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BORDEAUX, FRANCE

# Transitions towards sustainability in the case of food systems

## Issues for ergonomists and ergonomics

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First of all, I would like to thank the organizers to invite me for this conference. As you can see it on the slide, we prepared this keynote with my colleagues, Vincent Boccara, who could not attend the conference, and Chloé Le Bail who is here and will answer to your questions as much as I will. We entitled our presentation Transition towards sustainability in the case of food systems as we currently work together in a research-action project carried on issues regarding sustainable food at work. From this on going research, which we will briefly present, we wish to point out some challenges for ergonomics and for ergonomists. We hope this will lead to an interesting discussion with you!

# What do we mean by « transition(s) »

“Transitions (...) being evolutionary (...) it means that they are open ended, non-linear, fundamentally uncertain, and based on searching, learning, trial and error, and experimentation. Surprises and unintended outcomes are likely. Such transitions depend critically on interpretations and social acceptance. They are also conflictual and deeply political, producing trade-offs, ‘winners and losers’, and related struggles, as politically influential and well-resourced incumbents often resist change”

*European Environmental Agency, 2018:11*

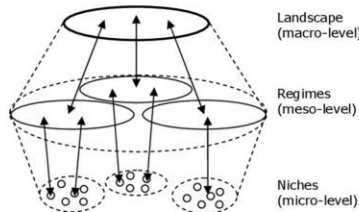


To start, we propose to discuss the buzz word transition. As you know, now a lot of people, either politicians or various stakeholders use this word and qualify the object to which it applies. Ecological transition which usually means decarbonization of our economy, nutrition transition which means less meat, agroecological transition which means less use of chemical inputs and more use of biological regulations, and so on. So, it seems that transitions are plural, and, refer to a shift from a state A to a state B which currently refers to some changes in our production and consumption practices and systems.

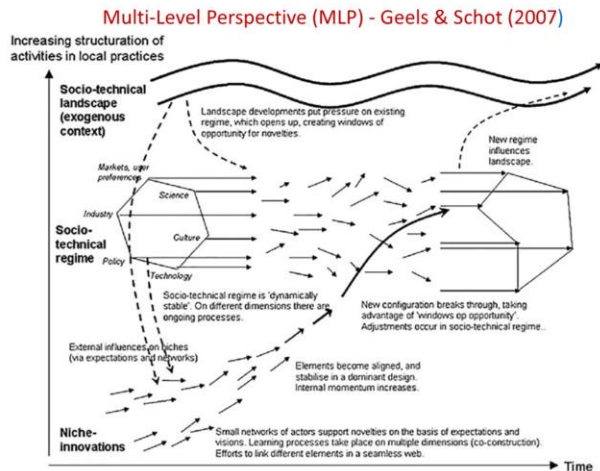
Historically, transition was a word used by historians and sociologists to characterize the shift in societies such as the Russian revolution at the beginning of the 20th century, or the shift which occurred in communist countries at the end of the last century. So it can be said that transition refers to a shift from one socioeconomic paradigm to another, although you know that today the idea of shift is not always taken on board by politicians for example.

As pointed out by the European Environmental Agency, transition is evolutionary (see slide). Therefore, it is not so much characterizing state A and B which is key, it is to capture the process by which state B is defined and potentially reached or the way there is a co-definition of the state and the means to reach it. So as pointed by this agency, (see slide)  
 But transition is also a concept which is particularly used by the scholars working on sustainable transition.

## Sustainable transition : MLP as a framework ?



Geels & Kemp (2000)



Indeed, a community of scholars has emerged 25 years ago, the sustainable transition research network. This network is a multidisciplinary one (transition studies) whose participants share the willingness to understand how sociotechnical systems change over time, the way new technologies can challenge the innovation trajectories carried on by incumbent actors. A key framework in this community, although not the only one, is the so called Multi-level Perspective which distinguishes niches, regimes and landscape so it is a multi-scale or layered model.

Sociotechnical systems here refer to a collective of actors, their networks, their practices, their knowledge, the technologies they use, their representations, and the norms they adopt, as defined by *Rip and Kemp in 1998*. Niches are small networks at micro-level which support novelties on the basis of expectations and visions. The elements within the network become aligned and stabilized while under external influence mainly from the meso (sociotechnical regime) and the macro level (landscape). Transition means a transformation of the incumbent regime in relation to windows of opportunities opened for niches to break through in the regime. Such framework has been applied to long-term transition processes such as the shift from sailing boat to steaming boat in the 19th century, the emergence of electricity, cars, nuclear power and so on.

As pointed by a literature review published in 2019, one can say that transition studies require a longitudinal approach to capture a long term process. Interestingly, this review also points the fact that the community is, to a certain extent, split into two research programs: one deals with the study of already achieved transitions, one deals with « transition in the making » and how to facilitate such transitions.

Although the schema presented here is rather well known out of the community to represent a possible transition pathway, it should be noticed that scholars in this community also discuss about the diversity of the transition pathways.

# Various transition pathways?

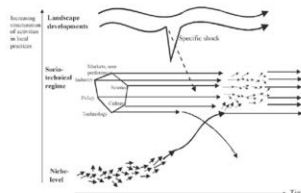


Fig. 8. Technological substitution pathway.

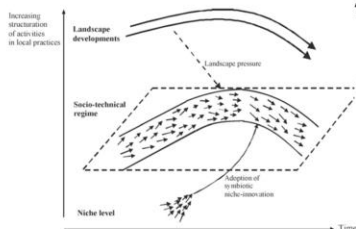


Fig. 5. Transformation pathway.

Geels & Schot (2007)

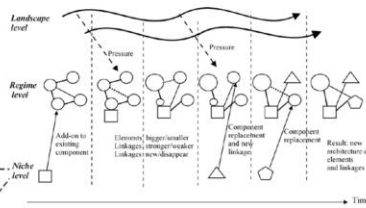
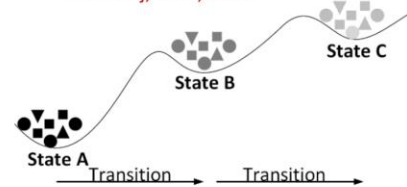


Fig. 10. Reconfiguration pathway.

Zolfagharian M., Walrave B, Raven R., Georges A., Romme L. , 2019.  
 « Studying transitions: Past, present, and future » Research Policy  
 looking at past transitions or at transitions in the making?

Wigboldus, S.A., Eldik, Z.C.S. van, Vernooij, D.M., 2021



For example, Geels and Schot in 2007 proposed various transition pathways on the basis of their research on past transitions in various industrial sectors. Wigboldus and al, in 2021, advocate for paying more attention to transition pathways but propose another way to represent the transition inspired may be more by the way resilience of socioecological systems is addressed and claiming for identify stages in which new configurations are temporary stabilized.

Few ergonomists participate in this community while some of the questions which are addressed echo our own preoccupations already mentioned during this conference, such as multi-scale approaches, longitudinal approaches, systemic one. So a question can be : how such approaches can be useful to tackle transition processes and issues ? Before addressing this question, let me give more flesh to my talk which is rather abstract up to now. Let me present a case in which we are involved as ergonomists, regarding transition processes towards sustainability within food systems.

## Food systems transition towards sustainability The case of the territorial food project « de la Plaine aux Plateaux »

What do we mean by food systems ? Rastoin & Gherzi in 2010 defined a food system as "an interdependent network of actors (companies, financial institutions, public and private organizations), located in a given geographical area (region, state, multinational space) and participating directly or indirectly in the creation of flows of goods and services oriented towards satisfying the food needs of one or more groups of consumers locally or outside the area considered". In the case we present here, the geographical area is delimited by a policy instrument, called a territorial food project, which I will explain further in the next slide, and its local implementation in a agri-urban area located in the south-west Parisian suburb.





# « territorial food project » A multi-layered object!

1. A policy instrument to support transition in food systems related to various French laws regarding food, nutrition, health and social inclusion.

Main purpose : relocalize agriculture and food in so called territories by supporting the installation of farmers, short circuits or local products in canteens.



A procedural policy instrument



National label & contract with a regional public administration      Financial means (after Covid crisis)



France Relance : agriculture, alimentation et forêt  
Mesure 13 Volet B  
Amplification des Projets Alimentaires Territoriaux

**Appel à candidatures 2021**  
Actions d'investissement dans le cadre de  
Projets Alimentaires Territoriaux

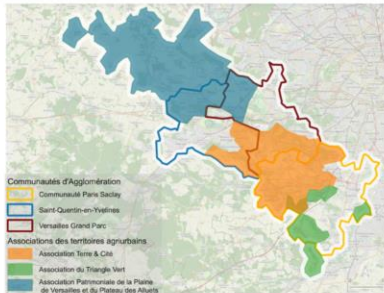
<https://agriculture.gouv.fr/quest-ce-quun-projet-alimentaire-territorial>

As explained on the web site of the French Ministry of Agriculture and Food Sovereignty, a territorial food project (TFP) aims to relocalize agriculture and food in so called territories by supporting the installation of farmers, short circuits or local products in canteens. Stemming from the Loi d'avenir pour l'agriculture, which has encouraged their development since 2014, they are design and implemented collectively on the initiative of local players (local authorities, agricultural and agri-food businesses, craftsmen, citizens etc.).

So la TFP it is first a policy instrument related to various laws and more specifically the so called "loi d'orientation d'avenir". This policy instrument is procedural in the sense that it does not fix clear quantified objectives to be reached, the compulsory actions to be taken. A territorial food project then is first viewed as a tool to support the concertation among the various stakeholders participating in the relocation of food systems, and as a tool which support financially the collective governance of the project. If the project is to be labelled by the public administration, there is a need to realize a diagnosis, to identify a collective goal, to define the operational actions which are considered as required to achieve such a goal. A contract is then signed which specify the action plan and the financial means allocated by the state to achieve it. When the first wave of territorial food project took place, means were mainly dedicated to facilitation in networking processes, while after Covid crisis more financial means were allocated and directed towards investments.

# « territorial food project » : A multi-layered object!

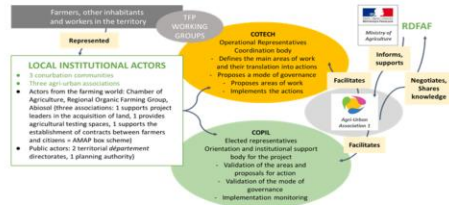
## 2. A physical and administrative area



## 3. A collective project with a common goal

**Acting together to reinforce the food resilience within the area**

## 4. A multi-stakeholder governance



## 5. An action plan with distributed tasks

PLAN D'ACTION DU PIET de la Plaine aux Plateaux		CBAs	Politique géographique
<b>Axe 1 - AMBITION :</b> Concrétiser la démarche partenariale du PIET et impliquer les acteurs du territoire	<ul style="list-style-type: none"> <li>Co-construire une gouvernance partagée. Organiser les Cba et Copi, mettre en lien les partenaires, combiner des outils de dialogue territorial efficace</li> <li>Appuyer des Groupes de Travail. Regrouper les acteurs et faciliter les échanges</li> <li>Faciliter les rencontres et les actions locales. Animer des agglomérations regroupées par les communautés d'agglomérations</li> <li>Appuyer le PIET avec les collectivités publiques existantes. Faire le lien avec différentes échelles (grande des départements, de la région, les autres politiques publiques et avec la planification au-delà des projets de territoire)</li> <li>Coordonner des actions avec les PIET voisins</li> <li>Actualiser et développer agraires et environnement</li> <li>Contribuer au dispositif d'évaluation du PIET</li> <li>Valider le dialogue auprès de partenaires extra-territoriaux</li> </ul>	<ul style="list-style-type: none"> <li>la Parisienne PIET et les autres PIET</li> <li>Communautés, communautés d'agglomérations, départements, régions, autres</li> <li>PIET et autres PIET</li> <li>PIET</li> <li>Autres territoires</li> </ul>	
<b>Axe 2 - PRODUCTION ET TRANSFORMATION:</b> Passer de l'agriculture au territoire et accompagner le développement d'une offre alimentaire locale, diversifiée et de qualité	<ul style="list-style-type: none"> <li>Appuyer les associations pour lutter contre les risques des cultures : protéger l'environnement et des filières de certification contre les agissements</li> <li>Protéger le foncier agricole et intervenir sur les filières</li> <li>Mettre la dimension des recettes locales, valoriser les enjeux des logements agricoles dans les projets urbains</li> </ul>	<ul style="list-style-type: none"> <li>Agriculteurs en partenariat de projet agricole</li> <li>Collectivités (Etat et autres)</li> </ul>	

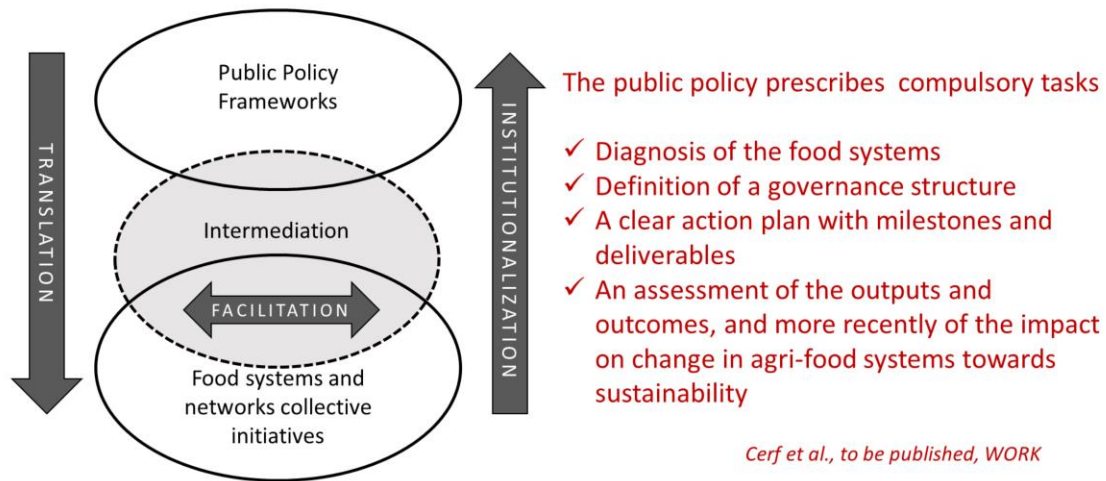
But the territorial food project has other meanings. In our case, it is also an area which has a geographically consistency in relation with the agricultural use developed over centuries in the area. 3 agriurban associations (in blue, orange and green) have emerged at the beginning of the 21st century to defend this use in face of increasing urbanization and of state planification regarding the this area. But it is also an area delimited by 3 commune communities, which are local administrative and political bodies.

Third it is a collective project which has been established through a multistakeholder process to define a collective goal (in our case, acting together to reinforce the food resilience within the delimited area), a governance structure and an action plan to reach the goal. As required for any territorial food project, the governance associates various partners. In our case, mainly associative bodies, local authorities, organisations related to agriculture. It should be noticed that no private or cooperative enterprises are in the governance, although they are key actors in the food systems! And as required to access to labellization and financial means, the FTP is also an action plan. In our case, this plan concern 6 main thematics, for example public and private collective catering, food accessibility for all, aso...The actions related to these thematics are listed. The way these actions will be implemented and the required financial means are identified. Finally such actions are dispatched among those involved in the governance for the follow up and the facilitation of their implementation on the area.

What does it mean for us as ergonomists : A territorial food project can hardly be seen as an organization as we usely define it in ergonomics. It is not a system in which clear hierarchy can be identified, clear key tasks can be identified, and work situations easily delimited. It has properties which need to be mentioned to be able to identify a framework which we can mobilize to analyze and facilitate such a process



## How to analyse the management of a food territorial project ?



With Chloé and Vincent and other colleagues from political and agronomic sciences, we suggest to pay attention to three main processes which we called intermediation processes and which result in intermediation work which needs to be analyzed and supported. This work takes place to support the political debates regarding the way to implement the policy tool, to TRANSLATE it in order to achieve the compulsory tasks as quoted on the slide, but also in order to sustain an collective action at the level of the whole area. Intermediaries therefore might create discussion spaces to support the definition of a common goal and the design an action plan. They participate in the allocation of resources and responsibilities among the participants involved in a non hierarchical governance body. At the same time, they have to FACILITATE initiatives which we call here territorialized collective action schemes. This work also implies to implement facilitation processes aiming at enabling the emergence and stabilization of new networks among the various stakeholders involved in food systems.

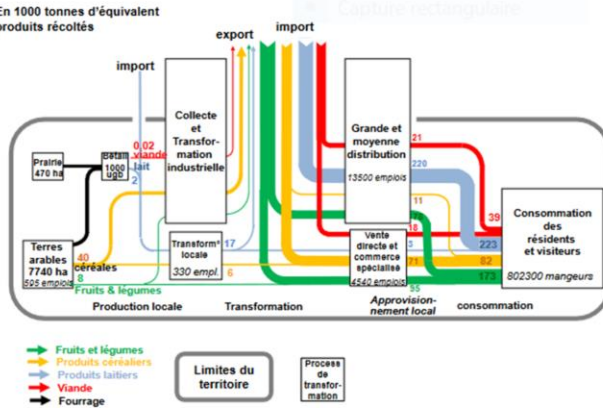
Finally it also implies that they can act as a spokesperson in various arenas to enable such new networks to be recognized, supported, and finally legitimized, INSTITUTIONNALIZED.

A second question is than : how to be part of this intermediation process as an ergonomist ?

# territorial metabolism picture a way used to represent the territorial food system :

## Périurbain de l'Ouest Parisien

En 1000 tonnes d'équivalent produits récoltés



## A « cold » picture

It does not acknowledge that such flux are the result of a long history of interactions between farm land and urbanization, food production and consumption.

## How do intermediaries anchor this analysis in a long-term dynamics ?

[https://www.metis.upmc.fr/sites/default/files/media/projets/torsades/torsades\\_fiches\\_juin\\_2021.pdf](https://www.metis.upmc.fr/sites/default/files/media/projets/torsades/torsades_fiches_juin_2021.pdf)

To answer to this question, we analyzed more in depth the way such intermediation processes were carried out. Regarding the translation process one, let us take an example. While it is compulsory to achieve a diagnosis of the territorial food systems, the way to carry it remains open although the chosen procedure has to be validated by the regional administration.

The association who has in charge the task, delegated it to researchers who proposed a concept issued from geography, the territorial metabolism one. Physical flux of products from production to consumption are referred to a given measure unit (nitrogen, calories...). The size of the arrows indicates the amount of product which circulate within and outside the area. The color is in relation with the type of agricultural production. Rectangles are used to shows the channels by which the production reach the consumers. Such a diagnosis enable the PAT governance to get what we can call a cold picture of what the initial territorial food system is. It does not give any access to the actors who take part to the food systems, the potential tensions among these actors and their vision of the future, the history of such systems, the work which is performed to get such flux.

- ✓ Mainly cereal production which are exported out of the area
- ✓ A critical lack of meat, milk products
- ✓ Provision of vegetables and fruits inside the area, but not sufficient in comparison with needs.
- ✓ A lack of local transformation
- ✓ About 800 000 « eaters » among which 400 000 « visitors ».

# A richer picture dynamics which co-exist locally



Citizens handling contracts with small-farming holdings



A « french silicon valley » planned by the State , with circular economy

Municipalities : offering job and land to farmers who are comitted to provide vegetables for canteens



Farmers offering to urbans various services (on-farm picking & selling, training)



Farmer organizing local diversification and transformation



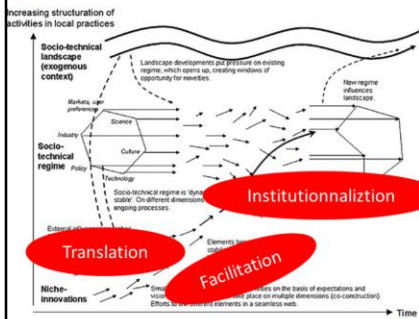
Local agri-urban associations building internet facilities to reconnect farmers & consumers



In fact, although the territorial metabolism is presented to the administration as a key element of the diagnosis, intermediaries have a richer picture in mind. They are able to acknowledge a lot of various local collective initiatives such as those we point here.

Some have started before the first territorial food project and this last one became an opportunity for further development. This is the case of the farmer who organizes local production for crops such as legumes or buckwheat and local transformation (legumes sorting and packaging, milling for oil seeds and cereals..). Intermediaries are also involved in the development of new ways to install vegetable growers. Either with collectivities who offer land and production means in exchange of a contract to provide vegetables and fruits for the school canteen. Or with associations which can help to install newcomers to agriculture who hardly have access to land or adequate training.

# Which place for the ergonomist?



The MLP can be related to intermediation processes but don't really support the way we can contribute, as ergonomist, in such intermediation processes

## Participate in opening inquiry spaces in which to include

- the multi-voicedness related to the diverse systems developed to re-connect local food production and consumption from an activity perspective
  - the workers and their way to perform their activities within these systems including those designing and implementing policies
- => In our case we chose to point unseen issues such as
- the activity of workers to access to sustainable food at their workplace
  - the way private collective catering managers reorganize work and access to local food while faced the high competition among the various food systems wishing to access local food
  - The activity of intermediaries while they collaborate to enable interactions between niches and regime food systems.

Although the intermediaries have a much richer picture than the one depicted under the territorial metabolism concept, when analyzing their work we can point out that they lack means

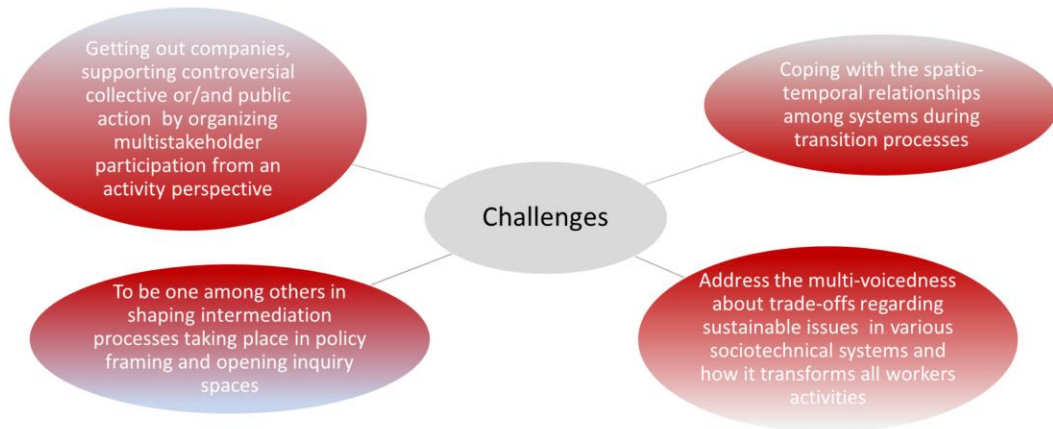
- to organize debate spaces in which the multivoicedness which underlies the variety of initiatives in terms of ways to reconnect local food production and local consumption
- to create a real contribution of the territorial food project to the territorial food resilience

Ergonomists might then support the creation of such spaces and take part to them by contributing to involve those who are working in the various food systems which exist locally. They can highlight the working conditions in food systems which are not so much under the spotlight.

In the territory for example, some issues are unseen. For example the high competition among channels to access local food, implies to better understand how this produces more variability and uncertainty to be dealt with by the middle managers such as those purchasing products in collective catering, and induces new abilities to secure local procurement on the long term. A second example is the access to local or sustainable food by those who daily work on the area without leaving there. A third concerns their inability to take private collective catering enterprises on board while these ones develop new managerial skills and rules to integrate local food in their menus.

Let us now switch from this case study to try to draw some lessons and point some of the challenges we have to face as a community.

## Lessons learn from this case study some challenges we had to face



- What are the main challenges for ergonomics and for ergonomist...all points, from my point of view challenge both ergonomics and ergonomists. What are they?



## Key points to be addressed by ergonomic frameworks

In order to help ergonomists to face these challenges

- Develop a **systemic** AND **diachronic** approach
- Support the **involvement of stakeholders** acting at various **interconnected scales**
- Enable the ergonomist to be part of a **multidisciplinary intermediation team** which contributes to a **policy framing and implementing process**
- Give account and support a **multi-voicedness process on the long term** in which **political and values debates** take place

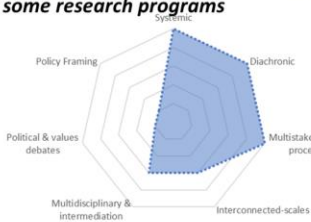
So for us, there is a need to develop a framework which enables the ergonomist to have a systemic and diachronic approach, which support (read the slide)

The question is then : does such a framework already exist or do we need to revisit our existing frameworks ?

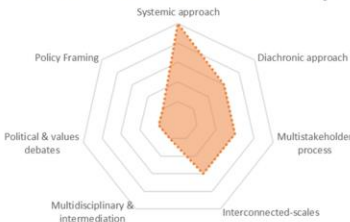


# how are such key points addressed currently

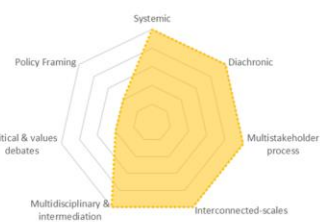
*In some research programs*



**Cultural-Historical Activity Theory**

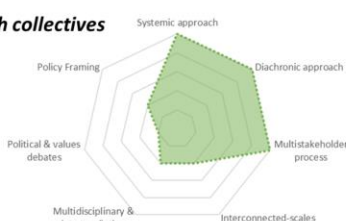


**Sustainable System of Systems**

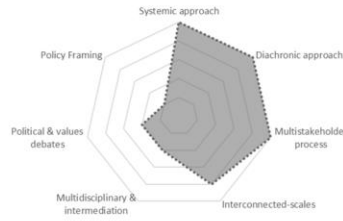


**ATEMIS-LIR**

*Or research collectives*



**CREAPT**



**Commission CDD (Design for Sustainable Development) of ARPEGE**

On this slide we propose to represent various research programs or research collectives which have not necessarily been developed to address sustainability transition processes. To our knowledge no framework has been up to now developed to address this.

So we started to reflect upon existing systemic approaches as we acknowledged that system thinking is highly relevant to tackle sustainability issues as already pointed out by the SoS model which is one among others researches we examine. Therefore, all the programs and collectives are considered as dealing with system issues although they do it in different ways.

Please don't focus on the metrics we used to compare the various programs or collectives, it is work in progress and we approximatively assess the extent to which one dimension is taken on board or not.

Apart from systemic approach, we can see that the diachronic or longitudinal approach is also well represented although may be more recently in the SoS framework as far as we know.

While dealing with multiSTH approach is quite common for ergonomists, we can notice that the various programs and collectives are not all able to provide theoretical and methodological guidelines to carry this while various scales are interconnected. Indeed we are more at ease to address multiSTH issues within a given enterprise, but less when we have to involve the diversity of the value chain actors and the diversity of their representations and points of views. That's the same when addressing various administrative scale and policy makers at local, regional, national, international levels.

While most of the programs recognize the need for multidisciplinary approaches and give eventually recommendations to act as an ergonomist in multidisciplinary teams, we consider that it becomes less clear when ergonomists have to take part to intermediation processes which we think are key to support transition within various systems towards sustainability

Finally, two dimensions are much less supported by the programs and collectives we quote here. The first one is the way ergonomists can intervene within political, ideological, value debates...while ergonomics addressed this dimension as part of the activity, it less addressed it as part of the design of new work systems leading to more sustainability. So to say how our frameworks support a reflective stance to intervene in such debates and to enable them to be taken into account in the design of new work systems ?

The last but not least point is the way such frameworks pay attention to the political framing and its translation at different levels of action. Indeed, policies and regulations are taken into account as context, as constraints, but the work which is done to develop such policies and regulations, the way they are translated has up to now scarcely been studied.

# towards an ergonomic community contributing to sustainability transition management

**• A need of structuration**

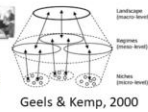
- At a national (e.g. SELF) & international level (IEA) ?
- Symposium, Technical committee (as ODAM) ?
- Researchers , students and practitioners in ergonomics or within an interdisciplinary community



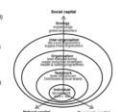
**• Which topics to discuss ?**

- How to represent system : limits, interaction, connections
- How to represent transition : as a multi-layered transformation of intertwined systems/ various stabilization and consistent phases
- How to analyze intermediation work and to intervene as an intermediary ?
- How to be reflective on the way we and others address sustainability issues in transition processes

Carayon, 2009



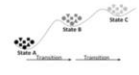
Geels & Kemp, 2000



Thatcher, 2015



Geels & Schot, 2007



Wigboldus et al., 202

**• How to make aware transition managers of what ergonomics and ergonomists can offer ?**

So to conclude this presentation we suggest that there is a need to may be join our efforts in order to develop conceptual and operational frameworks which clearly enable ergonomics

- to discuss with other disciplines who develop research on sustainability transitions,
- To support training programmes either for students or practitioners which will to take part to transition processes in real work situations and systems.

Read slide.

Thank you for your attention

