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Is a New Conception of Territorial Intervention Possible? An Example: “Brittany Green Transport Plan”¹

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Summary: The following work aims at describing and explaining an analysis method of the activity and its dynamics, which we have applied to the Brittany Green Transport Plan, in territorial intelligence logic. Based on a competency model, this methodology strives to characterise the collective competences and their evolutions, so as to give the actors ways to conceptualise them and then feed their territorial comprehension.

Résumé : Le travail présenté ici vise à expliciter une méthode d’analyse de l’activité et de ses dynamiques, telle que nous l’avons appliquée au Plan Véhicule Vert en Bretagne, dans une logique d’intelligence territoriale. Fondée sur un modèle de la compétence, cette méthodologie s’attache à caractériser ce que sont les compétences collectives et leurs évolutions afin d’apporter aux acteurs les moyens de les conceptualiser et, ainsi, alimenter leur compréhension du territoire.

Keywords: competency, activity analysis, car industry, carbon-free mobility chain, territorial intelligence.

Mots clés : compétence, analyse de l’activité, industrie automobile, chaîne de mobilité décarbonée, intelligence territoriale.

¹ The “Brittany Green Transport Plan” has been initiated at the beginning of 2009 by the Conseil Régional of Brittany, the Conseil Général of Ille et Vilaine, Rennes Métropole and the Rennes Chambre of Commerce and Industry (CCI). This plan is institutionally led by the Agence Économique of Brittany, and extends the prospective study on the future of the car industry run by the CODESPAR in 2008. The Plan was officially launched on the 21st December 2009 par its creators at the Conseil Régional of Brittany. Jean-Louis Legrand, the national coordinator for the de-carbonised transport plan was attending.

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The following work aims at clarifying an analysis method of the activity and its dynamics, which we applied to the "Brittany Green Transport Plan" plan in a territorial intelligence logic. Based on a competency model, this methodology's goal is to characterise collective competences and their evolutions so as to provide the actors with means to conceptualise them. It therefore feeds their understanding of the territory's adaptive dynamics with a triple stake:

- get common and pertinent reading frames in order to anticipate, in a mutating environment, the detection of threats to come and avoid, opportunities to grasp and assets upon which we can rely.
- get the finest description of available competences, and/or build them so as to answer to the challenge set by these transformations and take a part into them.
- get relevant levers to organise synergies that are necessary to the development of collective competences which will live up to the stakes, thus creating new forms of answers specifically related to economic activities .

However, and beyond this example, showing the significance of this method, as well as its generalisation potential, will allow a better apprehension of any type of economical activity.

Then, after having introduced the main elements necessary to understand the issues and stakes in Brittany related to the future of the car industry, we will expose the method which we devised and used, as well as its application to the "Brittany Green Transport Plan". Finally, we will try to express some more general remarks related to the use of this method.

I. Stakes and future of the car industry in Brittany.

1. *The car industry : a century rich in technological and organisational improvements.*

It might have been an electrical car, the 'Jamais Contente' ('Never-Happy'), that was the first to reach the speed of 106 km/h (65.8 m/h) in 1899, gasoline cars still surpassed it in 1909. Car industry built itself around the supremacy of heat engine. A century later, we can easily grasp the way this international industry regulates our economies and life styles.

The car gained its success thanks to the freedom and social status it symbolises. It gradually grew heavier by including new electrical and electronic equipments (30% of extra weight). It also got forms and volume (another 30%) that made it more attractive to customers, and saw its sell prices soar while a great majority of manufactured products went through the opposite. Car manufacturers have therefore sworn to constantly improve the technical performances of cars. However, the sell part of new vehicles has recently fallen behind that of the used cars even though the mobility needs have exploded. The manufacturers have adjusted to this demand by focusing on the creditworthy households (90% of the specialist car manufacturers customers), who moreover are the oldest customers (60% of the generalist manufacturers sales). They compensated this fall by moving their production to the countries where the workforce costs less, a measure that especially concerns the down market vehicles. Paradoxically, these models, which sells increased in France in 2009, were first conceived in a logic of growth by gaining market shares in these high mobility potential countries, which now constitute the core of the industrial activity.

The generalist manufacturers (Renault, PSA, Fiat, Toyota...) and the specialists (BMW, Mercedes, Porsche, Audi...) are engaged in a merciless competition on more traditional markets. These are in recess in spite of a wide, diversified offer. The latter is exacerbated by new entrants suggesting more economical solutions (such as Tata for India, Saïd for China...). The game therefore focuses on scale effects. Thus, if manufacturing three millions vehicles was profitable twenty years ago, four were necessary in 1995. Today, six is the minimum to ensure a safe future. This scale effect which has become mandatory for all, is accompanied by other demands: the de-integration⁴ of value chains, the management of the extended firm (manufacturer, system manufacturers), the regular reconsideration of ways to proceed, a constant improvement system that guarantees the reliability and the durability of the final product... It is an endless marathon! In addition, manufacturers concentrate their efforts on the most strategic functions (conception, purchase, assembling, sells...), and subcontract at least 60% of the realisation and the fabrication in volumes of modules or systems on the international market (global sourcing) so as to benefit from the experience effect and at the same time secure a return on the scale effect.

⁵ The de-integration consists in confiding the realisation of cohesions and sub-cohesions to equipment manufacturers. This distribution is realised within the frame of the extended firm, which becomes a chain of trust between the ordering party and the firms. The latters realise a part of the chain of value. The ordering party benefits from the experience effect of the "partner" firms. This externalisation also allows a repartition of the co-conception costs.

All of these evolutions in the car industry impact on an international level, and are characterised, on the one hand, as a continuing improvement of cars using a heat engines destined to customers owners. On the other hand, they are depicted as a steady optimisation process of the production activity. Until then, there has been no genuine reconsideration of the underlying conceptualisations of this activity or of the place it occupies in a larger context of mobility⁵.

2. The impact of the rupture's external factors on the constant evolution of cars.

However, in this beginning of the 21st century, this industry of the right-on-time, is submitted to external constraints that challenge the foundation of its economical model. Experts all agree on the fact that the world's fleet of cars will double by 2020 and triple by 2040. This expansion is hauled up to 80% by the BRIC – Brazil, Russia, India, China - and will be in line with a mobility model characterised by a hyper urban growth (5/6 of the world's population will live in cities). It goes without saying that resorting to the heat engine is responsible for the release of greenhouse gas and excessive petrol consumption. At this rate, it will never suffice to this level of demand. Besides, it has been noticed that the adaptation margins of mobility (the latter being dominated by the use of heat vehicles) are below the ones determined by the Grenelle de l'environnement texts related to the reduction of greenhouse gas releases (down to 20% in 2020). Consequently, our "car mobility" model and its practises might get marginalised, or, worse, dropped in favour of other standards that are now emerging (ex :China, India) Those standards originate from a radically different conceptualisation of the transport means: urban (90% of the market), clean (no release at all) vehicles which will be much cheaper and lighter, therefore consume less energy. In other words, a car tends to be perceived for its use and its capacity to satisfy the mobility needs of the users (besides other means of transports). This fundamental rupture sets the manufacturers in motion with the creation of new vehicle conceptualisations, as well as the users whose evolution is noticeable in their mobility practices.

3. Brittany's car industry faced with rupture

The ex-nihilo creation of a car industry in Brittany illustrates the efficiency of the territorial intervention methods used by the local and public Authorities. Indeed, within half a century, the Région Bretagne has developed a foremost car industry. Built around the assembly unit of PSA in Rennes, it results from a territorial industrialisation plan launched by the French State during the 1960s. This impulsion has since continued thanks to endogenous and exogenous measures which have globally contributed to improve the production process as well as the optimisation of the activity organisation in an uninterrupted manner.

PSA factory's production annual capacity was of 400 000 vehicles; in 2009, it assembled less than 120 000 units. The financial crisis had not only a full impact on this structure; it also unveiled a break in the market regarding mid- and top-of-the-range vehicles. Faced with the emergency of the situation, the local and public Authorities have initiated exceptional measures to protect and maintain the employment and the activities (such as the scrappage incentive...). For all that, wouldn't it be wise to imagine other measures to commit this industry to a new development dynamic?

The car's industrial future does not exclusively depend on the evolution of its only performance anymore. In order to accompany this transformation, it is necessary to explore other possibilities. So as to carry out this exploration, we suggest the description of the activity dynamics related to the car industry by resorting to individual and collective competency models, which would allow us to anticipate this activity's adaptation levers. It would consequently deliver us the possible directions of its evolution by anticipation.

II. Proposition of a method that will help to understand the dynamics of an activity

The competences concept holds a central role in our proceedings. Even though its use is trivialised, its associated definitions remain heteroclit and metaphorical. The classic models present it in terms of knowledge, know-how and know-be (Bellier, 1999) or as a resources combination (Le Boterf, 1999). They generally do not allow to go further than the taxonomist quirk of all sorts of nomenclatures and referential, which do not, by definition, encourage or promote innovation.

⁶ Mobility actually designs everything that concerns conception, manufacturing and the ending of mobility solutions: their use and the services related to it. We will then deal with the chain of mobility that extends to the vehicle conception and its use, to the offer of services adapted to mobility and its organisation afterwards.

The competences analysis process serves the adaptation of activities. Applied to the Breton Green Transport Plan, this process is a method based on a functional model (MADDEC⁶), and is theoretically based on individual competence (Coulet 2007, Coulet, submitted). It is also susceptible to account for collective competence. Individual competence is defined as ‘a dynamic organisation of the activity, mobilised and regulated by a subject to face a given task in a determined situation’, organisation of the activity, mobilised and regulated by a subject to face a given task in a determined situation.’ Besides, thanks to many references, (Piaget, 1974 ; Piaget, 1975 ; Bastien, 1984 ; Cell  rier, 1979 ; Vergnaud, 1990 ; Pastr  , 1997 ; Samur  ay & Rabardel, 2004 ; Leplat, 2006), two important notions are specified: processes which generate the production of a result (productive activity), but also the different forms of regulation of the activity. This means that, on the one hand, proactive regulations allow a better adjustment of the activity to the specificities of a situation, and that on the other hand, retroactive regulations permit its evolution (constructive activity) depending on the results.

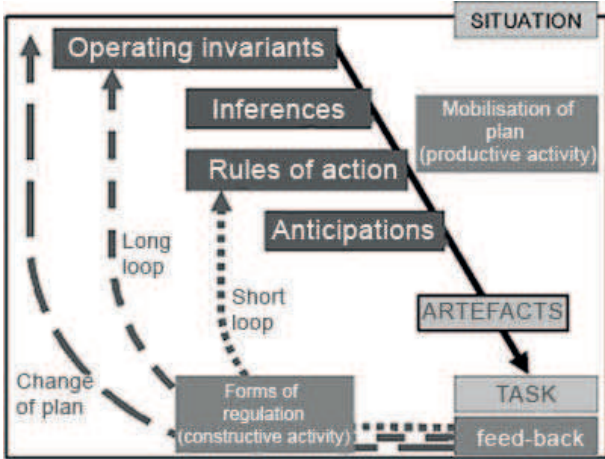


fig. 1 – MADDEC (from Coulet, to be published)

⁷Dynamic Analysis model used to describe and evaluate competences.

In addition, the hierarchal organisation of activities, which can be declined in different sublevels or led by more generalising ones, allows to:

- define the collective competence, which is itself organised into a hierarchy, such as the organisation of individual activities, or of smaller groups of people.
- give an account of the processes at stake in the collective or individual competence, by using the same theoretical frame.

Separated from this theoretical frame, our analysis method of the collective competence evolution features three steps, which respectively allow to:

- name, localise and precisely describe, at an instant T, the characteristics of the activity organisation which is linked to those of the environment in which it exercises. At this level, the goal is to characterise, by referencing to the model:
 - o the operating invariants or conceptualisation forms that are associated to the activity, as well as the concepts deemed relevant to be taken into consideration to realise an activity;
 - o the inferences or adjustments of the rules of action to carry out, depending on the characteristics of the situations.
 - o the rules of action necessary to the realisation of the activity that will allow to get the expected result;
 - o the anticipations of the expected results, linked to the aims of the activity.
 - o the tools (artefacts) used to realise the activity
 - o the situation, taken as a context into which the activity happens, with, most notably, the elements that evolve independently from the activity, and those which are modified by the activity itself.

The stake consists here to understand the proactive adaptation dynamics of the activity given the context in which it happens. In other words, it is necessary to apprehend and understand the vision the actors have of their environment (and of the changes that happen within it). It depends on their representation of it and on the way they will pinpoint the choices of the rules of actions as well as the tools they mobilise so as to adjust the activity, according to scenarios they usually face.

- give an account of the three modes of retroactive regulation, that are mobilised or can be mobilised, so as to make the activity evolve. The stake here is to identify the activity dynamics by understanding it through the three levels of retroactive regulation. They are, in conformity with the competency model, the short (productive) or long (constructive) loops, and another type of loop dynamics that features a plan change (integrative). In other words, the fundamental point here is to first give an account of the modifications of the activity organisation (which nature remains the same) by listing the changes that have happened to the rules of action (regulation in productive loop), and to the operating invariants (regulation in constructive loop). Then, through the third level of regulation (integrative loop), an additional report on the redefinition process of the activity itself (compared to others) would be given.
- name, locate and describe, at the t+1 instant, the characteristics of the activity which results on the development of one of the three regulation forms (see 1st step).

Then, the question is, what can therefore bring such a theoretical and methodological frame to the comprehension of the car industry evolutions and to the determination of the territorial development strategies?

III. The “Brittany Green Transport Plan”

If, in the first place, we keep the example of the car industry in mind, such a framework brought us to consider the organisation of the industrial activity as a collective competence built on and mobilised by the subsidiary companies. As for the dynamics of this activity, giving an account concerning them through three levels of the model regulation is possible, as such:

- a “short loop” dynamics which corresponds to an evolution based on the continuous improvement of the heat engine production for a customer owner;
- a “long loop” dynamics which corresponds to a new conceptualisation of a lightened and electric car (use of composites)
- a type of loop dynamics that features a plan change, which corresponds to the integration of the car production activity to a more global one: a user-oriented mobility chain

Thus, whereas the first level of regulation gives an accurate report of the car industry’s evolutions, which have been described already, the last two levels express two very distinct ways to answer to the new deals in the market of the car and mobility industry. If this analysis is taken into account, the last two levels of regulations are the ones that constitute the base of the “Brittany Green Transport Plan” ambition, which goal is double:

- create a centre of excellence for electric cars
- set up a carbon-free mobility chain of excellence on a regional scale

More precisely, two autonomous and co-depending frameworks have started; they will generate new activities and, as a consequence, innovative high-qualified jobs:

- The first one will set the Breton industrial future into a new playground: the massive production of electric cars. As Brittany intends to take an active part in the industrialisation of commercialised electric vehicles as soon as 2010; the plan also contributes to create the conditions which will allow the Région to be ready and in the vanguard for a second generation of 100% electric and 100% composites vehicles. Rather cheap and easy to use, these cars will become the base of a carbon-free mobility chain which meets the mandatory requirements of greenhouse gas reduction
- The second framework aims at transforming Brittany in a major territory regarding carbon-free mobility. Three development axis will take part to it:
 1. The integration of the electric car in an aging fleet in which thermal vehicles prevail;
 2. The creation of an infrastructure network of electric recharges so as to make their use more accessible;
 3. The creation of mobility services in order to facilitate the self-share, THE SOFT MODES and the modal report, as well as the maintenance activities and e-paying systems.

Besides, as mobility is an activity, its dynamics can be understood with the help of the same method, which allows the distinction of three forms of regulation:

- an evolution based on the continuous improvement of the current system by relying on the road traffic regulations, the offer of a wider choice of means or transports, the organisation of the modal report, the creation of services such as car-sharing or the shelf-share (regulation in short or productive loop);
- a change of direction obtained by a new conceptualisation of the mobility chain which is guided by achieving the factor 4, with the introduction of carbon-free vehicles (zero release), a modification of the modalities concerning the sharing of public space, solutions to substitute individual trips by e-services, the organisation of a modal report (regulation in long or constructive loop);
- the integration of the mobility activity within a new approach of urbanity with another distribution of activities and services of everyday life (regulation of loop dynamics that features a plan change, or integrative).

On the other hand, managing to make new forms of mobility appear in the favour of the environmental performance on a given area depends on its acceptability (the future users are submitted to a subjective judgement before they can even use it), of its acceptance (the said users are again subjectively judged while they are testing), and then of its appropriation (effective use of the available system) by the whole group of the parties participating to the mobility chain: manufacturers, mobility operators, users, institutions... Given the complexity of the exercise that associates the public and private actors, it is required, thanks to a cooperation between all these actors of mobility, to help a will to emerge as well as a collective competence of a new type. Therefore, as an example, if a new vehicle conceptualisation is considered by manufacturers so as to make its integration smoother within a mobility chain, it will be necessary, to establish gateways at the very beginning of the car conception and until the moment it will be ready for use. This process will contribute to the elaboration of a global appropriation dynamics. This collaborative necessity is called for with the mobility operators, whose working methods must evolve to become more interoperable.

Evidently, reaching such goals might require the setting up of a system which could bring each of the territorial partners to share and anticipate a better understanding of the mobility dynamics. From then on, having a model and an associated method used to apprehend the processes constitutes an absolute surplus-value in the conception and setting up of a territorial strategy. Thus, we can guess that thanks to the formation of a frame destined to the industrial and commercial deployment of a mobility solution at a regional scale, Brittany will therefore be able to accompany and help Breton industrials to enter in this new playground and simultaneously bring manufacturers, equipment manufacturers and mobility operators who are looking for an environment favourable to the creation of new solutions, to their experimentations and their industrialisation.

IV. Back to the method again

Finally, the method that has been used proves to be operational and gives an accurate conclusion of the evolutions of a specific activity. We were able to bring this fact to the light in the case, for example,

of the car industry and mobility. Besides, it offers the possibility to consider, in a systematic way, the processes at stake on their whole (with the mobilisation of this type of collective competences), and, specifically of those which preside over their different modes of adaptation. Thus, if we take a definite model of competence as a base, it proves to be possible to deploy a real engineering which will serve the developing of a territorial intelligence. The latter will not be limited to the visualisation of a change in terms of continuous improvement (short or productive loop). On the contrary, it will be given means to explore more radical evolutions (long or constructive loop), a process which even could reach a reconsideration of the activity itself (change of plan). Applying such a theoretical and methodological frame to the "Brittany Green Transport Plan" has allowed us to illustrate a process which of course retains its relevance in its approach of any type of collective or individual activity.

However, passing to the concrete elaboration of an intervention process on a territorial scale implies some elements such as:

- give the territorial experts a new representation of their activity, which will lead us to conceive and spread stimulation kits. Their goal will be to create a group of "agents of change" which role will be to pilot the projects with, as a base, a shared conceptualisation of regulation processes of an activity;
- mobilise the experts so as to create shortcuts of comprehension. They will take the form of resources that actors will be able to mobilise and use so as to decipher economic mutations in another way and consider different possible ways of adaptation (regulation loops);
- develop the training accelerators which will help the actors to create and expand new collective competences which are at the base of new value chains.

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