's organisation theory, reveals that the concept of the project should be and can be further conceptualised. The conventional approach treats projects, which are materially different with regards to the systemic relation that exists between the organisation and the project, in an equivalent manner. Luhmann's organisation theory however sheds a light on the influence relations that exist between the organisation and the project. The nature of the influence relation determines the scope, means and measure that are available for an organisation to steer projects.

Using the two elementary concepts of Luhmann's organisation theory, *distinction* and *autopoiesis*, I will outline that principally two types of projects exist, that differ essentially in the type of recourse the organisation has on them. Adding the decision-making model of Luhmann, introduces a dynamic element that describes how the genesis of this split into a project belonging to the one class or the other materialises. In section 2, I will discuss the above mentioned two basic concepts and put them into the context of Luhmann's wider organisation theory. In section 3, I make the argument for the two project classes and show how their origination runs over the process of decision-making. I discuss the decision-making model of Luhmann in some depth here.

Having established the two types of projects with their underlying dynamic, the next part of this paper deals with the nature of the influence relation between the organisation and the project, as it occurs for the two types of projects that I distinguish. Here, a distinction between governance mode and management mode is introduced, as the principal steering modality associated with each of the project types. This part of the paper is structured as follows. In section 4, I will give a short presentation of the concept of steering, as it is put forward by Luhmann. In section 5 management mode and governance mode are elaborated. Focussing on projects that can only be steered by the organisation in the governance mode, a model for project governance is presented that reasons on the premise that project governance, when it has effect, works principally on the decision-making practice of the project. The means of project governance are discussed in detail, and I make plausible which elements of governance have the highest prospect of achieving impact as was intended.

In the final part of this paper, section 6, the overall governance model is discussed and reviewed in the light of some major research contributions. The limitations of the model are addressed, and a research agenda is presented.

2. Distinction and autopoiesis

The signature status that Luhmann's systems theory (1964, 1984, 1986, 1998, 2000, 2004) achieved, is attributable to the incorporation of the concepts of distinction and autopoiesis. Both concepts address structure and process simultaneously. In both recursiveness plays a central role and they are recursive to another.

2.1. Distinction

The concept of the distinction is the beginning and the end of Luhmann's theory in the same manner as it is the beginning and the end in the thinking of George Spencer-Brown, who introduced the concept of form for the study of the distinction (Spencer-Brown, 2020). A form is the result of a distinction. A distinction is to cleave any space into two parts: the one part that is intended to be distinguished or marked, and the other part from which the distinguished part is distinguished or separated out. The latter part is an undifferentiated background to the marked part. Essential is that they always exist together. A distinction consists of three inseparable elements: an intention to make a distinction, the distinction or form that separates the marked from the unmarked and the time-related operation of making the distinction. Luhmann elevated the Spencer-Brown concept out of the isolated, abstract mathematical sphere and injected it into a sociological theory. The

distinction presupposes the existence of an observer and the operation of observation. Any observer is already a distinction itself, in other words observation is only possible due to pre-existing forms or distinctions. In his usage of observation as a core element of his theory, Luhmann connects to the stream of second-order cybernetics, i.e., the science of systems observing systems (Von Foerster, 1981). When observing systems are (also) observing themselves they become self-referential.

2.2. Autopoiesis

This concept was put forward by the biologists Maturana and Varela (1980). They proposed that organisms are self-producing and self-organising. As such they are „operationally closed“. Their relationship with the environment exists in selected channels, which are called structural couplings. Luhmann's theory applies this concept of autopoiesis to social systems and psychic systems, he argues that these systems are reproducing themselves through a continuous chain of interlocked basic operations. The basic operation of a psychic system is an instance of consciousness, that of social systems is communication. Social systems and psychic systems – the latter are persons from the viewpoint of a social system – have co-evolved and cannot exist without each other. Essential for any social system – they come in three types: interactions, societies, and organisations - is that communication is the autopoietic operation, and therefore can only occur within a system. Communication follows on an earlier communication and paves the way for a following communication. Autopoiesis is the ongoing operation that reproduces the identity of the system and the boundaries between the system and the environment and thus upholds the distinction system-environment.

Luhmann frames his central concept of complexity in terms of autopoiesis and observation. He argues that observing systems, like social and psychic systems, are in a continuous struggle to reduce complexity – needed externally as well as internally, because one-on-one relations with occurrences in the environment, or between elements within the system, cannot be maintained by a system - and such complexity reduction occurs through selection. Following entropy principles as applied in cybernetics, Luhmann poses that reducing external complexity enabled and enables systems to increase their internal operational complexity. This results in sustainability of a system within its dynamic environment, and is in fact an evolutionary process, or better said, the core of the co-evolution of the psychic and social systems.

2.3. Luhmann's theory of organisations

Distinction and autopoiesis, constitute the foundation of Luhmann's theory of organisations, of which I highlight the following aspects for the purpose of this paper. For a good overview of Luhmann's theory of organisations and its application the reader may refer to Seidl and Schoeneborn (2010).

Firstly, organisations are systems that uphold a boundary with their environment (the boundary is the distinction between the system and the environment, in the sense of the form). Organisations are autopoietic systems that recursively reproduce themselves from their own elements, which includes the continuous reproduction of the system-environment boundary. Communication is the transmitting batch in this process of autopoiesis.

Secondly, in organisations - being a particular form of social systems - communication must be meaningful for the organisation. Complexity is the central element in achieving meaning. The environment is always more complex than the system, the system cannot achieve requisite variety (Ashby). Hence, through selection, reduction of complexity is achieved in the mapping of the environment, which enables the creation of internal complexity on its turn. This complexity engineering is an ongoing process, for two reasons. The environment is changing, this brings up new combinations for selection and moreover, as any selection

introduces uncertainty by itself this generates the starting-point for the next selection. Connecting this to autopoiesis, constant self-production is necessary to compensate for constant self-decay and vanishment. The process of complexity-engineering is based on observations which oscillate back-and-forth from self-reference to hetero-reference. This implies the “re-entry” of the distinction system-environment: when assessing, observing itself the system necessarily adopts the distinction system-environment.

Thirdly, the autopoietic production that is enabled by communication are decisions. Decisions are part of the complexity engineering as organisations handle uncertainty through decisions. A decision is effectively an uncertainty transformer: an uncertainty is transformed into another uncertainty which is deemed more beneficial for the organisation at a particular moment in time. The time construct is crucial in the decision-making process, as decisions are made in the present, working from the past and selecting the future. It is an un-freezing-freezing activity. Decisions make the past temporarily less fixed in order to settle on the future (Luhmann, 2000). The autopoietic process of an organisation runs over the communication from decision to decision. Organisations operate with standardised and/or generalised constructs that (pre-)structure communications and decisions. I will discuss these constructs, decision-making premises and decision-making programs in Luhmann terminology, in detail in section 4.

3. Typology of projects

As outlined in the previous section, Luhmann’s sociological enquiries assume that any social system is a self-referential communicative system, and this equally applies to organised social systems (Luhmann, 2003). For an organisation, the communicated decision is the elementary autopoietic act. Luhmann states that the value of the concept of autopoiesis becomes apparent when studying the relation system – environment (2000, p.49).

Before starting the argumentation, I inform that in this paper a project is defined as a temporary entity that is to undertake a specified endeavour (Turner and Müller, 2017, p.75).

The question comes up whether projects themselves, as organised units, can be considered as autopoietic systems or not. Answering this question, in the exposé below I will show that there are principally two types of projects. **Organisation-bound projects**, in this case the decision-making process of the project functions within the autopoiesis of the organisation. **Autopoietic projects**, in this case the project is an operationally closed system with autopoietic decision-making and the organisation forms part of the environment of the project.

3.1. Decision-making and the organisation – project distinction

To answer the question above, we should analyse how the decision-making process of a project unfolds. The decision-making model of Luhmann offers a viable and accurate analytical tool here. Luhmann argues that organisations are reliant on constructs when decisions are made: *decision-premisses* and *decision-programs*, where strictly spoken a decision-program is a particular type of decision-premise. Premises are pre-conditions and suppositions, which are used because of their relevance for a particular problem, and not because of their validity (Luhmann, 2000, p. 222). Decision-premisses do not determine the outcome of decisions. They contribute to the feasibility of decision-making by decreasing the cost of decision-making through reducing the amount of information involved. Decision-programs are a particular type of decision-premisses, which are usually embodied in rules, procedures, or routines. The use of decision-programs is in the evaluation of the factual correctness of decisions (Luhmann, 2000, p. 257). The factual quality of programs presumes that can be verified at any time whether a program is being adhered to or not. The *eigencausality*, which enables operational closure of a system, through which it can build internal complexity, ultimately rests in the decision-programs.

Our question can be reformulated now as follows: do the organisation’s existing decision-making premisses and programs suffice for the project to operate, or does the project need to develop its own particular set of premisses and programs in order to operate?

Luhmann’s concept of distinction provides the answer to this question. I propose five dimensions in which projects can be distinct from their initiating organisations: output, technology, time structure, human resources, and knowledge. The dimensions that I postulated above are akin to the 4T concept as was originally put forward by Lundin and Söderholm (1995). I consider these five dimensions explicitly as distinctions because the distinction includes the element of reference. The self-reference of the autopoietic project as being distinct from the organisation, is supported by the referencing on the various dimensions. I will shortly address these five dimensions.

Output. Decision-making premisses and programs are functional because they are generalised and/or standardised. They are related to the contents in communication and decisions that recursively appear in the repetitive or routine operations of the organisation. The more the output of a project, in terms of scope or content, deviates from the content or scope of the organisation’s regular activities, the lower the opportunity that the constructs of the organisation can be “exported” into the project, or the other way around, the project processes can be integrated into the constructs of the organisation.

Technology. The premisses and programs are also associated with technologies that are routinely used by an organisation and therefore have characteristics that allow for an optimal pairing with these technologies. Hence, in case a project operates with technologies that are deviant or even alien to those of the organisation, this would again make these constructs less suitable to function in the decision-making process of the project.

Time structure. Luhmann argues that the generalised, standardised constructs exist in the first place for the organisation to battle the time factor. This logic runs over the complexity reduction that is ongoingly needed: for organisations to analyse over-and-over again the full complexity of situations or events would simply be impossible within given, feasible timeframes. This also implies that organisations, through their constructs, have created time structures for their communication and decision-making that essentially solved their time requisites. Here, we can think of the deadlines that are given for decisions or processing communication, or the cycle-times of decisions and communication-exchanges. Projects generally require fast cycles and short deadlines, and this would reduce the viability of the organisation’s constructs in this respect as well.

Human resources. Luhmann points out at length, that much of the constructs and routines that organisations make use of, as well as the knowledge they employ, relates to concrete persons within the organisation. He sees membership a primary determinant of the organisation. In case projects are staffed with personnel that is not a part of the organisation, the question of membership and hence the question “what organisation is this?” immediately comes up. Additionally, the constructs of an organisation cannot operate in a project as there are white spots of missing knowledge. Additionally, and equally important, there is the issue of transferability of *positions* from the organisation to the project (2000, p.291 ff). As will be explained below, the communication and decision-making constructs are closely connected to positions within organisation. The extent to which a project can operate using these positions as such or as proxies, may vary greatly. The lower the extent this is possible, the lower the likelihood that the constructs of an organisation are operable within a project.

Knowledge. The argument here runs along similar lines again. In case knowledge is involved that is not part of the know-how base of the organisation, this would immediately require project-specific decision-making and communication, for which the existing constructs in the organisation would not be effective, as they could not provide the selection operation that is the essence of communication and decision-making in organisations.

3.2. Organisation-bound and autopoietic projects

Projects, when they are conceived by the organisation, will form a part of some organisational unit, be it a PMO, department or ad hoc structure. Therefore, projects are organisation-bound projects at this stage. The team working on the project in the very early phases can report in standard departmental or project steering committee meetings on which usually a group of projects is reviewed. The decision-premises of the organisation are suitable to deal with the decision challenges of the project. In case of limited distinction on the five dimensions between the project and the organisation, the project will function as an organisation-bound project until completion. The decision-making premisses and programs will suffice for the project to make the decisions that need to be made.

In the case of a project with significant distinctions on the five dimensions, very soon autopoietic tendencies will emerge which will encapsulate the project and increasingly build up the boundaries between the project and the organisation.

The higher the extent to which a project is distinct from the organisation on the five dimensions, the more it will have to rely on alternative structures for communication and decision-making particular to the project. In other words, it will not be able to use the autopoietic processes of the organisation and will necessarily develop its own autopoiesis. As a result, a system-environment relation will develop between the project and the organisation with the associated boundaries. Or stated from the observing perspective of the project: the organisation will be another system in its environment.

This process of a project becoming an autopoietic organisation should be seen within the context that the self-reference of organised systems and therefore also the building of self-reference is done by reference to decision communication, and the decision communication constitutes a self-justification because it distinguishes between what is inside and what is outside the system (Cooren and Seidl, 2020). For further clarification, two remarks need to be made here.

Firstly, there is no half-pregnancy in autopoiesis, a project is either organisation-bound or autopoietic. We can use the metaphor of a horizon of autopoietic gravity to explain this. The decision-making process, fuelled by the distinctions of the five dimensions, acts as the force that can propel a project beyond the autopoietic horizon of the organisation. The distinctions on the five dimensions set a process in motion that generates questioning of existing decision-premisses and programs, the construction of and finally settling on alternative premisses and programs. Whilst there is a great deal of contingency - in other words, which are the relevant distinctions and how significant should they be depends on the situation - we should expect to find a statistical relation between overall level of distinction and the probability of projects functioning as an autopoietic system.

Secondly, any project, due to its nature of being a project, will to a degree put the existing decision-premisses and programs under pressure. For example, because outside contracted parties become involved, or the execution involves a field of particular expertise that is alien to the organisation, or the deadlines for delivery are exceptionally shortened to compensate for earlier delays. To continue the metaphor, an organisation-bound project can at times approach the gravity horizon. The organisation may not want to allow the project to pass the horizon, by simply accepting exceptions, modifying the premisses and programs or stretching the flexibility that these constructs anyway have, or by intervening into the project.

Now that the role of the decision-making premisses and programs is explained, I will deal with these constructs in more depth. This creates the necessary context needed for the discussion of the means of governance later in this paper.

3.3. Decision-premises

Decision-premisses are only useful if they can be structurally applied

to decisions of some sort. Thus, there is necessarily a swap between complexity and reach: the reduction in complexity enables that the premise can serve for a multitude of other, future decisions (Luhmann, 2000, p. 223).

Decision-premises can be divided into two groups: self-referential decision-premises and hetero-referential decision-premises, according to whether the organisation as an observer attributes the root of the decision-premise to itself or to its environment. There are two kinds of self-referential decision-making premisses: premisses that are themselves based on decisions, Luhmann calls these decisions planning (2000, p. 230), and decision-premises that are not based on decisions, Luhmann calls this organisational culture (2000, p. 241). Planning must accomplish the coordination of decision-premises. Luhmann argues that organisations create positions and communication channels with the objective of facilitating this planning (2000, p. 231). Although decision-premises are continuously actualising, since they are part of a network of premisses and associated with positions, there are limits to the extent and speed they can be changed. The organisational understanding and acknowledgement of intertwined premisses, that whilst working with certain premisses regarding a certain decision, there are other premisses dealing with the other decisions accounts in fact for of the value of decision-premises lies with (2000, p. 239). It can therefore be understood, that already for this reason only organisations may have to install projects, i.e., to set up a temporary unit rather than interfering in an existing setup.

Organisation culture, representing the total of non-decided decision-premises, develops spontaneously. It is mostly fed by the informal organisation and operates by its implicit presence. With the notion of organisation culture being the realm of decision-premises not based on decisions, the resistance organisations show against planned change can be seen in the light of planned change only affecting the decision-based premisses, whilst not implying many others (Luhmann, 2000, p. 241–249). The impact of organisation culture on a project is quite unpredictable.

The need for decision-premises stems from the re-entry mode of autopoietic systems. The operationally closed autopoietic social systems need the re-entry of the form system-environment in order to uphold their relations with the environment and their own autopoiesis. This re-entry causes a bipolarity, an undetermined oscillation between self-reference and hetero-reference. The decision-premise stabilises this oscillation, and the uncertainty in the plane system-environment can be orthogonalized into the plane time, with its two, not-actual horizons of past and future. The actual orthogonalization is the decision, by synchronising past and future and selecting a future course, which is embedded in the uncertain future. With decision-premises the decision-making can be checked on two levels: the level of what is actually happening, as well as the level of the decision-premise leading to (un) intended results (Luhmann, 2000, p. 224).

Through the operation of decision-premises so-called *double closure* of the system is achieved: closure on the level of decisions and closure on the level of decisions on decisions. This leads to certain reflexivity of the system and literally forces autonomy. Luhmann explains that a system can only differentiate from its environment when it can decide on the coordination of decisions, i.e., can regulate its regulation. In absence of this, the system would be dependent on an external signal to prompt it to do something differently (Luhmann, 2000, p. 229). This holds logically for the genesis of autopoietic projects as well. Their increasing autonomy runs over the coordination of coordination, i.e., the extent to which the project itself decides on its decision-premises.

Next to self-referential premisses, hetero-referential decision-premises exist. Luhmann designates these with the term *cognitive routines*. Cognitive routines are standardised, readily accessible pieces of information regarding the environment, they represent the essential notions on how the world around the system works. Cognitive routines develop along with the practice of decision-making in the ongoing oscillation between self- and hetero-reference. The system does not treat cognitive

routines as an organisational artefact but bestows them with “reality credit”. Self-referential premises are embedded in cognitive routines and could not even exist without them (p. 250–252). The cognitive routines of an organisation are in a symbiotic relation with decision-premises: premises cannot develop without a base of cognitive routines and cognitive routines will disappear if not applied in decision-making. With increasing distinction between the project and the organisation only the more general cognitive routines (common sense) will retain relevancy for the project. Without a sufficient basis of cognitive routines, a project will not be able to develop proper decision-premises, it will therefore have to create or takeover some specific, sensible cognitive routines on its own behalf. An importance secondary consequence is that an autopoietic project will also have to develop cognitive routines that relate to and describe the organisation, as the organisation will not have cognitive routines on itself available (cognitive routines are by definition hetero-referential). This introduces the considerable degree of contingency in the relation that develops between the project and the organisation.

3.4. Decision-programs

Luhmann distinguishes between two kinds of decision-programs: input-oriented programs – the *conditional programs* – and the output-oriented programs, the *purpose programs*. Conditional programs occur in the form of: (only) if – then. Luhmann points out, that this program is rooted in the past, as it requires something to have occurred and been verified in order to be triggered. This makes the conditional programs suitable for a high level of specification. Although a high level of precision is possible, usually this is not how conditional programs are devised. They leave a certain indeterminacy on the if-side, there is room for interpretation, as well as on the then-side, the decision is not defined in all aspects. Adaptability of these programs is also enhanced by complementing them with rule-exception schemes. These schemes of course ask for a separate evaluation before the decision can be made. The required decision-making capacity exponentially increases when more indeterminacy and exceptions are allowed. Purpose-programs occur in the form: goal – means. These programs are future-oriented and hence surrounded with uncertainty. In their standard operation, they are usually connected to conditional programs. The alternatives that can come into consideration have to be contained, because they operate on the default principle that everything goes, except what is specifically excluded. Additionally, some causality must be established between means and goals, for a workable purpose program to be created. In the purpose programs the perspective of risks appears, and within the framework of risk management the trade-offs between residual risks and costs must be made. Luhmann points out, that both types of programs contribute to the structuring of what he calls the memory of the organisations. This memory retains those aspects of decisions that can be used as a decision-premise and forgets everything else. The function of the memory is therefore not to store as much data as possible, but the reduction of complexity by means of continuous forgetting (2000, p. 261–275).

Since they are rooted in the past and their flexibility is limited, conditional programs of an organisation are the first that lose their relevance for projects with increasing distinction of a project from the organisation. Some of the organisation’s purpose programs may be suitable or relevant for the project. Considering, however, that they are usually connected with conditional programs, which are less applicable to the givens of the project, this could lead to decision-making ambiguity in case they are transferred, or simply prevent the transfer of the program. Moreover, although purpose programs are quite flexible, they are tied to certain causalities to be legitimate as a program, and it is precisely these causalities that may appear as problematic when observed from the perspective of an autopoietic project, for which these causalities are now hetero-referential and will oscillate with its self-reference.

On their behalf, projects do not easily add to the memory of the

organisation. The learning capacity in projects, in terms of delivering programs for future use, in other situations, is quite limited (2000, p. 267).

3.5. Dynamic aspects

Relevant for projects is Luhmann’s assertion that organisations need adequate decision-making capacity, which is delivered through the programs (2000, p. 277). Whereas the required decision-making is high in projects, the initial availability of decision-programs may be low, particularly for projects with significant distinction on the five dimensions. This leads to a situation of overload, which triggers the complexity reduction process. Faced with decision-making overload these projects will likely erase what has been taken over from the organisation and effectively perform a reset and speed up their course towards autonomy.

Luhmann addresses the particularities of projects, especially with regards to their heightened need for ongoing, renewed reflection. He attributes this to two causes. Firstly, projects are more in a flux situation in terms of where they are, compared to where they planned to be. Secondly, pointing out that projects cannot rely on the reflexivity that is built in the organisation, Luhmann states that “Reflection loops must be installed – partly to correct the normal functioning of the system memory, partly to run the project as a non-trivial, self-reflective machine and to ensure that information is constantly renewed.” (2000, p. 274).

4. Luhmann and governance

First of all, the term governance is absent in the works of Luhmann. In this context, Luhmann applies the concept of steering (Steuerung) when one system actively tries to direct another system. When it comes to governance, Luhmann has a specific view, which is generally known as his “steering pessimism”. The fundamental limitation to steering lies in the autopoiesis of social systems. Systems cannot determine each other, can only “massively irritate each other through structural couplings” (Luhmann, 2000, p.401). Luhmann differentiates between *trigger-causality* and *intervention-causality* in this regard (2000, p.401). It is conceivable that an external impulse triggers a specific internal response of the system and would consistently do so, but what happens after that depends on the actual state of the system itself and its autopoietic process in those conditions. The environment has no recourse on that. So even with a trigger-causality, the lack of throughput causality will still leave the final outcome unpredictable. Luhmann makes an important provision, by pointing out that organisations can exchange steering-oriented communication between each other. Nevertheless, the autopoietic limitation still holds (2000, p.402). According to Luhmann, organisations may actively pursue close, or even “symbiotic” relationships with other organisations to be able to cope with a turbulent environment. He stresses however that “although the system-system distinction may enhance the system-environment distinction, it cannot replace it” (2000, p.410).

So far it can be concluded that a world of autopoietic organisations offers little room for governance that produces results matching the intentions of the governance intervention. Outside their boundaries, organisations are confined to exchanging steering-oriented communication and pursuing close relationships in turbulent environments. In the next section, I will argue that it is therefore necessary to differentiate between the steering of organisation-bound and autopoietic projects. I will also address the question whether effective steering of autopoietic projects is possible, and if yes, where are these possibilities located?

5. Governance of projects

A project can be viewed as a protective measure of an organisation against undesirable complexity increase: the complexity that arises is

solved within a dedicated unit, the project. Luhmann views such differentiation as the introduction of relational selectivity and coins the concepts of simple complexity and complex complexity to illustrate this. Simple complexity refers to the situation where most elements of a system interact with each other, complex complexity marks the case when more selective and contingent patterns become necessary (2000, p. 173). The relation between a project and the organisation is therefore also based on selectivity and contingency which is captured in the rules and process for the steering of projects.

5.1. Two modes of relation

As stated earlier, I support the approach of Turner (2020a, 2020b) that links project governance to decision-making in projects. The framework that organisations use to steer their projects can most accurately be seen as performing the task of “managing project-management” (Too and Weaver, 2014).

Now, the setting in which this task of *managing project-management* is performed, is qualitatively different for an organisation-bound project and an autopoietic project. This qualitative difference of setting critically influences the impact that the *managing of project-management* may have on the decision-making processes, and what are potentially effective means for *managing project-management* for each of the project types.

In the case of an organisation-bound project, there is no autopoietic segregation between the organisation and the project. An organisation-bound project is a differentiated unit that is confined by the autopoiesis of the organisation. Therefore, from the position of the organisation both trigger-causality and intervention-causality are available. The organisation has a higher degree of recourse on the decision-making process as it occurs in the projects.

In the case of an autopoietic project, the organisation loses a great deal of its recourse on the decision-making process of the project. The decision-making process of the project is operationally closed, and from position of the organisation there may be trigger-causality but no intervention-causality. Apart from this limitation, there is another one the organisation is faced with in the case of autopoietic projects. I explained earlier that autopoiesis of an organisation, in fact the recurring making of decisions, is upheld by a constant oscillation between self-reference and hetero-reference. Exercising the authority that the organisation is endowed with vis-à-vis the project, may cause that hetero-referencing crowds out self-referencing, and thus distort the autopoiesis of the project which will negatively affect its functioning. Summarising, when steering an autopoietic project the organisation is confronted with (even) more challenges compared to an organisation-bound project.

I therefore differentiate between two modes of *management of project-management*.

- *Management mode* in the case of organisation-bound projects
- *Governance mode* in the case of autopoietic projects

The term *management mode* illustrates that *management of project-management* in this case refers to one entity acting on another entity in the same (autopoietic) system. From a social systems perspective, this can be considered as management activity.

The term *governance mode* illustrates that *managing project-management* in this case refers to one social system steering another social system.

In distinguishing between these two modes, we restore the qualification which is at the heart of the agency theory of governance, which locates the governing entity *outside* the governed entity. This starting-point of agency theory was abandoned in the concept of project governance as it emerged in the past two decades, which focussed on the shell-activities of the organisation around its projects. The proposition that I make here, is that these shell-activities are either management-type or governance-type depending on whether they are directed at an

organisation-bound project or an autopoietic project.

The literature on project governance has documented the available means and measures quite extensively. In the next section I will focus on the means that are available for the steering of autopoietic projects. This type of project presents the greater challenge and requires more diligence from the organisation. The particularities of this have not been addressed in the literature on project governance so far. As the relation between the organisation and the autopoietic project is a governance relation in the classical sense of the agent theory, I will simply use the term (project) governance for what is in full the governance mode of the management of project-management.

5.2. Impacting on autopoietic projects through governance

I will structure the discussion on governance for autopoietic project by applying two classifications. The first one relates to what governance should achieve as for its impact on the decision-making in the project. I will call this the *area of concern*. The second classification refers to how the governance is mediated. I will call this *platform*.

Area of Concern. The impact of governance on project performance concerns on the one hand the quality of decision-making in general, i.e., facilitating that decision-making optimally contributes to preventing avoidable costs, avoidable wastes, and quality loss (Turner, 2020a); on the other hand, it concerns preventing drift of the project away from the organisational objectives connected to the project, as a result of sequence of decisions.

Platform. There are two principal platforms through which governance is mediated. Firstly, providing context for decision-making; this context can either exist as uniformly applying to projects, e.g., a procedure or a manual, or can be specific to a project and even develop along with the project. Secondly, acting on the decision-making “real-time”, e.g., the communication and discussion around decisions as they take place; it should be noted, that if a governance entity participates or contributes to an actual decision this remains a decision within the recursive “operationally closed” process inside the project of which the governing entity is not a part. In Luhmann’s wording again, trigger-causality does not guarantee intervention-causality in the case of autopoietic projects.

Using these classifications, we can construct a governance matrix as shown below (Fig. 1). The numbers in the quadrants refer to the next paragraphs in which the particular cell will be discussed.

I will now discuss the possibilities and limits for project governance that exist within the Luhmannian framework. To do that, I will rely on the work of several scholars who have made efforts to somehow compensate for the built-in steering pessimism in Luhmann theoretical framework.

5.2.1. Area of concern: quality of decision-making/platform: contextual

Willke (2005, 2014) coined the paradigm of contextual steering (Kontextsteuerung), which builds on Luhmann’s notion that it makes no sense trying to directly influence autopoietic systems. Consequently, steering should be directed to influence contexts, and organisations should work from decentralised and non-hierarchical models. In case the environment, or a relevant system in the environment observes a negative difference at a particular system, the observing system in this environment should not exert direct intervention in the observed system, as this would endanger its autonomy. However, it is possible that the observing system in the environment of the observed system sets

		Platform	
		Contextual	Decision interaction
Area of Concern	Quality of decision-making	5.2.1	5.2.3
	Preventing drift	5.2.2	5.2.4

Fig. 1. A matrix for means of governance.

context conditions in such a way that the observed system selects its options from the point of view of the greatest possible environmental tolerance and compatibility (2014, p. 101). The context that an organisation can provide to a project concerns resources, norms, rules and regulations, routines, know-how, technology, and infrastructure. Naturally, all of these are vital to the success of any project to some extent. However, the more distinct the project is from the organisation, the less the organisation will have to offer. For autopoietic projects, there is reason enough for “steering pessimism”. On the other hand, if one would give up contextual steering, project governance would stand almost empty handed. How can an organisation realise a contextual steering of which at least some desired impact can be expected? Let us first look to resources. Here, much more than the plan-actual reviews that are part of normal project practice cannot be done. The discussions around budget and staff increases are usually one-sided. Governance should be a level playing field where both the governing party and the governed party are exposed to having to argue on their own behalf (Baecker, 2019). In other words, as much as a project must convincingly argue for additional budget and time, the organisation must convincingly argue why the planned allocations are realistic.

An organisation can of course make and should make rules, regulations, and processes especially for the conduct of projects. These will only come alive within the project and given the fact that the project will have its autopoietic production, it is uncertain how these regulations and rules will be used within the project. But this is just one side of the issue. On top of this, any learning or any practice that will develop around these rules and regulations will stay within the project and will most likely disappear when the project is completed. This is something that Luhmann also points out. Luhmann talks about the high “rate of forgetting” that goes with projects. He brings up the question whether organisations have a “narrating, story-telling culture” (2000, p. 273). Indeed, it makes much more sense to direct this part of project governance to the organisation rather than the project itself. The crucial element is that experiences are shared, that staff from different projects takes part in meetings which are not about that each project concisely presents itself, but about sharing experiences. The building of organisational memory is closely tied to persons. It also underlines the necessity of moving staff across projects and developing career trajectories for project-related staff which is increasingly regular practice in professional organisations.

Mostly, however, should contextual steering take the form of stimulating the reflexivity of the project, particular in the early phases of the project when the self- and hetero-reference are needed to build up the adequate decision-making premises. This will take the form of intense discussion between representatives of the organisation – be it project owner, steering committee, or expert staff – and the project team. Such discussions may be an effective form of steering if they work from the proposition that the project is autonomous, and the goal is to make the project team reflect.

5.2.2. Area of concern: preventing drift/platform: contextual

One can provide autopoietic projects with water but not force them to drink it. Still, to hold up their basic oscillation the projects will have a continuous thirst for information from their environment. Buchinger (2007) elevates the point that autopoietic systems display openness towards their environment as a means for survival, these systems constantly scour their environment for impulses. The openness towards the environment is necessarily connected to the self-reference of a social system, which is the condition for maintaining its identity. The organisation is just one system in the environment of the project though, and secondary to the environmental information directly connected to the actual tasks that the project has to perform. The establishment of structural couplings between the organisation and project is the vital part here, as this may allow incoming information to resonate within the project. A structural coupling between the organisation and a project refers to something which is deemed reliable, predictable, and beneficial

for both organisation and project (Luhmann, 1992, p. 1432). It is available anytime when the organisation and/or the project needs it. Structural couplings produce consistent connection-points for both the organisation and the project. As such, they support the autopoiesis of both the organisation and the project. Evidently, that this severely limits what can act as a structural coupling between the organisation and the project. Moreover, it underlines that any one-sided steering effort by the organisation, whether that is done with the intention of benefit for the project or not, will have no chance to serve as a structural coupling and hence will not evolve as a base on which receptivity of the project can foster. In terms of project governance, structural couplings can only take the form of, and must be limited to very basic, standardised occurrences. These can be in the form of reports, meetings, or procedures. The ultimate benefit of these means is to be sought in the fact that they will keep the relationship between the organisation and the project open. There should be a perceived benefit for both sides. For example, a steering committee meeting should not have as the main purpose to bring the members up to speed, but also to provide recognition, support, and consent for the project. Maintaining alignment is a result of the outcome of numerous decisions in the project’s autopoietic process, these cannot be individually tracked. Structural couplings produce consistent connection-points for both the organisation and the project and are the best means to secure alignment.

5.2.3. Area of concern: quality of decision-making/platform: decision interaction

The notion of Luhmann that governance should be directed to differences and not to the system itself (Luhmann, 1997), can find useful application in the micro-environment of projects too. Firstly, if governance is focused on differences, this can structure the governance in terms of content. An agreement can be made which differences will be subject of governance. Outside observers, like steering committees, tend to wanting to know “what is going on in the project” with the hope that once they know this, they can get a grip on the project. Now this is exactly what is not possible, for the reasons that are extensively set out in this paper. Obvious differences one can think of are differences on variables of the project triangle. Although indispensable, these would not bring any steering effort very far, very principally because the realism of planning most often develops only in the course of a project. Differences should ideally extend to decision-premises, this would enable a more targeted steering. Project governance may be more effective if the selected differences are overlapping with structural couplings between the project and the organisation, in this sense the organisation should have something “to offer”. For example, if one of the observed differences concerns the updating of the risk register, governance can be effective if the organisation can make temporary resources available to reduce a difference. Generally spoken, taking differences as an entry point for governance will keep governance actors at bay and therefore hold back any management-mode intervention into a project, which will most likely be harmful for the project.

Trust belongs here as well. In Luhmann’s analysis of organisations, trust is a vital factor in the cooperation between organisations, it enables organisations to uphold their boundaries, and hence their internal processes, whilst trust serve as base for checking each other references and hence makes joint complexity reduction possible (2000, p. 408 ff.). The function of trust is to keep options for decisions open, without trust the choice of decidable possibilities implodes (1988). This is particularly important when no decision-premises are available or the organisation and the project have deviating decision-premises. In this case trust creates a reference that enables a decision that takes a wider range of, probably also more risky alternatives into consideration. In instances of critical decisions that may have a major influence on the course of the project.

5.2.4. Area of concern: preventing drift/platform: decision interaction

Following the governance model of Baecker (2019), project

governance should follow a somewhat paradoxical approach by on the one hand putting forward truly clear instructions and underlining the legitimacy of these instructions, but on the other hand making the governance effort fully open and transparent to criticism. This touches on the notion of governmentality. Du Gay poses that governmentality “create(s) a distance between the decisions of formal political institutions and other social actors, conceive(s) of these actors as subjects of responsibility, autonomy, and choice, and seek(s) to act upon them through shaping and utilising their freedom.” (du Gay, 2000). Müller (2017c) defines governmentality in the context of projects as the mentalities, rationalities, and ways of interaction, chosen by the governance roles. The reference to the possibility of criticism and how this can be effectuated, should therefore be part of any project governance framework.

Most of the decision-making that determines the occurrences of avoidable costs is highly intrinsic to the project, as this is typically a sum of many small decisions. In case of tactical decisions - one can think of decisions that involve a wider stakeholder evaluation, or a decision to sink costs to prevent worse - a notion put forward by Blendel is of value (Blendel, 1993). Blendel reasons that communicating systems are in a constant search of making self-reference meaningful vis-à-vis hetero-reference. This can in effect synchronise the selectivity that shapes their autopoietic processes and make the systems act in a coordinated manner. Blendel argues, that it is the perceived rationality of the other system that is the enabler of this intersystemic coordination. Projects will perceive the interest of the organisation to exercise project governance most likely as rational. If the channels between the project and the organisation, and what is conveyed over these channels, are deemed rational by the project, this may penetrate the *eigenselectivity*, that is, the organisation-specific selectivity built into the autopoiesis. This offers an opportunity for steering but does not provide any guarantee for the result of any steering effort. Relevant is that the opportunity for steering prevails as long as the relationships are deemed rational. In other words, the reflection of the governance actors is crucial, because they should be aware whether their efforts are being perceived as rational by the project or not. This implied coordination may be a factor in preventing drift of the project away from the organisation’s goals. Also Baecker sees the reflection of the governing entity as a condition sine qua non: “Governance is a system, which would not function without the reflection on the own responsibility for a system coming into being.” (2019, p. 3, translation author)

The discussion above can be summarised in the matrix that was introduced earlier (Fig. 2).

6. Discussion and conclusions

6.1. Contributions to the field

Applying Luhmann’s theory of organisations results in several relevant contributions to the study of project governance.

The project concept. The concept of autopoietic organisations was so far not systematically applied to projects. Applying this concept we can discriminate between organisation-bound and autopoietic projects, which relate fundamentally different to the organisation. This, on its behalf greatly affects what is available for the steering of projects, in other words, for the management of project management. When

research is conducted that is based on samples of projects, it is crucial to know which type of project is represented in the sample. A mixed sample would, without further considerations, most likely produce unequivocal results.

Distinction matters. I argued that when studying projects in relation to project governance, it is key to pay attention to the distinction between the organisation and project. This distinction drives the eventual emergence of the autopoiesis of a project. The study of project governance did not apply this perspective so far. The notion that the differentiation between the organisation and the project influences the modalities of their interrelation is also discussed by Pemsel et al. (2014). Sydow et al. (2004) extensively enquire the tensions that this differentiation causes in the embeddedness of projects in the permanent organisation. However, the project distinction concept proposed here is more radical: project differentiation may exactly lead to a situation in which a project is no longer embedded in the organisation.

Foundation in decision-making. The model presented in this paper starts from the foundation of the project process, i.e., the decision-making, and argues how governance may be steer decision-making. This approach is similar to that of Turner (2020a, 2020b) - which was an innovation to the field in the first place - with the difference that, by applying Luhmann’s theory of organisations, the model drills down to the level of the decision-making itself.

Management of project-management. The term “management of project-management” (Too and Weaver, 2014) is a highly accurate one, more accurate than the term project governance in fact. This paper makes the proposition that organisation-bound and autopoietic projects are each associated with their own mode in the management of product-management. I argued that in the *governance mode* the organisation faces additional criticalities and limitations compared to the *management mode*. This opens up a completely new research perspective of studying the governance of autopoietic projects, as well as differences with steering organisation-bound projects.

Governance of autopoietic projects. A framework that offers a functional connection between the operational process of a project and the practice of project governance, was so far not offered by the dominant approaches in the field. This paper outlines such a model for autopoietic projects. By structuring governance means and measures according to their concern with regards to the decision-making of the project, as well as according to the way of their mediation, this functional relation between governance practices and the decision-making process as the elementary operational process was established.

6.2. Discussion of earlier research

To close the discussion part of this paper, I review the model put forward in this paper in the light of several important research contributions. Before that, a comment is to be made. So far, the empirical research and conceptual frameworks on project governance have never applied a differentiation between organisation-bound and autopoietic projects, whereas I argue that this differentiation is vital for understanding how an organisation can steer its projects. Hence, the conclusive value of any reference to previous research is quite limited, as it is undetermined whether the projects, which were the subject of the research, concerned (mostly) organisation-bound or autopoietic projects. Still, I argue that it is valuable to see whether the outlined framework for governance of autopoietic projects resonates with some of the more significant conclusions from earlier research. Autopoietic projects have quite specific manifestations of reacting to steering, which can be observed and as such will have been observed by the research of projects.

Müller (2017c, 2019) found evidence for a significant relation between project sovereignty and project success. The potential destructive effect that direct intervention into autopoietic organisations can have, was addressed by Teubner and Willke (1984), and Willke (2014). Naujoks (1994) adapted this view and elaborated the concept of context

		Platform	
		Contextual	Decision-making
Area of Concern	Quality of decision-making	Context steering, project memory, reflexivity	Trust Governing on differences
	Preventing drift	Structural couplings	Governmentality, and openness to criticism Perceived rationality

Fig. 2. Means of governance allocated to governance dimensions.

steering for the corporate sphere. The autopoietic projects need to maintain their autopoiesis as it sustains the identity and boundaries that are vital for their functioning. Lack of sovereignty points to a dominance of hetero-reference over self-reference, which will hamper the recursiveness of the decision-making. Loss or partial loss of recursiveness will cause loss of meaning and consequently interpretation issues, as well as confusion in decision-premisses. We can expect that the quality of decision-making deteriorates, and the project performance will suffer. The perceived sovereignty of project managers that Müller and his associates found in their research, indicates a healthy, balanced autopoiesis.

Müller et al. (2014, 2017) researched the positive role of trust in project governance. Müller (2017c) provided also a concise literature review on this subject and concludes that trust positions an important factor in the acceptance of project governance. I stated earlier that the function of trust is to keep options for decisions open, without trust the choice of decidable possibilities implodes (Luhmann, 1988). This is particularly important to provide a sound base for decisions when no decision-premisses are available or the organisation and the project have deviating decision-premisses. In case of decisions in critical situation a steering committee or a project owner, or even an entity beyond that, may want to participate or even strongly influence the decision. Looking from inside the project, these governing persons and entities are not part of the recursive decision-making process as it goes on in the project. In these cases, trust - as hetero-reference - is vital for accommodating the influence or interference that the organisation exerts on the project, in other words, trust will contribute to maintaining the balance between self-reference and hetero-reference. This implies that the decision will likely be productively integrated in the recursive chain of decisions, and the follow-up decisions will be more effective because of that. Based on the results of the 2014 research Müller concludes that a "freedom to act" is a prerequisite for a successful governance structure (2017c, p.175). Again, this points to the importance that (particularly autopoietic) projects need to be able to uphold their autopoietic operation, which boils down to maintaining a balance and a free movement between self-reference and hetero-reference.

The context that governance provides to a project is a key factor in the model that I presented in this paper. As was stated, several scholars in the Luhmannian tradition even argue that contextual steering is the only effective way for governance. Context steering will inevitably have a structural and a project-specific component. Structural because the governance will have to fulfil certain expectations from the side of the organisation, specific because there is a uniqueness to each project. Studies by Turner and Simister (2001) and Miller and Hobbs (2005), underline that project governance should adapt to the specific project context in order to be effective. Also, the time-dependence is addressed as an influencing factor. Regarding the structural aspects of context, a contribution of Locatelli and associates offers valuable insights (Locatelli et al., 2014). Systems Engineering is a process-based comprehensive management-system for the full project cycle, which is multidisciplinary, suitable for complex environments and offers a comprehensive set of approaches, techniques, and tools. Systems Engineering is standardised under ISO15288. The authors argue, based on a review of project governance literature, that Systems Engineering can materially contribute to the improvement of project governance and foster a more holistic approach towards projects. This conclusion is very much in line with the model presented in this paper. Systems Engineering (SE) is on the one hand structural, as it is standardised in terms of the processes involved and the way these must be structured and documented, on the other hand it is specific as a project will have to tailor it to reflect its own operation. Once implemented, SE typically provides decision-premisses. In addition, it provides transparency towards the organisation and increases the opportunities to build up project memory. Because the SE framework will have to be in place fully fledged when a project moves into execution, it stimulates reflexivity, as key project staff will have to reflect on how the project will want to operate. Lastly, it offers great

opportunity for governing on differences, of which was stated that this is to be directed to decision-premisses rather than outcomes. SE can be connected to a maturity model (ISO15104). Governance on differences can then take the form of monitoring the progress on process maturity.

Lappi et al. (2018) discuss the governance of agile projects. They show that much of the steering ambition is relinquished in the agile approach, as the focus is the autonomy of projects. Pivotal in this regard, also in terms of decision-making, is the inclusion of the project owner or customer in the project team. The research challenges the idea of pre-determined governance dimensions. The goal-based steering is transformed by the scrum practice, which can be regarded as a periodic self-reference/hetero-reference exercise. The analysis indicates that in agile projects context is easily defined too narrow, thereby limiting the scope for contextual governance, which the authors see as a point of attention.

The intent of this paper was not to suggest new instruments of project governance. Project governance research has sufficiently described and analysed the means and methods employed by project governance, or better said, that go under the flag of project governance. What is less known, or at least surrounded by a high level of contingency, is why project governance works out well, and which are the relevant ingredients of the overall governance framework. This often results in suggesting a maximalist approach to governance. Within the model that I outlined this paper, such an approach may cause an overload of hetero-references, and this could very well hamper the project rather than supporting it. The quality of governance practice may manifest itself in selectivity, and the granular framework of project governance proposed in this paper is intended to contribute to that.

6.3. Limitations

The conceptual model on governance of projects a laid out in this paper is grounded in the rigorous theoretical framework developed by Luhmann. Still, the foremost limitation of this paper is the lack of empirical validation of its propositions. The four foundation blocks of the model – distinction organisation/project, organisation-bound/autopoietic project, decision-making process, management/governance mode of managing project-management – must be subjected, individually and in conjunction to empirical research.

A further limitation is that, whereas I defined two modes of the management of project-management, only for the mode associated with the autopoietic project a detailed analysis was made. Luhmann's organisation theory can equally be applied to what I called the management mode which is associated with the organisation-bound project. With such an analysis available, a more granular comparison can be made regarding the differences between the modes.

6.4. Directions for future research

The Luhmann-based approach to governance of project opens a wide field of research opportunities.

A first orientation concerns secondary analysis of previous empirical research, particularly such studies that provide clues regarding the five dimensions of distinction. On a post hoc basis the projects involved in the research could be classified as organisation-bound or autopoietic and from there the conclusions of the research could be re-interpreted.

A second line of research is directed to testing the notion that the level of distinction of the project determines whether projects operate as organisation-bound or autopoietic. This calls for a research instrument with the level of distinction can be qualitatively evaluated. This can then be used to establish whether there is support for the two modes that were proposed in this paper.

A third group of research would look at autopoietic projects in more detail, particularly how the decision-making processes evolve. We would expect to find intense struggle for control during the transition phase when a project is propelling towards autopoiesis. This should be

fought out mainly in the field of decision-making premisses and programs. Relevant suggestions for communication research based on Luhmann's approach have been put forward by Cooren and Seidl (2020). A further research topic is the necessary redefinition of the relation organisation-project is when a project has become autopoietic. In such case study-based research the adaption of narrative analysis methods could provide valuable insights.

The matrix presented in Fig. 2 provides direction for focussed research into the means of project governance. For example, case-study based research directed to structural couplings between organisation and project: which are these couplings and how do they develop, what was their impact on the decision-making.

A possible fifth stream of research relates to the dynamics generated by the presence of non-organisation staff in the project organisation, in relation to emergence of autopoiesis of projects and the functioning of governance. As stated earlier, "membership" is a primary defining factor of an organisation in Luhmann's theoretical framework (Grothe-Hammer, 2020).

Inter-organisation projects are of great interest when studying autopoiesis in projects. Generally, inter-organisation projects will be autopoietic organisations from the start. Of interest here is the referencing to the various project-owner organisations and the internal tensions this may cause. Furthermore, the impact of a singular dominant organisation, or a host organisation on the transition into autopoietic project (Kujala e.a. 2020).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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