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REPLY



In response to ‘Six critical questions about smart specialisation’

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ABSTRACT

This paper has been written as a response to « Six critical questions about smart specialization » by R. Hassink and H. Gong. The paper starts with a reminder of what has not changed in terms of the basic principles and *raison d'être* of smart specialization. Then it proceeds to identifying what we have learned since 2014 and on this basis it will address the six critical questions posed by Robert and Huiven.

KEYWORDS

Smart specialization; regional innovation policy; entrepreneurial discovery; transformative activity; structural changes

Introduction

In ‘Six critical questions about smart specialization’, Robert Hassink and Huiven Gong (2019) give a very good explanation of the origin of the concept of Smart Specialisation Strategies (S3) and its application within the framework of European regional policies as from 2014, while formulating a series of pertinent questions. These questions essentially reflect and clearly express a sort of discrepancy between what was at this time an incomplete concept – and a massive and immediate implementation of the prescriptions formulated by this concept. The questions posed by Robert and Huiven are therefore very pertinent and I thought it would be interesting to attempt to answer them, based on what we have learnt since 2014, at the end of a period of implementation and interactions between practice and theory. This massive implementation has in fact constituted a vast field of more or less successful experimentation – that academic researchers have been able to observe and whose results have been integrated into the ‘models’ – a rapid and parallel learning process thanks to which – it seems to me – we are better prepared to answer the questions raised by Robert and Huiven. I admire Hirschman’s epistemology, so well expressed in ‘Development Projects Observed’ (1967). Today this is the one that I endeavour to follow – in all modesty: the meticulous and systematic observation of smart specialization experiments, in Europe and beyond, based primarily on a form of participative research, allows us to propose a more robust and simple concept, whose implications regarding implementation are much more obvious and easy for the regions concerned.

With this in mind, I will start with a reminder of what has not changed in terms of the basic principles and *raison d'être* of smart specialization. Then I will identify what we have learned since 2014 and on this basis, I will address the six critical questions posed by Robert and Huiven.

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I. Raison d'être and basic principles still valid !

The S3 approach focuses on the deployment of innovative activity and the establishment of new connections within and beyond the region, enabling the region concerned to transform itself and develop new competitive advantage based on these transformations. The other *raison d'être* of S3 is to encourage regions to build competitive advantage on their specific strengths, potentials and opportunities, rather than doing as others do. Thus they avoid doing the same 'good' things as others, which in the end will in many cases prove inconsistent and unrelated to the region's existing assets and potentials and does not provide any comparative advantage. Instead, the region achieves the specific critical mass needed for a significant change in the regional economy.¹

To attain these very general objectives, the principles identified in 2009 remain valid (Foray, David, & Hall, 2009):

- *Concentrate on certain priorities.* This principle aims to generate a certain density of actors and projects that are 'related' as they are dedicated to the same priority – an imperative condition to benefit from the resulting synergies, complementarities and agglomerations, which are essential determinants of innovation, creativity and R&D productivity. This is also an important condition for a government to be able to reach the level of input 'specificity' required to innovate in a given industrial or technological domain. This has been a constant argument by Hausman and Rodrik (2006) – that 'the public inputs that innovators require tend to be highly specific in the area in question. There are really very few truly generic inputs for innovation'. But governments cannot address all specific innovation infrastructures and specific services for all markets and activities. Government capacities both in terms of information (what does each industry need in terms of specific inputs?) and resources (can we afford the provision of all industry-specific public inputs for all sectors?) are indeed limited. They need to choose.
- *Concentrate not on structures (for example the region's three most important industries) but on the transformation of these structures.* Each priority includes one or several sectors as well as a direction of change. If both elements are combined and sufficiently well defined to create the density effects mentioned above, they build a priority area, a cornerstone of a smart specialization strategy.
- *Favour an entrepreneurial discovery logic,* which means simply that the targeted transformation will not follow a path that is decided from the top but will be discovered as the process unfolds. There is therefore no *ex ante* plan, but rather a permanent process of navigation in line with the transformation objectives, which implies rigorous feedback, monitoring and flexibility mechanisms. This does not mean that objectives should not be set but rather they should be pursued and adjusted in line with emerging evidence and experience.

The S3 approach is thus marked on the one hand by a high level of intentionality and strategic focus on priorities. On the other hand, it is characterized by a high level of self-discovery and initiative by the actors of the innovation process. It is this combination of two policy logics – a planning logic and a self-discovery logic, frequently opposed in the literature and in practice – that constitutes its trademark! As so well expressed by Paul

David – one of the concept's three originators – S3 is neither totally top down nor purely bottom up. 'The S3 approach is about designing an intermediate process aiming to enhance entrepreneurial efforts and coordination within a framework (a strategic priority) structured by the government'.²

II. We are better at 'doing' an S3 nowadays

Thanks to the massive exercise of implementation since 2014 and the first lessons learned from it, we are now able to refine the process of design and implementation. Although the rationale is intact and the general principles remain in place, we can identify certain conditions or provisions that at the time seemed absolutely vital for the success of the approach but that henceforth seem less necessary or even useless and harmful.³ We can consequently propose a simpler and more obvious process that regions will find easier to implement, while its effectiveness will no doubt be greater. In this section, we want to briefly discuss three issues – the three steps needed for the design and implementation of an S3; the data needed to support the policy process and whose nature changes according to the three steps; the governance mechanisms, which also evolve according to the three steps.

A. Three steps for policy actions

Instead of talking of a large number of stages within a rigid process that must be respected at all costs, it is undoubtedly wiser to suggest just three steps to regions, which they can then conduct as they like:

- A. Identifying thematic priority areas
- B. Translating these priority areas into transformational roadmaps
- C. Implementing the transformational activities with an action plan

i. Identification of thematic priority areas

This is the starting point and must include one (or several) sector(s) with a clear direction of change. Only the subject of change (e.g. one or several sector(s)) and a direction of change together build what is called a priority area in S3.

The implication of such a definition is that not all actors will be part of S3 simply because they belong to the sector concerned. They need to belong to the sector 'while' being involved in and committed to the transformation process, which is part of the definition of the priority area. There is therefore a delicate balance to be found between a too broad and too narrow definition of the priority area. A too broad area (e.g. digitalization of healthcare) will make it difficult to generate the density and agglomeration effects, one of the crucial objectives of an S3. A too narrow area (e.g. the development of certain types of medical devices) will result in excluding some actors who were ready to be involved in some kind of transformation and thus in concentrating resources and efforts on a too small number of predetermined champions.

This identification naturally remains based on a considerable effort to acquire statistical knowledge of the economy, assess its competitive position and define the innovation capacities of the region. Furthermore, the identification relies on a participatory process

aimed at bringing together a maximum number of public and private stakeholders who are best placed to know where the growing markets are and what research would best satisfy the business and societal needs of a region.

There are two important points here that we have learned and which can now help us to propose a more simple and obvious process.

First, it was argued that the priority areas should be chosen through an entrepreneurial discovery process. This provision was very difficult to follow and generated a high level of stress within the community of regional policymakers. And this was unnecessary. It is important here to avoid a classic confusion between a participatory process and entrepreneurial discovery. This point was very well expressed by our colleague M. Navarro –

Certainly, priorities are the result of a participatory process. But not all participatory processes involve a logic of entrepreneurial discovery. In almost all the territories we have analysed the government has been the actor that has led the prioritisation process, and the role of other actors has been small or almost testimonial. In short top-down processes have prevailed over bottom-up processes in the setting of priorities.⁴

Indeed, there is not really any entrepreneurial discovery at this stage and what is needed is a more ‘simple’ participatory process. Having no entrepreneurial discovery here is not a problem because, as already stated, the S3 design is structured to involve two logics of policy actions – a planning mode and a self-discovery mode. Clearly, the first step (selecting a few priority areas) has a planning aspect while the second and third ones will be profoundly influenced by the entrepreneurial discovery process (below). There is therefore no room or need for an entrepreneurial discovery process at the priority area selection stage. But just wait! The entrepreneurial discovery will very quickly materialize during the following two phases.

Secondly, it was argued that regions need to identify and select region-specific priority areas and that too many cross-regional similarities at this level (many regions choosing similar priorities) were an indication of failure. Recent lessons tell us that this is not true! Priority areas can to a great extent be similar from one region to another – after all, the potential for solutions in terms of structural change is not infinite and regions characterized by the same provisions of natural resources and the same economic specializations will tend to want the same types of transformation. And now we think that it is not a big problem because regional differentiation will happen later in the process. In fact similar priorities will lead to specific solutions and transformational roadmaps because capacities, potentials and opportunities are region-specific. The translation of the priority into a transformative activity (the second step) enables regional differentiation to occur.

These two points (priorities can be similar – entrepreneurial discovery is not the right word to describe what is happening at step one) help to show how we can make the concept more obvious and simple – by helping regions to get rid of unnecessary provisions that were very detrimental to starting the process.

ii. The translation of a priority area into a transformational roadmap

This step involves the definition of the nature, scope and meaning of the investments for transformation and transition within the considered sector(s). It is important to emphasize this step because it has been observed that many regions that had correctly conducted their prioritization task found it very difficult to concretize and implement these priorities.

And yet this is the crucial phase: ‘the conversion of each priority into a more concrete transformational roadmap’ – a set of projects and actors – all committed to following the same direction of change – and thus linked by this common direction. The crucial and possibly only common link among projects and actors is ‘to be involved in the same direction of change’. But this is enough to obtain coordination and agglomeration effects from a set of related projects and actors.

This conversion process from priority area to transformational roadmap is the most difficult one and it cannot happen if the direction of change is not known. The problem can be expressed thus: an identified priority targets a certain transformation of one or several industries – e.g. the transition of the electromechanical sector towards industry 4–0. Before S3 is designed and implemented, we are at a certain level of technology, employment and qualification, business model and performance where we are aiming to move to a higher level of digital innovation in this industry. This requires a full understanding of the obstacles to this transformation: Why haven’t we already reached this level? What constraints, market and coordination failures, obstacles of all kinds prevented this evolution? How can it work? All the identified projects and actors are going to address these problems and constraints that concern ‘not only R&D but enterprises with their suppliers and clients, with the need for new skills and qualifications, new forms of management and logistics, specific public goods (specialized services), and adoption of certain key technologies (diffusion)’. Here, in the identification and search for resolutions to these obstacles, is where entrepreneurial discovery kicks in.

All of these diversified projects will eventually constitute the transformative activity. The definition of a transformative activity is very simple:

It is neither an individual project nor a sector as a whole but a collection of related capacities, projects, activities and people that have been ‘extracted’, as it were, from an existing structure or several structures, to which can be added extra-regional capacities and that is oriented towards a certain direction of change.

This translation of a priority into transformational roadmap in order to build and develop a transformative activity is the key transition. It enables many of the S3 objectives to be attained.

It concretizes a certain **direction** of change, initially expressed by the priority, and reveals guidelines concerning the course of action to achieve this change.

It enables the transition from priorities, which can to a great extent be similar from one region to another, to a broad regional **differentiation**. In fact, similar priorities will lead to different transformative activities as the latter are designed as a specific response to problems and opportunities that are specific to the particular region.

This is the missing link between a priority area and the individual projects. The transformative activity is a collection of related ‘projects’ – linked by the fact that they all contribute in one way or another to the same structural transformation in the priority area. It thus creates relational **density** and the chance to reap the benefits of a certain coordination between the projects and actors involved in this transformation. The transformative activity covers a large number of factors, including the formation of human capital, corporate management, adoption of new technologies, etc. It is therefore a collection of **distributed** capacities and projects, which cannot be reduced to the notion of a single major

project (like the creation of a new specialized R&D institute, frequently destined to become the proverbial white elephant).

This is the preferred framework for entrepreneurial **discovery**. At the end of the priority definition phase, it is impossible to know what the outlines and content of the transformative activities will be. They are built and developed on the basis of the entrepreneurial discovery process.

Therefore this translation phase produces the good properties of an S3 approach, designed to transform the structures of the regional economy, and which we have grouped under the heading the **5 Ds**:

Direction of change
 Relational **D**ensity
 Regional **D**ifferentiation
 Entrepreneurial **D**iscovery
 Distributed capacities

We can add one important effect of this translation phase. It operates as a feedback mechanism to verify the pertinence of the priorities. If the transformational roadmap comprises only a few projects, projects that are not very innovative or unconnected, etc., this is an indication that the priority was perhaps badly formulated or premature. We should go back to square one and discuss the pertinence of the priority in question again.

iii. Implementation with an action plan

The action plan step centres on the implementation of the transformative activity. It involves mobilizing and coordinating financial instruments, which often have different objectives (R&D, training, infrastructures), evaluating projects regarding their financing, designing feedback mechanisms, monitoring and flexibility to maximize the informational effects and spillovers of entrepreneurial discovery – more important than ever at the transformative activity development stage.

iv. More a script than the 10 Commandments!

It is therefore quite obvious that an S3 must not rely on an immutable formula that everyone must adhere to in order to avoid failure – like the 10 Commandments! Let's leave the regions the freedom to invent their own approach, while still insisting on the necessity of adhering to the three stipulated phases. Here we can be inspired by the idea of a script: a set of simple rules like those the theatrical director gives the actor he is asking to improvise concerning a certain theme.

B. Governance

If we go back to M. Navarro's reflection, it is clear that the prioritization phase is determined by a logic of top-down governance – which does not exclude a participatory and collaborative process between all the stakeholders and in no way detracts from the evidence-based character of this prioritization process either. This means simply – as

P. A. David wrote (above) – that the framework within which the entrepreneurial discovery will take place is constructed from the top.

On the other hand, the two following phases are extremely decentralized. For each identified priority there must be a corresponding coordination and investment board that will deal with the execution of phase 2 – the conversion of the priority into transformation roadmap – and phase 3 – the elaboration of the plan of action and its implementation for the development of the transformative activity in question. This decentralization is important so that the monitoring, information and flexibility mechanisms can be as efficient as possible. Phases 2 and 3 actually correspond to an ARPA- type form of governance, featuring principles such as general organizational flexibility, bottom-up programme design, discretion regarding project selection and active project management – all these features relying on highly talented, independent and empowered programme staff (Azoulay, Fuchs, Goldstein, & Kearney, 2018).

III. On the six critical questions

We can now address the six critical questions posed by Robert and Huiven.

A. Is smart specialization about specialization or diversification?

The first lesson to be learned from this experience is that you must think twice before deciding on the title of your article! Most of the time, it's not very important, but in some cases, it matters terribly! The term 'specialization' is probably not appropriate. There is indeed the idea of concentrating, focalizing on some areas – for the two reasons mentioned in Section I. But if the idea is to concentrate, it is to better achieve transformations, and hence to avoid a specialization in technologies and business models that are soon outdated. The important thing therefore is to insist on this duality between 'specialization' (concentration of resources and choice of priorities) and transformation (diversification, transition, modernization,..). This is the essence of our concept. However, it is not well captured by the expression 'smart specialization'. We had quite quickly confided our doubts to the Commission concerning the suitability of the term – arguing that the concept of specialization in economics has a relatively negative connotation – but it was already too late!

B. How well is smart specialization embedded in existing regional innovation policies?

It seems to me that the S3 concept is a 'recombinant innovation' – in other words, its newness originates from the combination of concepts that already existed.

The K4G Group was a group composed only of innovation economists, macroeconomists working on endogenous growth and econometricians specializing in the measurement of R&D and productivity (to name a few: Aghion, David, Hall, Licht, Mairesse, Marimon, Metcalfe, Van Ark, Veugelers). This does not mean that these economists were not interested in the spatial dimension of innovation! Of course not, since the spatial dimension lies at the heart of innovation conditions and procedures and thus

constitutes an integral part of the research programme of innovation economists. But this does mean that the regional system and regional governance dimensions were missing.

This is why, very rapidly, experts on regional economies and policies improved the approach – particularly as from the practical implementation phase – and among these brave pioneers, we must of course mention McCann and Ortega-Argiles (2015), Morgan (2017), Rodrigues Pose, Di Cataldo, and Rainoldi (2014), who insist especially on the constraints and limits of the regions in terms of institutional capacity to design and apply relatively sophisticated policies.

But the approach has also been considerably strengthened by the work concerning industrial and development policy developed primarily by Hausman and Rodrik (2006) – whose arguments and developments very quickly proved to be incredibly pertinent for the consolidation of the S3 approach. I am thinking particularly of the emphasis placed on the importance of specific (*versus* generic) inputs and capacities required in order to innovate – which entails a government making choices, as it cannot address all the specific capacity and infrastructure problems in all sectors.

Finally, the work carried out on related variety – notably by Boschma and Gianelle (2014) or Frenken, Van Oort, and Verburg (2007) – has led *ex post* to a significant theoretical basis for the fundamental idea that regions had to imagine and build their future using existing capacities and structures. It remains a very significant contribution even if I do not think that this work can be used prescriptively in relation to the concrete implementation of an S3.

I am deliberately omitting work concerning national/regional innovation systems (from Freeman to Lundvall) – that has not radically influenced this approach, and it is useful to recall that another report from the K4G Group expressed criticism of these approaches – criticism with which to a great extent I agree (David & Metcalfe, 2009).

Any combination of knowledge can cause a breakthrough and in our case, I think that it is the combination of two policy logics – a planning logic and a self-discovery logic, frequently opposed in the literature and in practice – that constitutes a breakthrough. There is also this idea of a concentration of resources, not on a structure but on a transformation process.

C. From cluster to smart specialization policy: really something new or more of the same?

The third question comes at just the right moment! Breakthrough? But how can we talk of breakthrough when the concept of cluster policy emerged well before that of S3? Let's go back to the second basic principle (Section I). The concentration of resources and prioritization must be not on a structure but on a transformation process. But in the minds of the originators of S3, a cluster is a structure – quite a favourable and productive structure, at least we hope so, but it's not certain, and it remains a structure. The structure must change, transform itself when new opportunities arise. And yet a cluster's capacity to transform itself – like Silicon Valley – can certainly not be taken for granted (Hassink, 2017). From this point of view, the S3 approach becomes a mechanism that can enable this transformation to occur. A cluster is thus both a possible starting point (if the cluster exists but has lost its initial dynamism) and a desirable point of arrival for the

S3 approach. A successful S3 always leads to the formation of a cluster – a collection of related projects and actors, all involved in a certain transformation.

S3 is also the response to the collapse of certain cluster policies – that do not understand that the real formation process of the cluster by a collective involvement of actors and projects in a defined direction – possibly stimulated by S3 – is far more important than its administrative creation.

D. Entrepreneurial discovery process (EDP): a transformative hope or a lock-in trap?

Robert and Huiwen actually ask a lot of questions here! I think that it is on this level – the role and meaning of the EDP concept in the theory and practice of S3 – that we have made most progress. The main function of the concept is to introduce a bottom-up component in a process that also has a top-down component. As already emphasized: the main characteristic of S3 as policy process is the combination between a planning logic and an entrepreneurial discovery logic. The entrepreneurial discovery process does not take place at the step of priority area choice (as was previously thought) – and here a participative process (always important as from the first phase) must not be confused with an entrepreneurial discovery process that will only take place afterwards in the way in which the transformative activity is constructed and developed – in response to the priorities considered (see M. Navarro, above).

This improved specification of the scope of the EDP is very useful and very productive. It relieves the regions of a great deal of pressure, while providing this entrepreneurial discovery logic with its true field of operation: the identification, implementation and evolution of a collection of projects – all moving in the same direction of transformation. The very notion of entrepreneurial discovery implies the production of information concerning these projects – the successes, the failures, the surprises – which obviously requires monitoring and flexibility mechanisms – with the aim of maximizing the social value of the information produced.

So here we are talking about discovering, on the one hand, the path to transformation and, on the other, the characteristics and properties of the projects that have been identified and selected. Is the term EDP appropriate? Yes, probably, even if Kirzner (1997) would certainly not acknowledge it – and it's possible that the expression coined by Hirschman (1967) – 'a voyage of discoveries' – is more suitable.

Two difficult questions remain. Of course, the choice of priorities and then the selection of projects can be subjected to policy capture and in that case there is a risk of public funds being monopolized by a small number of regulars (i.e., vested interests). The only answer here is belief in the possibility of establishing more transparent and robust processes, and delegating certain tasks of selection and choices to external committees of experts. This answer is only partially satisfactory but I think it's the only possible one when confronted with those who would like to throw out the baby (here any form of industrial policy) with the bathwater!

Can the process as a whole foster breakthroughs and radical innovations? There is no proof to the contrary. A lock-in trap is created precisely when a structure becomes incapable of transforming itself – and S3 concentrates precisely on transformation. But what degree of radicalness can be attained with this approach with regard to transformation

is a relatively academic question. The ultimate decider should be the growth of productivity. Indeed we observe significant effects of productivity created by a transformation consisting essentially of processes of development and adoption of generic technologies invented elsewhere. This is the profound contribution of the analytical framework of general purpose technologies. Within this framework, the horizontal propagation of a generic technology – in other words, the development of new applications adapted to more-or-less traditional sectors and the formation of new capabilities (skills, management) – represents a key factor of productivity (Bresnahan, 2010). Indeed, with respect to regional development, breakthrough innovation and frontier research cannot be viewed as the only sources of productivity, growth and development. There are many types of innovation-related actions that are relevant for productivity and growth, such as building up human capital, adopting (not inventing) new technologies, diffusing novel management practices, generating complementarities between key enabling technologies and traditional sectors as well as developing social innovations. All these activities are important in order to strengthen capabilities and lever the growth and development potential of a regional economy; and all need to be included in any S3 exercise as important drivers of innovation, growth and structural change. As the great innovation economist Manuel Trajtenberg (2010) wrote a few years ago: ‘They are perhaps less exciting and flamboyant than high-tech and world-class science, but they ultimately represent the key to economy-wide growth in most regional economies.’

E. Which type of region tends to benefit from smart specialization?

I no longer think that S3 can be beneficial for all regions! Incidentally, one of the first three authors – Bronwyn Hall – had mentioned her scepticism concerning the most advanced and largest regions in terms of GDP per capita.⁵ The reason is well expressed by Robert and Huiwen who refer to ‘a drop in the ocean’: it doesn’t make much sense to ask a region like Baden-Württemberg to choose and prioritize – whereas that is the very essence of S3. At the other end of the spectrum, it is clear that less advanced regions will have great difficulties in acquiring the minimum of entrepreneurial and institutional capacities necessary for the implementation of the concept in accordance with the three steps. But there are still all the intermediate regions – for which the concept and its implementation really do make sense. I have just returned from two experiences – one in Sfax (Tunisia) and the other in Curitiba (Brazil) – and I observed to what extent the founding principles of S3 were well understood and the tools provided for its implementation well used. It is certainly regrettable that there was an initial attempt to affirm a ‘one size fits all’ logic that was not pertinent. The disappearance of the ex ante conditionality principle regarding the next budgetary period will resolve this problem as each region will be totally free to choose whether or not to implement an S3 concept.

F. How to measure the effects of smart specialization?

The measurement of the effects is obviously a considerable challenge. Clearly, we will not reach the highest scientific standard to discern causality and the reasons are many: no pure treatment effect, complexity, time lags in realizing benefits. However, it is not because application of the most rigorous and academically recognized methods (e.g. to isolate

the treatment effect and discern causality) is not possible that all attempts at assessment should be abandoned.

The crucial issue is to correctly understand what we wish to measure, and clearly distinguish between intermediate outcomes (particularly the development of the transformative activity) and true and final impact.

The way in which the transformative activity develops within the framework of a priority area and creates innovations and structural transformations must be observed, measured and monitored. The different dimensions of the transformative activity (R&D projects, training programmes, service platforms, start-ups) entail the development of specific metrics and the mobilization of third-party data. Those metrics that offer a data-intensive and timely view of each component of the transformative activity provide ‘a real-time barometer’ of the development of the activity that can be used as a starting point for understanding the dynamics of transformation and the degree to which there is progress or an indication that something warrants further investigation (Feldman et al., 2014).

IV. Conclusion

The ‘Six critical questions’ article is very useful at the dawn of a new budgetary period concerning regional policies, during which regions are invited to reconsider their choices of growth and innovation policy. These questions neatly summarize all the problems and uncertainties posed by the S3 concept. But today these questions cannot be answered as if we were still in 2010 or 2012, as if we have learned nothing.

The unique experience of S3 over the past few years has led to an enormous learning process regarding the design of strategies, preconditions and procedures required for effective implementation. Thanks to an impressive collective effort between academic researchers and policymakers at European, national, regional and local levels significant progress has been made. This progress has concerned the academic aspect; thus the innovation policy research domain has changed considerably within a few years (particularly thanks to the work on S3) (Foray, 2018a, 2018b, 2019; Morgan, 2017; Radosevic, Curaj, Gheorgiu, Andreescu, & Wade, 2017). But it has concerned especially the practical aspect as the S3 community of practice that has developed an implementation concept, which is consistent with theory, ambitious and whose feasibility has been demonstrated. The result is that the most recent national/regional S3 initiatives to strengthen research, development and innovation are far better conducted than they were a few years back.

This is why it seems to me that it is easier to elucidate the questions posed by Robert and Huiwen today than it was yesterday, even if there is still a lot to learn. Their article provided a magnificent opportunity to demonstrate this, and I thank them for it.

Notes

1. See the recent paper by Foray, Morgan, and Radosevic (2018) for an analysis of S3 within the broader research and innovation policies landscape of the EU.
2. P. David (personal communication, 2011).
3. On this subject, the famous guide mentioned by Robert and Huiwen, to which I contributed like many others, is no doubt a model of what must not be done when one wishes to convince

public agencies and regional governments regarding the implementation of a policy concept. It presented an incredibly complex process, displayed a certain rigidity and was ultimately counterproductive. That's my opinion !

4. M. Navarro (personal communication, 2016).
5. B. Hall (personal communication, 2010).

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