Strategic synthesis – green paper towards a framework for fostering research and innovation knowledge integration in joint programming

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Preamble

The green paper on a strategic synthesis framework intends to gather and develop guidelines and recommendations to support joint programming approaches and research-policy communication for urban research and innovation activities. However, as this context typically spans many sectors, disciplines, research fields and frontiers, as well as societal challenges and issues, it puts synthesis needs beyond simple results communication. It is crucial to cross-sector (silo) communication and understanding in order to shape synergies from dilemmas and fathom potential wicked issues. Hence, the JPI Urban Europe *Strategic Research and Innovation Agenda 2.0* (SRIA 2.0) envisage:

> *In support of managing the project portfolio and targeted communication, strategic analysis of projects and their activities and results is needed, particularly to support the development of the urban living labs approach. Advanced communication in terms of strategic synthesis could help to promote research results in terms of policy recommendations, good practices, policy briefs, case studies, etc. A strategic synthesis framework is thus to be developed to help create and prioritise appropriate formats, target groups and communication aims.*
> *(JPI Urban Europe 2019:40)*

As part of policy communication and to increase accessibility of programming and project results, first steps towards strategic synthesis of the project portfolio's various call generations were made with the *ERA-NET Cofund Smart Cities and Communities Funded Projects and Results* catalogue (ENSCC 2019) and with the *Project Results Catalogue ERA-NET Cofund Smart Urban Futures* (ENSUF 2020).

The strategic synthesis framework green paper developed here is part of the EXPAND II Work Package 6 on *Communication and dissemination*, in which one of the overall objectives is to develop a synthesis framework for how to combine and translate research results into transition relevant knowledge, including a typology of different formats.

Guide for readers

As the report is a green paper, a proposition on the next steps, the notion of a 'framework' is used in the sense to frame conceptual and operational matter. It is one-part subject matter reflection and framing, one-part outlining resources available. The chapters thus follow the logic:

The first chapter outlines some of the main the warrants and reasons why programming for urban transitions and transformations need to consider and practice synthesis. The second chapter presents a couple of examples of what kinds of synthesis approaches and challenges are available inside and outside JPI Urban Europe communities of practice.

If the reader is already convinced of the usefulness and even necessity of synthesis and what kinds of synthesis approaches are available, s/he may jump directly to the third chapter which outlines and suggests how JPI Urban Europe and the DUT partnership may move to support synthesis.

Jonas Bylund, Research and Innovation Officer

JPI Urban Europe Management Board

Chapter 1 – Why strategic synthesis?

Why does joint programming that adresses societal challenges need strategic synthesis? And why is there a need to propose a framework to this end? Mainly since societal challenges are generally perceived to require transdisciplinary and co-creative research and innovation across sectors and silos. Transdisciplinary projects, in turn, relies on synthesis in order fulfill the expectation on better suited outputs in the first place. But it is oddly quiet around these challenges of synthesis in most project descriptions and in programming. Hence, an opportunity to develop a framework to adress and develop strategic synthesis is foreseen in the Horizon Europe partnership proposal *Driving Urban Transitions towards a sustainable future* (DUT 2020). There are at least three reasons for this.

Synthesis is a core activity for research and innovation programming

Firstly, strategic synthesis is a core activity for research and innovation programming. JPI Urban Europe as a knowledge hub on urban matters has to step up the game in supporting and making strategic synthesis. Not only to provide public policy making at various levels/in various contexts with supporting materials and evidence, but also to be relevant for society at large and urban communities of practice, i.e. civil society, commercial actor policy making, networks and initiatives around Europe and around the world, and even in the feedback loop on strategic issues back to the academic research community. As The Royal Society notes in its presentation on evidence synthesis principles:

> *Policymakers often need timely access to a reliable summary of the current best evidence, to inform both near-term policy decisions and longer-term enduring challenges such as climate change. 'Evidence synthesis' refers to the process of bringing together information and knowledge from a range of sources and disciplines to inform debates and decisions on specific issues. (The Royal Society, 2018: 7)*

And:

> *... some forms of synthesis may become increasingly valuable to the conduct of research itself. With more researchers and more articles published than before, the challenge of enabling new research to build on what has already been carried out is increasingly acute. In any discipline, establishing what is already known (through rigorous synthesis) before undertaking new research should be a fundamental aspect of the research cycle. There is a continuing need for funders to base their funding decisions, and researchers their proposals, on proven evidence gaps; for research to be conducted and reported in a way which accumulates bodies of evidence; and for editors to recognise the importance of synthesising evidence alongside the importance of seeking novelty. (The Royal Society 2018: 12)*

Synthesis is required to shape lines of communication in the urban archipelago

Secondly, synthesis is particularly relevant for urban research and innovation actions. This is because of the character of the 'urban' area of intervention – which is less a sector or discrete frontier than an asymmetric archipelago of clusters and issues, replete with entangled dynamics

– in research frontiers and in policy contexts that are both still commonly disciplinary and sector oriented. The many times missing lines of communication and understanding between the quite diverging urban imaginaries and understandings in the archipelago could be seen as a challenge of synthesis. Put another way, the craft of synthesis seems to be crucial for integrated urban development (Leipzig Charter 2007; New Leipzig Charter 2020).

In other words, it is about making sense of dilemmas (SRIA 2.0). Since without a sound knowledge integration and synthesis in a project, the resulting policy briefs, evidence, and general conclusions will be highly distorted mutations of what actually occurs 'on the wild side' and in the various everyday knowledge practices and experiences involved.[1] Hence, synthesis can be seen as the core trade and craft of urban and regional planners, which is why it is relevant to understand and develop more generally in the field of urban research and innovation. If the ethos and conceptual craft of urban planners is not grasped well, then the field of urban research and innovation is doomed to be forever fragmented and without any sense and communication between sectors, silos, and 'regional' clusters of challenges.

JPI Urban Europe has noted these dynamics particularly when it comes to call preparation and topic development, with cycles of and iterations that require a high level of synthesizing skills and competence (Figure 1). The experience here is: joint call development may initially have a well elaborated and balanced set of call topics. During development among funders and, even more so, when consortia propose projects in the open and competitive call, selections are made by reviewers, these topics evolve and some aspects are enriched while other drops out. At the end (e.g. the kick-off of the newly granted projects) only parts of the initial ideas. Added to this is of course the projects' development in their own right.

Call development experiences

topic selection   topic development   proposal development   project development

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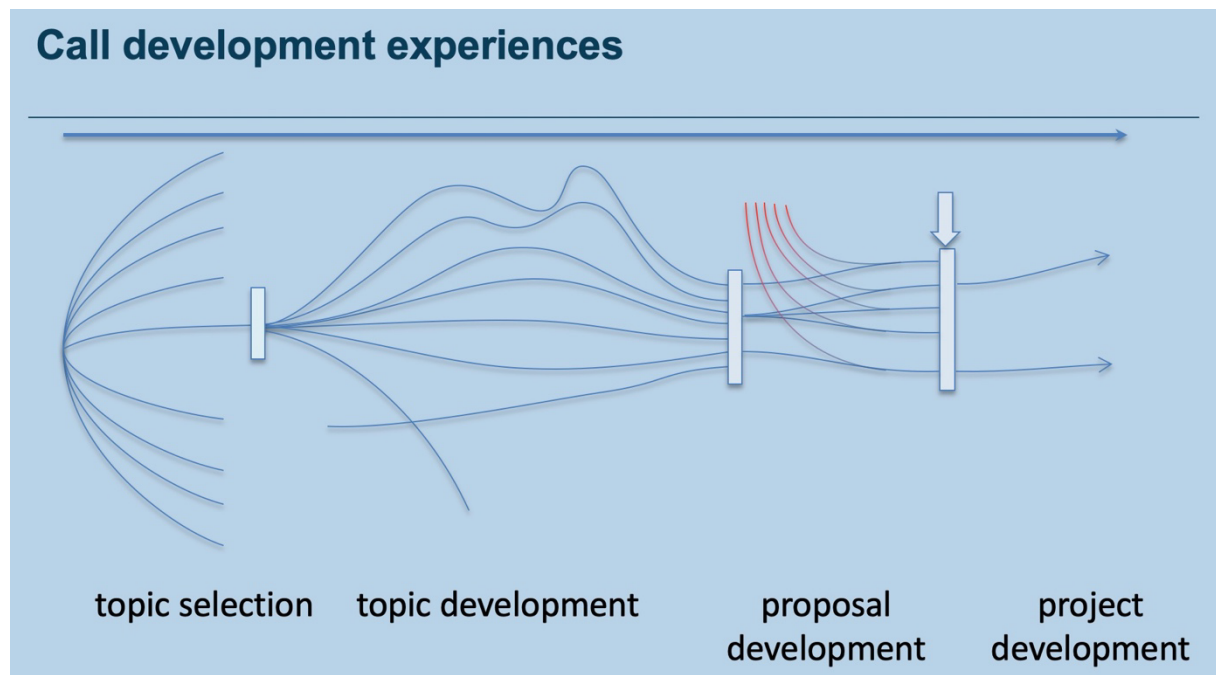
[1] In technical terms, the issue emanating from this distortion is the severe risk of growing incomprehension between various knowledge practices (disciplines, sectors, epistemological) unless there is an explicit 'red thread' by co-created synthesis to establish topology, cf. Mol 2002.

Figure 1: Call preparation dynamics in a schematic, drawn by Arjan Van Binsbergen, JPI Urban Europe Management Board.

Synthesis is crucial in urban experimentation

Thirdly, synthesis is crucial in urban experimentation. If urban experimentation and urban living labs 2.0 emerges as 'the new normal' in urban governance,[2] then it will require even more of knowledge integration (not just 'open data' and flows of digitised information), making sense of vastly different types of knowledges if there is any learning on how to work in uncertain settings etc. As Karvonen observes, experimental urban governance would be a way to embrace uncertainty and contingency, generate recursive learning loops, and work with cities and urban areas as districts of innovation (Karvonen 2018: 204ff).

It would be good to note that urban and regional planning, as a field of practice and theory, was always, or at least the last 200–300 years of Modern Planning, reliant upon the synthesis craft and skills by planners – to the point that 'planning' as a public administrative and land-use managing activity was always less about timelines and drawing on maps than understanding and integrating various types of knowledges and information generated from different methods (surveying, calculating, ethnography, etc.) into a full sense of the territory to manage.

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[2] See e.g. <https://jpi-urbaneurope.eu/news/outcomes-from-the-urban-transitions-pathway-symposium-2019-in-maastricht/ >.

Chapter 2 – What is synthesis?

Synthesis is a main feature of transdisciplinary research and innovation. Although it could be stated even stronger that, beyond this, it is central in any sensible intentional urban co-creative endeavour where a challenge is to be tackled. Synthesis is a common result of transdisciplinary research, along with shaping consensus and diffusion (Defila & di Giulio 2015). According to Defila & di Giulio (2015), it is the product of the effort of integrative knowledge aimed at by transdisciplinary research as it is the 'very nucleus of successful inter- and transdisciplinary research' (p. 125).

The main difference between synthesis and other similar activities such as literature reviews or consultation summaries (compilation, anthology, potpourri, etc.) is that it has be clear on the epistemic fusion and/or tracing of its elements, i.e., to be clear on the various kinds of knowledge practices flowing into the synthesis and their traceability *after* integration. Other activities may simply list or collate elements and results, while not necessarily fusing or drawing and proposing the lessons to be learnt from the various elements.

A crucial point on the difference towards other activities here is the resources available to shape synthesis on a variety of knowledges and everyday experiences. Is relatively straight forward to commission a synthesis on a research field or debate. However, in JPI Urban Europe it is many times noted that, on the one hand, the knowledges/know-how is not readily found in papers and reports; and, on the other hand, that the synthesis 'product' may be less useful or relevant for a broader set of stakeholders (including policy actors) if rendered in a conventional paper or text report, and other formats may be required.

These aspects of synthesis were part of the strategic synthesis framework development from the outset in 2018 that underpins the SRIA 2.0 policy and the EXPAND II task. It is represented here by a mind-map (Figure 2) that outlines desired qualities, sources, and reasons for synthesis in the JPI Urban Europe programming environment. In the memo, it is noted i.e. the need for strategic synthesis in a challenge driven and transnational urban research and innovation programme with a focus on transdisciplinary and co-creative activities to support sustainable urbanisation and transformations. The strategic aspects are, among other things, seen in the need to instrumentalise various kinds of synthesis towards various groups of stakeholders and programming objectives.

Urban living labs

Fronesis

Academic Knowledge

Mixed / Diverse kinds of knowledges

Issue Material

e.g. Mistra Urban Futures Knowledge Arenas

Manage Critical Mass(es) (not singular statements)

Overview
Pattern recognition
Translation(s)
Meaning (additions)

State of play / current position relative to targets

Forward looking, agenda setting implementation paper

Cumulative

Purpose Effect

Operationalisation / utilisation

Urban policy

City authorities

Innovation policy

Counter inbreed (inverse archipelago syndrome)

Norm critique (e.g. gender, equality etc.)

Network analysis

Visualisation

Narratives

Maps

Method Format

Typology

Useful templates

Specifications

Time

Level of ambition

Internal or procured / commissioned?

'Light' formats (e.g. Quick and Dirty)

'Mid-range' formats (e.g. policy briefs)

'Heavy' formats (Thourough, rigourous, detailed)

Who executes?

Project: JPI UE, H2020, national?

MB?

UERA or other research actors?

Object / issue oriented

Course 'Master class'

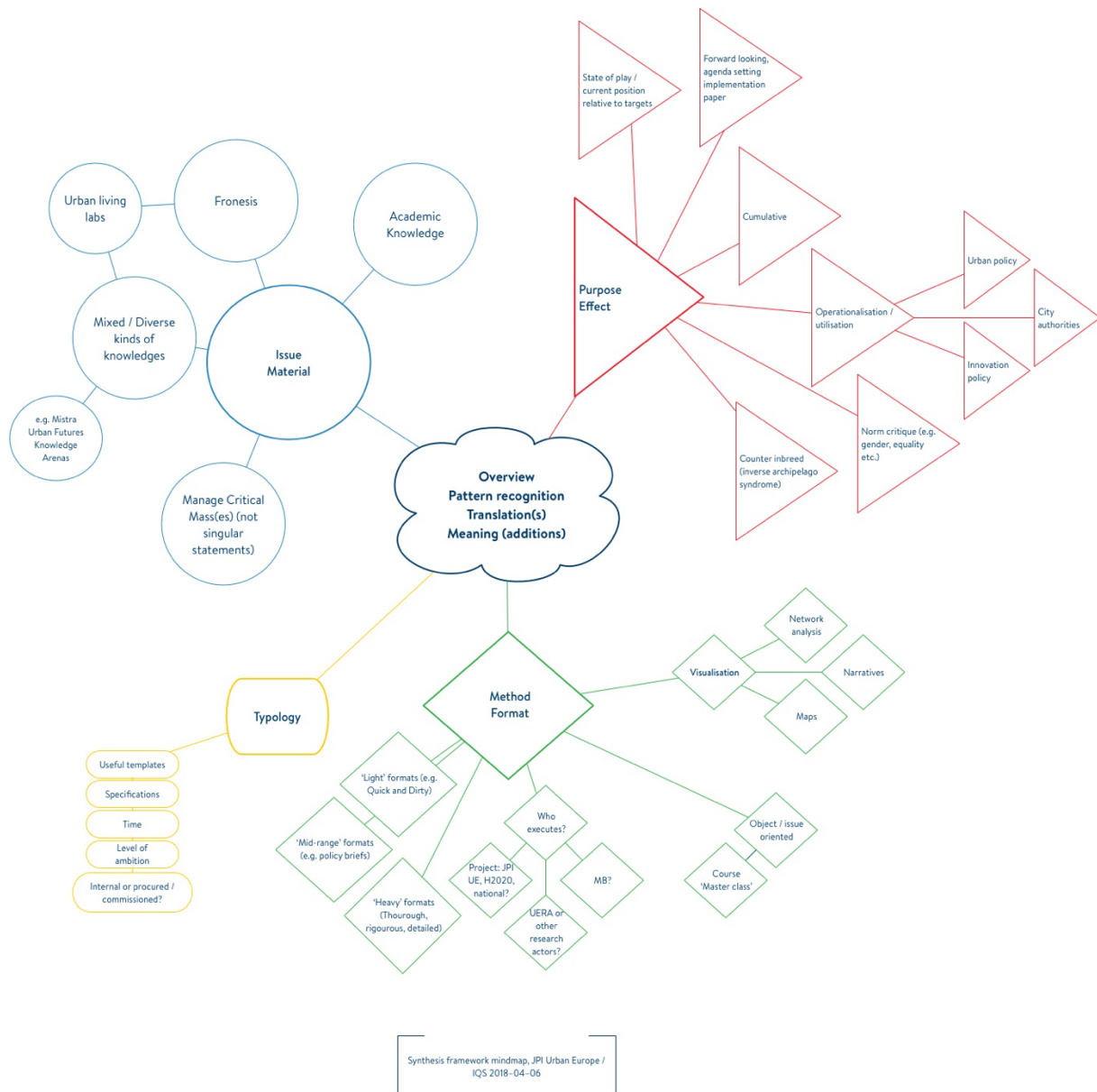Synthesis framework mindmap, JPI Urban Europe / IQS 2018-04-06

Figure 2: The strategic synthesis framework mindmap, drawn together with Katarina Schylberg, IQS, that outlines the needs, hypothesis, target groups of JPI Urban Europe.

Knowledge integration

The 2018 mind-map serves as reference point to guide the development of the strategic synthesis framework. But it fails to characterise the knowledge integration required for synthesis (Defila & Di Giulia 2015). Regarding the more academic aspects of synthesis, acknowledging the epistemic challenge in knowledge integration points to typically different challenges in intra-, inter-, and transdisciplinary synthesis. In other words, the difference between research frontiers, fields, and matters of concern along epistemological lines means different types of challenges for knowledge integration.

Intradisciplinary: Some research fields and frontiers are relatively mono-epistemological in terms of what counts as robust elements in fact building, which means that these fields and

frontiers are probably relatively simple and straightforward to synthesise. Examples here are found in e.g. geology or astronomy.

Interdisciplinary: Other research fields and frontiers may build upon a more diverse set of epistemological approaches and data practices. Environmental studies and human geography are typically mixing kinds of data practices to shape knowledge on systemic phenomena, even some medical research may be characterised by this kind of interdisciplinary and inter-methodological approach.

Transdisciplinary: Some fields and frontiers, and typically co-creation around matters of concern (to have the perspective follow the issues outside the academic setting), thrive in the collaboration between a multitude of knowledge practices combined to a high degree. Among transdisciplinary research and practice development, this has been characterised as a system and issue-oriented approach with an open ended variety of knowledge practices potentially inolved (or gathered around the matter of concern; e.g. Pohl & Hadorn 2008).

Furthermore, Defila & Di Giulio (2015: 125) notes common results that inter- and transdisciplinary projects should aim for which characterises the work done by synthesis:

- *Consensus: those participating in a research project have to arrive at a shared problem framing, at joint research objectives they all equally want to reach, at shared questions and at a joint understanding about the approach for dealing with these questions. They will also need to develop a common language.*

- *Integration: those participating in a research project have to develop common answers to their shared research questions by integrating, from the very start, the findings from the different disciplines and/or fields of practice involved in the research. To this end, findings and approaches have to be selected in terms of their contribution to the common answers, they have to be reprocessed, related and brought together. The common result is the integrated knowledge produced in this process, the so-called 'synthesis'.*

- *Diffusion: the results of the research need to be disseminated and their reception by the users envisaged promoted. As a rule, the audience of inter- and trans-disciplinary research is neither disciplinary nor purely scholarly. Therefore the channels of dissemination have to be different from the disciplinary ones.*

These aspects of knowledge integration points to the need to take more diverse knowledge practices, experiences, and lessons into account and to accommodate diverse formats and media in strategic synthesis.

A challenge in formats and media

The strategic aspect in knowledge integration and synthesis beyond text formats is evident in the following on the need for visualisation in and around climate change:

> *I believe we need tools that can visualize and integrate our climate transition, with complex co-dependencies such as health effects and other societal and economic benefits. At the same time, we need to simplify and*

visualize the needed transition for politicians and decision-makers, our stakeholders, as well as the general public. Politicians are generally not experts, and we need to visualize where the main issues are in a simplified manner. (Edman 2020)

Designing and developing synthesis for various target groups and imagined users of the synthesis poses questions beyond the conventional advice to simplify and adapt text to target audiences. This pertains both to what material is to be synthesised as well as what formats and media it should be developed and presented in/through. For evidence synthesis, The Royal Society supports looking widely when noting what elements evidence can be synthesised from: 'Depending on the focus and purpose of the synthesis, evidence from a variety of sources may be relevant, including published and unpublished academic literature, research conducted outside academia, policy evaluation studies from different countries and contexts, and expert and public opinion' (The Royal Society 2018: 7).

However, this endorsement comes with an eye only to the diversity in the assembled elements (findings, results, ways to fathom state of the art and debates around a concern) and the implicit assumption that the target group is policy makers and that they are most comfortable with a typical text-based synthesis. The 'one pager' syndrome might suggest that the contemporary policy maker does not have much time to dive into longer texts – even if synthesised. Other formats or media might make more impact among policy makers (when not specialised in the field of, say, urban studies or, at them most, with a specialisation in an urban development related sector) and other actor groups in a stakeholder position etc.

For instance, exhibitions can be effective means of using various media in order to synthesize disparate knowledge practices and experiences. One recent example is the Horizon 2020 project CLIMAGINARIES' 'Carbon ruins' exhibition (CLIMAGINARIES 2020). Another example is ZKM Center for Art and Media, Karlsruhe, Germany, notably its long collaboration with philosopher and sociologist of science and technology Bruno Latour to open frontiers on philosophy of knowledge, democracy and facts, or climate-change and the Anthropocene (ZKM 2020).

A challenge in non-linear research and innovation activities

Transdisciplinary research and innovation co-creating with stakeholders beyond the proper laboratories, i.e., out in everyday settings, are also faced with challenges of systemic character. The simplified demarcation between a supply side and a demand side – in communication contexts usually sender and receiver – is a bit more complex in transdisciplinary and collective experimental activities such as e.g., in urban living labs where urban public governance actors may collaborate with academic research and commercial actors, and engage a general public in co-creation.

Hence, many times the information build-up trajectory is not straightforward and linear, but knowledge (evidence) emerges dynamically in an ecosystemic complex fashion. Hence the Royal Society notes regarding challenges on supply and demand sides when it comes to evidence synthesis:

Although "supply" and "demand" are useful organising concepts, the reality is more of a spectrum than a dichotomy. Supply-side and demand-side challenges can reinforce one another, and the means of overcoming them... generally require collaboration and co-production rather than action solely by synthesis providers or synthesis users. (The Royal Society 2018: 9)

SLU/IQS collaborative project on strategic synthesis

These two central aspects in synthesis were developed and reflected upon in a collaborative project with Andrea Kahn as project lead,[3] Lisa Diedrich (SLU Urban Futures[4]), and, in an early phase, Caroline Dahl (SLU Urban Futures) and Katarina Schylberg (JPI Urban Europe / IQS); and, joining in 2019, Caroline Wrangsten (JPI Urban Europe / IQS). This work was mainly progressed through a series of dialogues and a conference session at ITD 2019 Gothenburg (see Annex 1).

The open-ended collaboration revolves around two core aims: 1) since synthesis clarifies research relevance and target audience, in what ways can it help make research more useful? 2) since synthesis dynamically mobilises existing knowledge to be integrated by critical (in the sense of understanding how things work) and reflexive processes, what could a synthetic mind-set model be?[5]

The collaboration generated eight observations on strategic synthesis treated as principles in progress, i.e., deemed useful to iterate and explore further. While avoiding any speculation on potential impact of synthetic work, these eight observations help form a sense of the framework boundaries needed to stabilise a common sense of strategic synthesis in future research and innovation programming:

1) Synthesis *is not* inventory, collation, or coordinated packaging

2) Synthesis **produces** more than the sum of the parts – **new knowledge**

3) Synthesis takes **different forms in varied forums**, e.g.: Synthesis in different time frames/temporal registers, Synthesis at/for different scales

4) Synthesis, **conditional and transparent** on the provisional nature of 'facts', is not truth.

5) Synthesis **yields partial perspectives** (not a 'God's eye view').

6) Synthesis is **positioned** – between the message, the messenger and the audience.

7) Synthesis is **chemistry**: it is **catalytic**, how you get things to react and interact.

8) Synthesis is **dynamic,** it moves towards results but is **never final**

As the collaborative project moves on, more people has been involved and produced examples and reflections on their synthetic practices in the 'strategic synthesizer working group' (see below on tool-kit).

Urban Lunch Talk #10

The Urban Lunch Talk #10 in 2019[6] was dedicated to synthesis practice, with panel participants representing projects by Jamal Shahin (PARENT), network organisations by Anna-Lisa Boni (Eurocities), and researcher Katarina Larsen (KTH). Three reflections on the panellists'

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[3] Andrea Kahn, currently at design CONTENT (www.design-content.com), launched and managed the *SLU Urban Futures Synthesis lab*, with the mission to explore and document synthesis methods used in inter- and transdisciplinary collaborative research. Most of the content in this section is by a synthesis curated by her.

[4] See <https://www.slu.se/en/Collaborative-Centres-and-Projects/slu-urban-future/ >.

[5] See also <https://www.slu.se/strategic-synthesis >.

[6] See < https://jpi-urbaneurope.eu/event-calendar/urban-lunch-talk-10-from-project-fraction-to-synthesis-action/ >.

exchange on their everyday use of synthesis were made that informs the development of a strategic synthesis framework:

1) What is the role of synthesis? Mainly to make sense of diverse information and learning about the complexities (knowledge integration). To shape a set of recommendations (evidence synthesis). And synthesis is a means to change (transformative support). It is an approach to understand and make sense of diverse knowledge practices rather than extracting end-user experience.

2) What are the various formats of synthesis you work with? Harmonised or common language, i.e., to have one common language in a project (or a setting) or increase translation skills between researchers and in target groups. Furthermore, it serves as translation between EU policy and local context. It can take the form of action plans and in the distinction between issue oriented (in settings where the diverse actors share an interest in the issue) and boundary-objects (where the synthesis becomes a platform to shape and coordinate a common understanding of the issue, to help stabilise it discursively or socio-materially).

3) Is synthesis end of project or daily practice? Eurocities practices synthesis as an 'everyday' activity, it is crucial in order to mediate across policy, research, and local settings (city administrations). It is also practices by projects and researchers as well as public officials or organisation planners when accessing data in (strategic) planning, where actors partner up around an issue, a challenge, glancing at the future.

Urban Transitions Pathways Symposium 2020

A further source of input towards the strategic synthesis framework emerged in the Urban Transitions Pathways Symposium 2020. In the exchange around how to support and develop everyday experimental approaches and co-creative transdisciplinary programming in the DUT partnership, quite a few comments and input around the importance of synthesis emerged. The following statements drawn from the symposium points to the need for a more developed and versatile sense of synthetic practice at the core of transdisciplinary and co-creative work outside academic settings:

Personal skills: Development of personal skills are crucial. Engage in ongoing training and personal development to be able to effectively engage with transdisciplinary research and co-creation – upskilling to become more effective as facilitators and aware of power dynamics and language. For instance, by 'mixed classrooms' – spaces in between scientists and policy makers/politicians, consultancy/training. More basic social science is needed in urban transition projects to address inequalities, political implementation. However, clear requirements for engineers, natural scientists, etc. in calls to engage with non-academic stakeholders. In this regard, higher education is at the moment totally unfit for transdisciplinary research. Furthermore, transdisciplinary research has shaped a contemporary orthodoxy. But it is also more diversified than 'an approach'.

Thematic skills / issue-oriented: The technical/scientific language and tools can be enablers for contribution and interaction. However, groups of disciplines understand differently the assets of their research. Agreeing and exchanging knowledge about this is naturally time consuming. Actors need to work to use shared and compatible 'data' (each discipline has their own 'data'), and then setup a 'data'-driven approach. Interpretation of complexity is essential in this process. What goes by transdisciplinary research is likely to take different forms depending on the problem addressed or issue tackled. The DUT partnership calls and activities may have to 'meet' these various forms in different ways.

Intra-project: Connect learning processes regarding urban experiments and support translational work and intermediation. Too often this depends on volunteering and ad hoc work. Work with a wide range of stakeholders (finance, technology, etc), with deeper layers of values and worldviews (climate sceptic, right wing politics etc). Resources for project development, to have more sound involvement of different stakeholders, also considering a better complementarity of projects within a call (portfolio approach). Go beyond 'traditional' urban living labs settings and offer (encourage) urban planners together with researchers entirely new frameworks - storytelling, etc. Design calls that encourage collaboration across disciplines (natural, social and humanities) where civil society engagement is not delegated to social sciences. Ensure that citizen scientists and other civil society representatives are actively and substantively mobilised and engaged, with appropriate mechanisms to level the playing field.

Trans-project: Manage variation, connect different research projects/approaches, portfolio approach to achieve a mission and tackle challenges versus a control and top-down approach, provide the resources needed to do so. Synthesis and knowledge 'transfer', easy access to knowledge, results, evidence, etc. Rethink 'research' as it is not always done by 'experts' in 'institutions' - what about linking all the people in the city, to share knowledge and learning. Setting up third spaces, interfaces in the universities, creating more horizontal knowledge ecologies, longer term milieus in the wild into which researchers can interface, but that has a dynamic of matters of concern among a wide set of type of actors.

How can synthesis be done?

> *When it comes to matters of science, technology and the environment, it is increasingly apparent that it is no longer possible to operate in closed or secluded settings where public interest or social utility can be simply presumed. (Chilvers & Kearnes 2016: 2)*

This outline paper does not purport to make an exhaustive list of all possible ways to shape synthesis. However, to service the continued development of strategic synthesis in practice, the following is a highlight of some methodological aspects and approaches that seems promising considering the challenges identified in the previous chapters.

A first note on approaches is that they may be distinguished through their different aims, mainly to build consensus (typically within a project, a programming environment, or other organisational context) or for the diffusion of findings and evidence (typically to disseminate outside a project, a programming environment, or other organisational context).

Inventory of synthesis

Regarding consensus building, the inventory of synthesis is a mapping tool which can be used to plan the need for synthesis ex ante, protocol and monitor progress in terms of knowledge integration, as well as support methodological writing up ex post to supplement findings or dialogue and co-creation actions. According to Defila and Di Giulio (2015: 124; see Figure 3), it is '… an instrument developed in order to analyse and describe the integrated results of inter- or trans-disciplinary research. [… and] the special challenge to be met in trans-disciplinary research when it comes to integrate non-academic knowledge.'
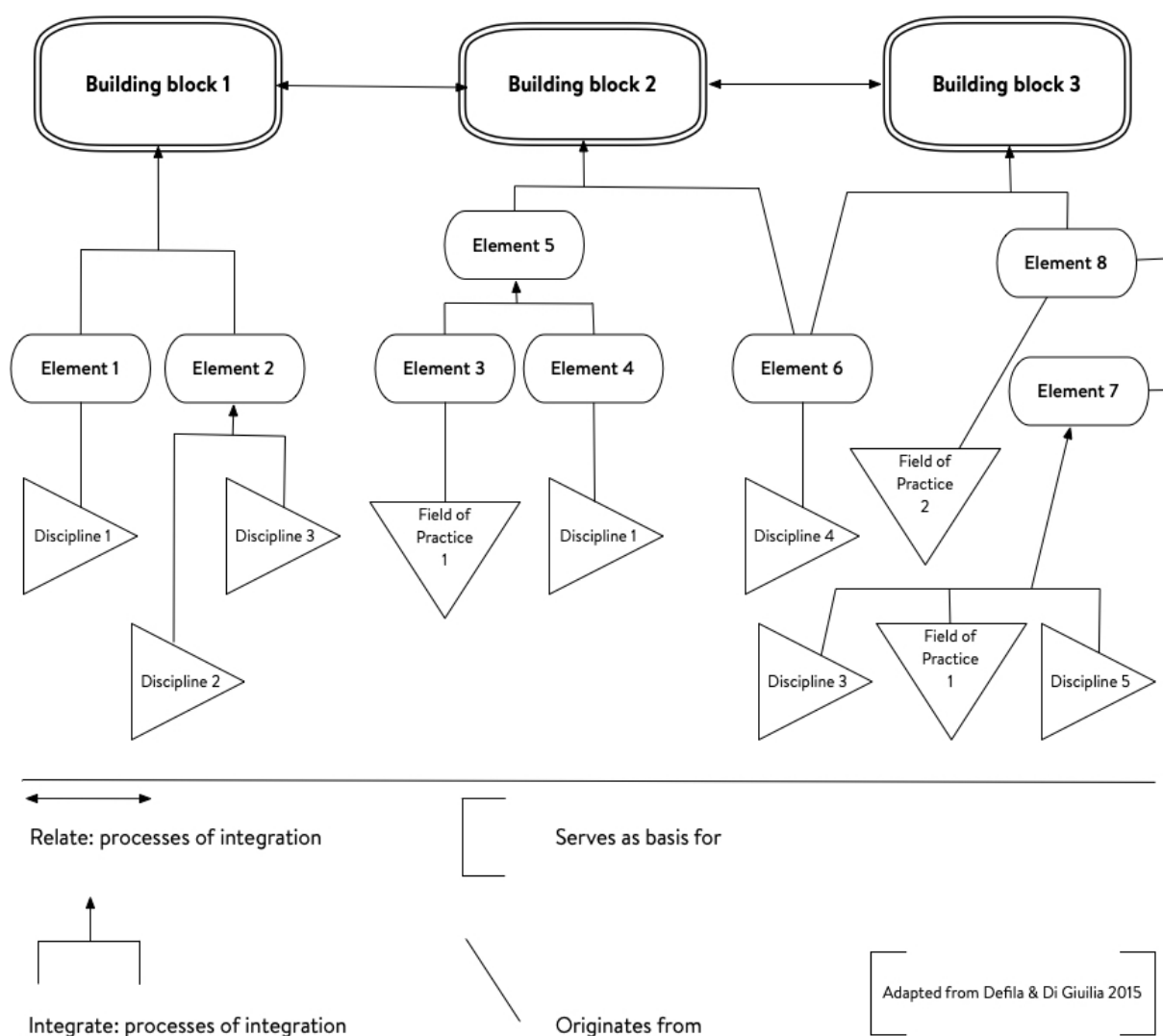
Figure 3: Schematic map of an inventory of synthesis, after Defila and DiGiulio (2015), note the various aspects and general direction of progression.

Four kinds of evidence synthesis

When it comes to diffusion, The Royal Society (2018: 7) notes that there are examples of techniques in the broad range spectrum:

(1) The *full systematic review* is an approach that commonly requires '… many months to complete, [and] is the most established and comprehensive way to capture all the relevant evidence on a topic, and can be used to build up a high-quality synthesised evidence base on policy topics that are predictable, enduring and recurrent.'

(2) The *rapid drawing together of evidence in an emergency*, in contrast, is an approach to turn to 'when the timescale is short and a policy question urgently needs addressing.'

(3) The *meta-analysis* is an approach in evidence synthesis to pool and re-analysis data[7] from a group of studies (or projects, etc.) to a larger set, in order to enable ' conclusions to be drawn when each individual data set is too small to provide reliable evidence.'

(4) The *evidence gap maps* are an approach that gathers studies and reviews on a specific theme or challenge, and identifies where there are no known impact or assessment.[8]

Format example tools and approaches

The collaborative project on strategic synthesis with SLU Urban Futures (see Chapter 3) generated eight example approaches in a preliminary toolbox. Apart from the JPI Urban Europe 2018 mindmap (outlined above) which was included in the toolbox, the synthesis process tools were:[9]

Learning History, Anna Sundman, Theory Into Practice, an annotated timeline to help identify moments and events in a collaborative working process that generated new/synthetized knowledge.

#UrbanGirlsMovement Video, Caroline Wrangsten, #UrbanGirlsMovement Project, a storytelling approach to craft stories with multiple and diverse voices, helps to organise and prioritise key information and findings.

Illustrating Synthesis, Joanne Leach, an annotated visualisation for the process of synthesizing in projects.

Research Process Diagram, SLU Landscape, an annotated visualisation for the process of synthesizing in projects.

Framing Concepts, Henrietta Palmer, Urban Futures / Chalmers, a conceptual construct to help formulate and codify (complex) relations.

Collective Learning Spirals, Henrietta Palmer, Urban Futures / Chalmers, a process of inquiry and learning tool to help establish the relative position of questions arising out of stakeholders' diverse knowledge and expertise.

Terms of Engagement, Elisabeth Viktor, PWC , an operational framework to help define and/or document protocols in a synthetic process.

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[7] The Royal Society notes this to be statistical data, although there seems to be no reason to exclude other forms of data in the pool and re-analysis.

[8] See e.g. <https://www.3ieimpact.org/evidence-hub/evidence-gap-maps >.

[9] See SLU Strategic Synthesis state-of-play for more on the various tools, at <https://www.slu.se/strategic-synthesis >.

Chapter 3 – Next steps to develop strategic synthesis

Looking forward to what parts of strategic synthesis requires attention in the coming years? The proposition is organised around the three main areas of activity in JPI Urban Europe: the policy context, the programming context, and the projects' context.

Policy context

As synthesis seems crucial for co-creation in the urban archipelago to shape an infrastructure and community of practice, it plays a central role in the context of policy-making – from local city authority to transnational EU policies relating to the urban dimension – in order to support urban transformations and transition pathways. One part of this role is in evidence synthesis, but even more pertinent in terms of the kinds of challenges that traverses cross-sectoral. In this context,

> … primary research can be difficult to navigate, even for academics, and it is generally inaccessible to those outside academia. Moreover, policy questions are rarely answered by a single study, or even by a single discipline. Decision-making and public debate are best served if policymakers have access to all the relevant evidence relating to a particular issue. This involves an important step – evidence synthesis – between research being conducted and decisions being taken. Indeed, an accurate, concise and unbiased synthesis of the evidence is arguably one of the most valuable contributions the academic community can offer policymakers. (The Royal Society 2018: 8)

However, this is not limited to rational application of evidence but also to safeguard political debate in terms of minimising democratic deficits and being transparent on agenda setting issues. In view of policy labs and other participatory approaches to policymaking, the role synthesis making in co-creative settings with policy makers seems to increase e.g., early on in urban planning and development or regarding wicked issues where diverse stakeholder fora would be called for (cf. Callon et al. 2009). This latter kind of knowledge practice and process would be synthesis generating as it aims at some shared perspective, some kind of consensus on the qualities of an issue or challenge.

Programme context

In the research and innovation programming context – not least when transnational – there are aspects of strategic synthesis to develop under the framework.

1) Synthesis generated by the programme and by the projects or activities supported is an obvious principle of validation on whether the programme and the projects actually achieve and further genuine transdisciplinary works (as opposed to simply supporting consortia with a diverse set of actors but scant if any interaction and co-creative knowledge practice). Hence, it could be argued to have a natural place in programme monitoring and evaluation. Although even more pertinent is perhaps to have projects be explicit in final reports (if not in annual reporting) on synthesis made and how.

2) In the cycle of call and instrument development (cf. Figure 1), synthesis is necessary not only to shape a consensus around state of the art concerning topics. It also seems crucial when review panels assess project proposals, in that the panellists need advanced competence in knowledge integration among many epistemological types (including layperson, non-academic forms) as

they are typically from a variety of disciplines and ideally also span knowledge practices outside academic settings.

3) In order to enable and promote strategic synthesis in the project portfolio and calls as well as the thematic synthesis dimensions in other activities, a highlighted role in a multi-annual call agenda may be required. This could also mean to implement general criteria for a kind of certification of JPI Urban Europe urban synthesis.

Project context

Along the aspects touched upon above, the development of strategic synthesis would not only support projects and their legacy in and beyond the portfolio, but potentially raise competence in the urban innovation ecosystems on urban challenges and how to co-create sound responses to them. For instance, it could (1) encourage and support competence and skills development among urban stakeholders (research, innovation, business, civil society, public administrations, etc.) in synthesis (cf. input from the Urban Transformations Pathways Symposium 2020 above).

However, (2) since in transdisciplinary research, synthesis is both a core activity and an outcome, it can also be used as a measure of success in transdisciplinary research (and note that it is not 'impact'!): 'The very nucleus of successful inter- and trans-disciplinary research therefore is the integration achieved in terms of the common answer(s) to the common question(s), or – in other words – the common result.' (Defila & Di Giulio 2015: 125)

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Annex 1 – ITD 2019 Gothenburg Session

International Transdisciplinarity Conference 2019

PROPOSED STREAM: METHODOLOGICAL INNOVATION

Title: CROSSING THE LINE - REIMAGINING SYNTHESIS WORK: URBAN LIVING LABS AS A TEST CASE

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Keywords: Synthesis, formats, knowledge practices

Abstract

This session explores how "synthesis" – re-imagined beyond the conventional academic literature review – may be mobilized as a potential and powerful transdisciplinary format.

It starts from the claim that transdisciplinarity, while popular in principle, is not yet viable in practice, as it lacks proven formats and methods for doing the work, and for communicating the outcomes of the work. We propose that "synthesis (reimagined)" has potential to become a viable transdisciplinary format. Furthermore, the session provides a warrant for why synthesis needs to be reimagined to become such a format, since (a) It needs to accommodate heterogeneous knowledge practices; and (b) Its results need to be accessible/available to different discursive/practice communities.

Transdisciplinarity involves heterogeneous knowledge practices *'practicing together'*. This approach to knowledge production is increasingly viewed as key to addressing the societal challenge of urban sustainable transformations and increased liveability. At the same time, it is becoming increasingly evident that we lack the transdisciplinary formats and methods required to navigate, collate, distil and communicate (synthesize) knowledge outcomes generated through diverse knowledge practices.

A current challenge for transdisciplinary approaches is how to formalise knowledge. This raises the issue of suitable formats. Technical text can work well in certain contexts, such as expertise-based and /or academic knowledge practices; but it works far less well for sharing and learning in the heterogeneous knowledge practice context of transdisciplinary work. By drawing a line between 'knowledge and non-knowledge' conventional synthesis (typically, literature-review based) gets in the way of constructively aggregating knowledge outcomes from heterogenous sources. But, what if the line between 'knowledge' and 'non-knowledge' gets crossed out, substituted by open ended settings of knowledges/heterogeneous knowledging? How then can synthesis formats and approaches be re-thought, re-designed, and re-newed to suit diverse ways of knowledging beyond the seclusion of academic institutions?

For example, while it is relatively straightforward to commission a 'synthesis' on a research field or academic debate related to sustainable urban transition work, doing so for a collection of actively ongoing urban sustainable transition projects such as Urban Living Labs proves much more difficult. How to learn from this work? Many times, we find that, on the one hand, the

knowledges/know how pertinent to sustainable urban transitions is not readily found in papers and reports. And, on the other hand, any synthesis 'product' made from collecting findings from those projects may be less useful or relevant if rendered in a conventional paper or text-based report. Other formats or media may be required.

Hence:
- Conventional research practices and methods constrain the impact potentials of synthesis, *so*;
- We need "work arounds" to mobilize diverse co-present knowledge products and practices, *but*;
- Productive transdisciplinary collaborations and conversations face many hurdles (normative metrics don't apply, non-commensurate value systems/habits of mind, unstated assumptions, etc.

Session design

This session – a collaboration between panelists and participants – aims to elaborate on why synthesis is needed, explore some examples of how it can be done, and reflect on what the synthesis outcomes could be. It will be structured in three- parts:

1. *Why" reimagine synthesis?* - Panelist presentations - 15 minutes.
        What do we mean by **strategic** synthesis? How is it different from normative synthesis?
        What's in the toolbox now? What could be a new tools?
        Who are the audiences for strategic synthesis?
        Why do we need it? Introducing the test case: Urban Living Labs

2. *"How to" interactive synthesis* - Participatory demonstration   45 minutes
Case study: "The Valencia workshop: from JPI Urban Europe Placemaking Week, June 2019"
        Rehearsing strategic synthesis: 3 parallel working groups, 30 minutes
        Presenting synthesis outcomes - 15 minutes presentation (5 x 3 groups)

3. *"What next - reflectivity on the go*" - Observations/provocations for future work, - 25 minutes
Comparing the parallel synthesis efforts, what can we take away?
        What could the craft entail? How did the toolbox expand?
        How can we communicate session outcomes? What should be follow up work?

Background Materials (will be circulated for use in workshop)

Valencia Urban Living Labs for Placemaking and Urban Transitions workshop description
Valencia Urban Living Labs for Placemaking and Urban Transitions workshop outcomes

Recommended readings (optional)

JPI Urban Europe, *Strategic Research and Innovation Agenda*, SRIA 2.0. *https://jpi-urbaneurope.eu/app/uploads/2019/02/SRIA2.0.pdf*

Integrative thinking, synthesis, and creativity in interdisciplinary studies, David J. Sill, *The Journal of General Education, Vol. 50, No. 4, Best of JGE: Featuring Articles from 1984–2000* (2001).

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