A set of systemic design tools for the design of flourishing local fashion systems

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Context and issues

Our research is part of a new decentralized vision of the territories and takes part in the construction of new socio-technical models of circular economy, which seek to increase the environmental efficiency of processes, optimize the use of accessible resources and the autonomy of stakeholders in regional ecosystems.

This alternative model of development based on several sources as bioregionalism (Georgescu-Roegen, 1971), conviviality (Illich, 1973) or sufficiency (Schumacher, 1973) is emerging advocating the necessity to both focus on a smaller territorial framework and to define systems that are in line with the values of environmental and social justice. Ezio Manzini (2013) uses the term "cosmopolitan localism" to define the model as "*a globalization based on interconnected localities, where many important decisions are made locally by the people directly concerned, and more importantly, where for each step of the process of production and consumption, much of the decision-making, know-how and economic value remains in the hands, minds and pockets of the local communities*".

Systemic design can be useful to support the construction of this complex model and face its limits. Systemic design is a discipline that has its roots in cybernetics, ecology and systems complexity, and highlights the circularity of material flows, the importance of the dynamics of sociotechnical networks, the diversity of local cultures and the auto-poietic behavior of systems. From hard to soft-system methodologies from qualitative to quantitative analysis, from positivist to constructivist epistemologies, different approaches are developed so as to catch the behavior of systems and participate in their effective transformation.

Applying systemic design for supporting regional transitions involves the creation of conditions at different scales to help the emergence and the development of active and sustainable communities. It questions policies, resource extraction and valorisation, processes and technologies, business models, social issues and concerns every stakeholder present in each node of value constellations. These actors can be multiples, possess varied internal representations and have heterogeneous powers of action according to their own situations.

Thus, selecting design approaches is a real challenge that need to be based on empirical data and rich theoretical foundations considering systems that relies mainly on the ability of stakeholders to act in complex environment and that are able to construct new dynamics and virtuous loops of activities from resources and metabolism of the territory.

In this paper, we propose an operational contribution for supporting territorial regime transitions through systemic design. A set of tools is presented, realized from research materials of an action-research dedicated to the development of a sustainable fashion community in the Nouvelle Aquitaine Region.

Methodology

Our research is anchored in an action research approach on the territory of Nouvelle Aquitaine region. This resolutely inductive and empirical approach considers the field as a place for experimenting and confronting the concepts and tools imagined from the observations and situations experienced within this terrain.

From an operational point of view, the action research is based on the intention to endeavour the emergence of activities around the valorisation of local resources, used industrial and individual textiles and clothing. Two type of objectives were highlighted to initiate a complex socio-technical process of design for regional transition:

> (1) Different stakeholders are involved all along the process: innovation clusters, the regional circular economy platform, sorting, upcycling and recycling centres, designers, seamstresses, brands and citizens of the territory.

> (2) The ideal objective is to facilitating the development of a complete ecosystem that explore all deposits of bio-resources and used textiles on the territory and find solutions of valorisations by co-creating pathways that fight continuously against legislative, organisational, knowledge and technological lock-ins.

The action research consists in the participation of the researcher in two different scale projects:

At a regional policy level, the author was an active member of the INTERREG EUROPE Retrace project, dedicated to apply systemic design method (Barbero et al., 2017) into five regions (Nouvelle Aquitaine included). The actions of this project consisted in:

- Realizing a holistic diagnosis of the territory that analyzed the key features of the territory (geography, urban center, economy, demography and culture), the actual political instruments

for circular economy and an input-output characterization for three sectors. The textile industry was one of them.

- Analyzing business models of more than thirty good practices. Five local and nine international good practices were observed in the textile and clothing sector.

- Managing four regional stakeholder meetings aimed to respectively framing the actual lacks of circular initiatives and transferring knowledge through good practices around three sectors. One workshop of the third meeting was dedicated to the valorization of textile in Nouvelle Aquitaine and co-designed with industrials, social entrepreneurs, policy makers, and NGOs.

- The definition of a regional action plan for circular economy built on the previous three steps.

At a niche level, the researcher was engaged in the development of a social entrepreneurship initiative[1] dedicated to provide training and upcycling services in the textile sector. This initiative has been supported by an incubator in social innovation since 2016[2]. Committed to the values of ethical fashion, reuse and citizen autonomy, the ambition of the project is to participate in the animation of local initiatives, in the knowledge diffusion of both industrial and creative upcycling practices and look for fostering the emergence of brands and shared elaboration of upcycled product collections.
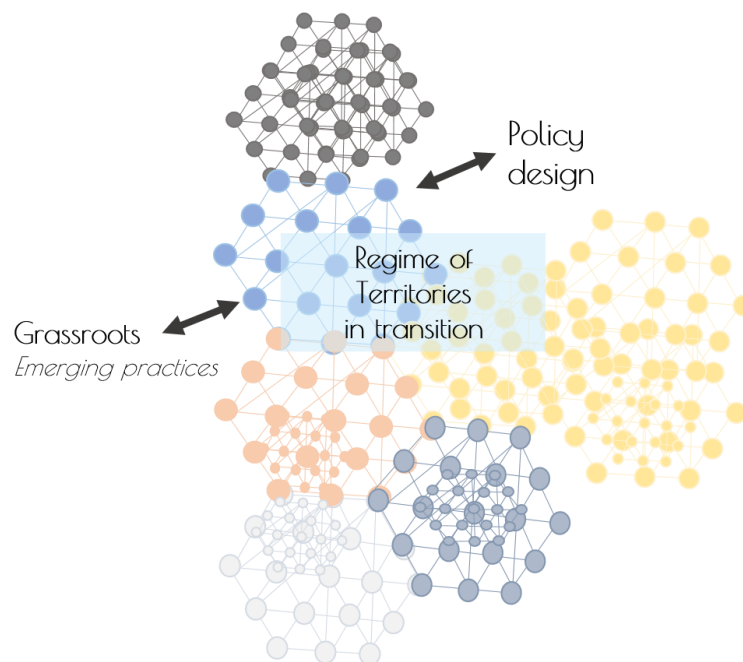

Figure 1: Action-research methodology making explicit the tensions and synergies of emerging practices and policy design for territories in transition.

By experiencing the design and development of these two projects at grassroots and policy level, the researcher has collected and analyzed interesting research materials (participant feedbacks, intermediary objects created and used during projects) so as to propose a first set of systemic design tools for regional circular transitions into the fashion sector.

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[1] *More information about the initiative H.UP can be found here : http://marionreal.wixsite.com/upcycling*

[2] *Eticoop is an incubators in social innovation : www.eticoop.fr*

Presentation of a set of systemic design tools

Three different tools were adapted from intermediary objects collected during the development and analysis of both projects. They were created from existing tools in a hybridization logic (Legardeur, 2010) to respectively answer to the following needs:

(1) To create a visual representation that could sum up the challenges listed at different systemic levels for encouraging the transition toward local fashion systems;

(2) To compare the circulation of product, material and information flows in different scenarios of business models;

(3) To involve stakeholders in a prospective activity based on territorial resource management.

Each tool in their last version will be described by a short presentation of the context of emergence that will be followed by a definition of key components and dynamic of the tool.

Systemic view of local fashion transitions

This tool is the result of a previous analysis (Real, 2017) that has defined a new systemic framework from the design a rich picture of the region and the comparison of four models of local fashion systems.

The view is composed by a dynamic socio-technical network surrounded by a triangle of three lenses to consider for impulsing changes: the integration of convivial technologies, the social acceptance at individual and organization level and the activation of beneficial regional policies. In this view, change makers, designers and intermediaries are seen as key stakeholders to catalyze the metamorphosis of such systems and support the interaction between each determinant nodes. Building the systemic view of local fashion transitions consist in identifying challenges for each lens and finally discuss the role of intermediaries during the design of system transformations. The view can be used for occasional workshop or be seen as a managing tool that will be completed all along the maturation of projects and communicated to different stakeholders.

Convivial technologies are defined by Illich (1973) as any instrument, object or institution used by people that will allow them to shape the world according to their own intention, imagination and creativity. Designing such technologies remains to fight against five threats (the biological degradation of the ecosystem, radical monopoly, over-programming, polarization, and obsolescence) in each step of their life-cycle (Lizarralde et al., 2017).

To identify challenges through a *convivial technology* lens, tool users will define the type of technologies presented in their processes and systematically discuss the autonomy of users within a limited resource environment. Here some examples of questions that emerged during the action-research:

- How to find a balance between the automatization of processes, the creation of jobs and human flourishing?
- How design and production processes can avoid the obsolescence of products and optimize the maintenance and durability of systems?
- How to share and mutualize open tools, technologies, information and knowledge within local networks?

The ***social lens*** echoes with a strong background in recent eco-design and social business model studies like the social life-cycle analysis () or the triple-layered canvas (Joyce, 2013). The quest for equity and empowerment is predominant when thinking about local transitions. During the

4

analysis of social entrepreneurship projects research, systematic challenges were at stake concerning the empowerment of users in sustainable behaviors, the fair status of workers and volunteers, the mode of governance and management model needed for transparent processes and participative decision making.

The *policy lens* is often set aside in design of systems in reason of the omnipresence of top-down processes and a perception of policies as constraints rather than innovation opportunity. The originality of the Retrace project is to involve networks of local stakeholders in the design and regulation of their policies with the objective to find again a cohesion from several scale of actions. Public procurement, participative forms of funding and subsidies, accessibility to land and abandoned places are examples of policies that will be determinant to ensure the development of diversity of local small-scale projects.

Figure 2 represents the canvas of the systemic view for fashion local system.
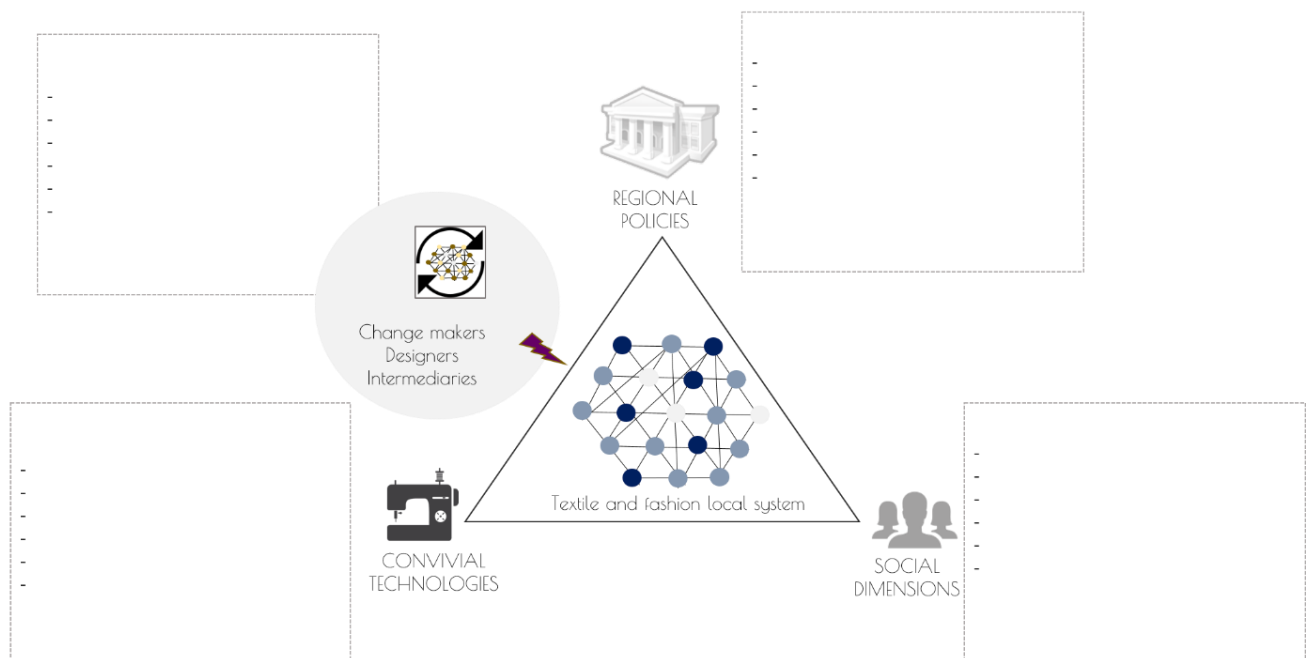

Figure 2: Systemic view of fashion local system

Business model comparison for local fashion systems

Designing business models consist in the generation of representations of how companies or stakeholder networks can create, capture and deliver value through the development of product, services, or product-service systems. They are conceptualized as systems of interdependent activities that transcends the focal firm and spans its boundaries. They provide a narrative that lays out the activities and structure of the business, improving organizational performance. Business model innovation can be considered as individual or collective action: they are deliberative co-created design in an envisioned social system (Jones, 2014). Different tools can use during this activity with a predominant use of canvases like Osterwalder model (2004) or Flourishing canvas (2013). A complementary approach consists in modelling the dynamic of systems via different types of flow diagrams that could represent uni or bidirectional information, material, product or money exchanges.

In this line, several diagrams were realized during the maturation stage of the social entrepreneurship initiative and the analysis of Retrace case studies. A collection of three types of closing loop business model were synthetized to generate relevant discussions during business modelling: (1) current model, (2) internal tack-back model, (3) Multi-stakeholder renting model. The two first models are encouraged by the extended producer responsibility (EPR) that has been set up for the clothing, household linen and footwear producers, distributors and importers. These companies are considered responsible by law for providing or managing the recycling of their products at the end of use. They can either organize their own recycling (2) or contribute to an accredited by law to provide for them (1).

(1) In the *current model*, brands pay a fee to an eco-organism to help in the different steps of textile valorization. Once produced, distributed and used, clothes could be thrown away in landfill or donate in dedicated deposit. Then, charities or sorting centers will collect and sort and redistribute them to users and other stakeholders for four specific types of valorization (direct reuse in different territorial areas, upcycling, recycling in yarn or others applications and energetic valorization.
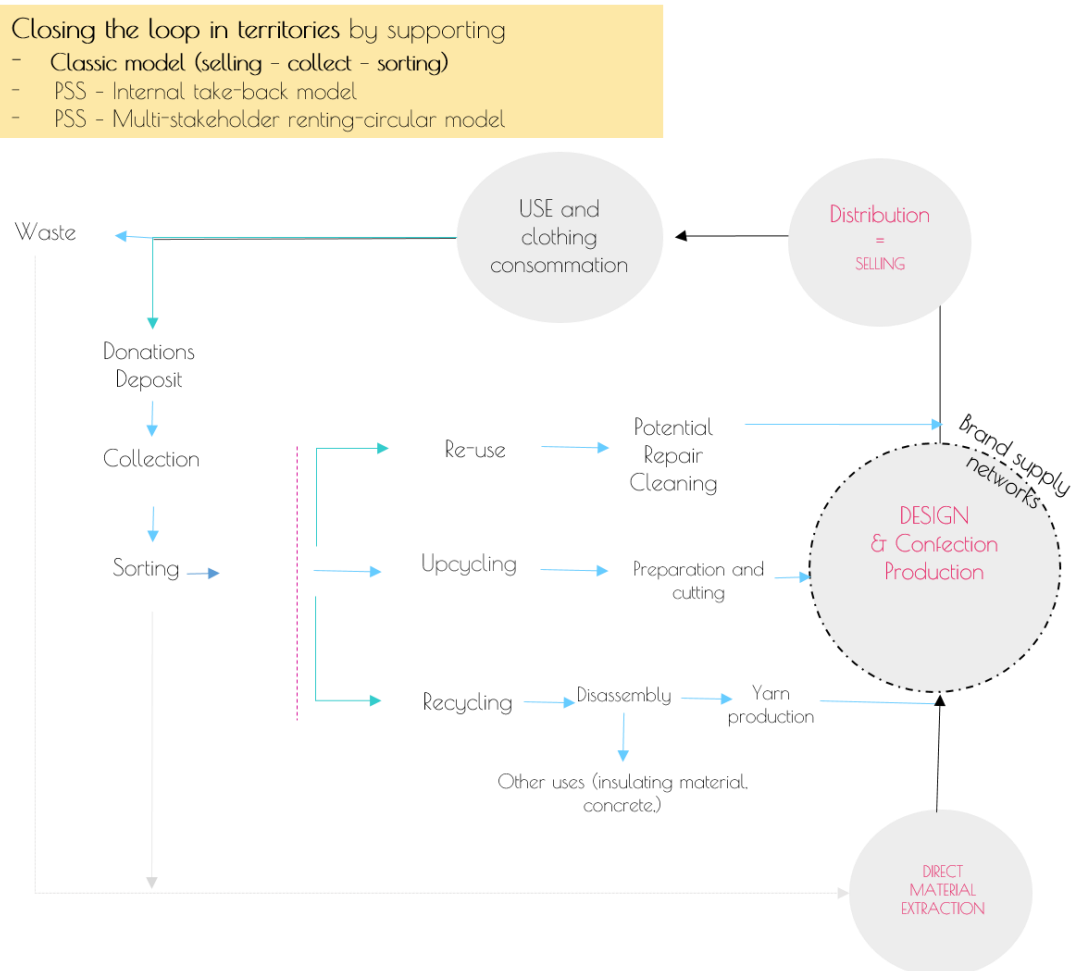

Figure 3: Flow diagram of classic closing loop model

(2) The *internal take-back* model (*see figure 3)* illustrates how could brands gradually internalize circular loops and reinject products in the global value chain. Modalities of collections can consist in diversifying customer relationship (buying with deposit, offering discount voucher when customer bring back products) via online platforms or distributors/shops partners or by

building strong partnership with new intermediaries specialized of end-of-life logistics. Once sorted, clothes can be reused internally, donated or sold to second-hand shops and charities. Brand supply networks can benefit for collected clothes as new resource in their production processes. New services and products can be offered like repairs, upcycled products, recycled yarn and material use in new products. Processes and networks of suppliers need to be adapted so as to optimize the re-integration of old products in the design of new collections.
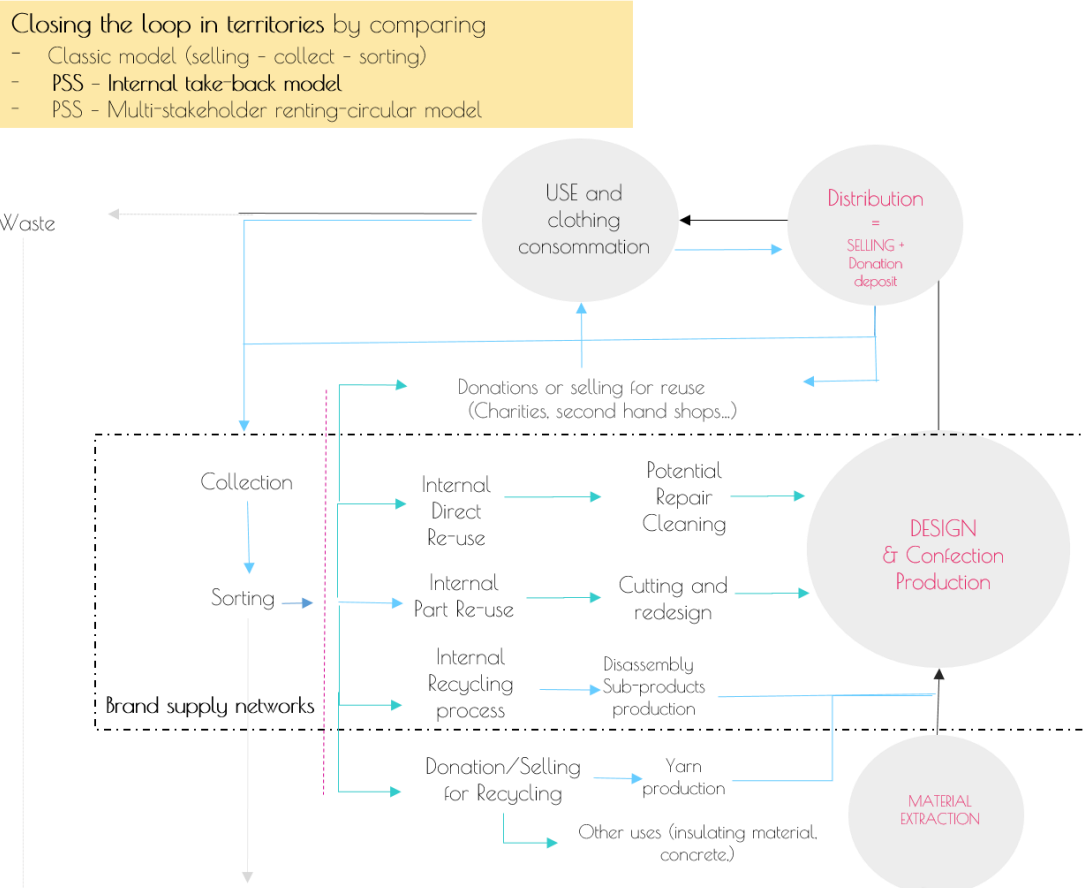

Figure 4: Flow diagram of internal take back closing loop model

(3) The *multi-stakeholder renting* model is not centered on brand development but on renting platform that offers a complete integrated service for customers of dressing management. Customers can pay an adapted monthly or annual fee for the functionality of "clothing". Platforms are like libraries of clothes that have their own use background (new, upcycled, second-hand products). Customers can order, receive and give back clothes. They can be advised on their styles or informed on the provenance and stories of products. Thinking locally, new type of supply networks could emerge through this model with a strong importance given to sorting activity, the concept of micro-manufacture and the development of recycling activities. Inspired by the Scottish *Kalopsia collective*[3], the concept of micro-manufacture evokes a custom-made service of designing, cleaning, repairing, disassembling and producing clothes that are integrated in the platform and potential dedicated shops. A logic of co-

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[3] http://contemporarytextile.com/

creation can be proposed for customers, brands and designers to define the orientations of products.

We made the assumption that using these visualizations for comparing and completing business models within an entrepreneurial context or regional sectorial reconstruction can facilitate the effective construction of disruptive visions in process and stakeholder network design.
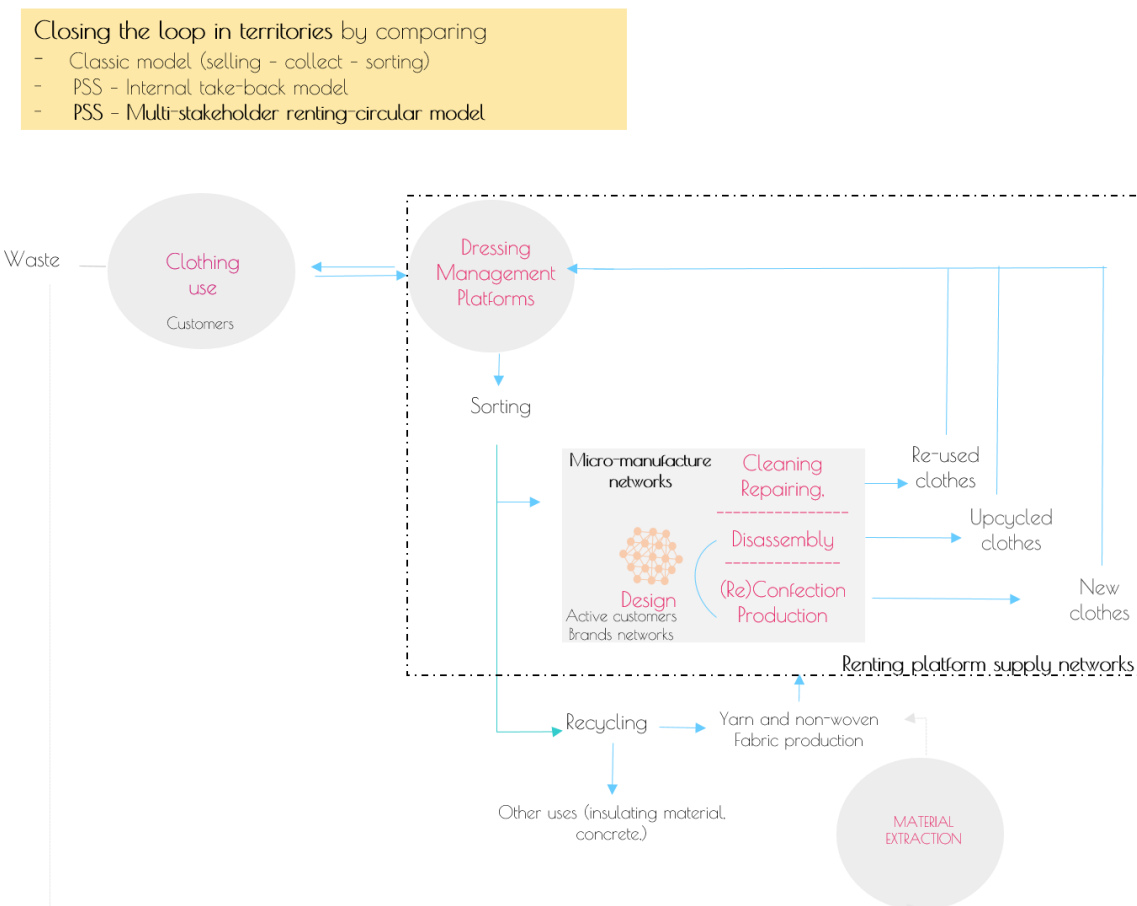
Closing the loop in territories by comparing
- Classic model (selling - collect - sorting)
- PSS - Internal take-back model
- PSS - Multi-stakeholder renting-circular model

Figure 5: Flow diagram of multi-stakeholder renting closing loop model

Territorial Resource Prospective

Applying systemic design in a situated vision of circular economy involves the development of a strong knowledge on local resources and cultures as well as on their transformations. The methodology proposed in the Retrace project (Barbero, 2017) relied on the construction of resource knowledge through regional data collection and visual mapping of key features of the territory and input-output processes for three selected sectors. Infographics were considered as representations of territorial metabolism and act as first inputs to impulse prospective studies and design of futures policies. The availability of data on how resources are circulating into and beyond territories is questionable as well as for the uncertainty of collected data than for the perimeter of their accessibility for all stakeholders.

The tool illustrated here (*see figure 6*) allows to build a methodological framework during collective and prospective actions within the dialogical necessity to define narratives of wished futures while being aware of local use of resources and territorial metabolism. It encourages tool users to practice

8

back casting while raising awareness of the present situation and discuss around a shared vision of the ratio of importations, exportations and local input/output circulation for each type of resources. The transition toward evolving shared visions consists in identifying mid-term challenges and persisting in defining strategies for data collection along the way. The tool aims to define narratives based on territorial needs while gaining traceability in material and clothing flows.
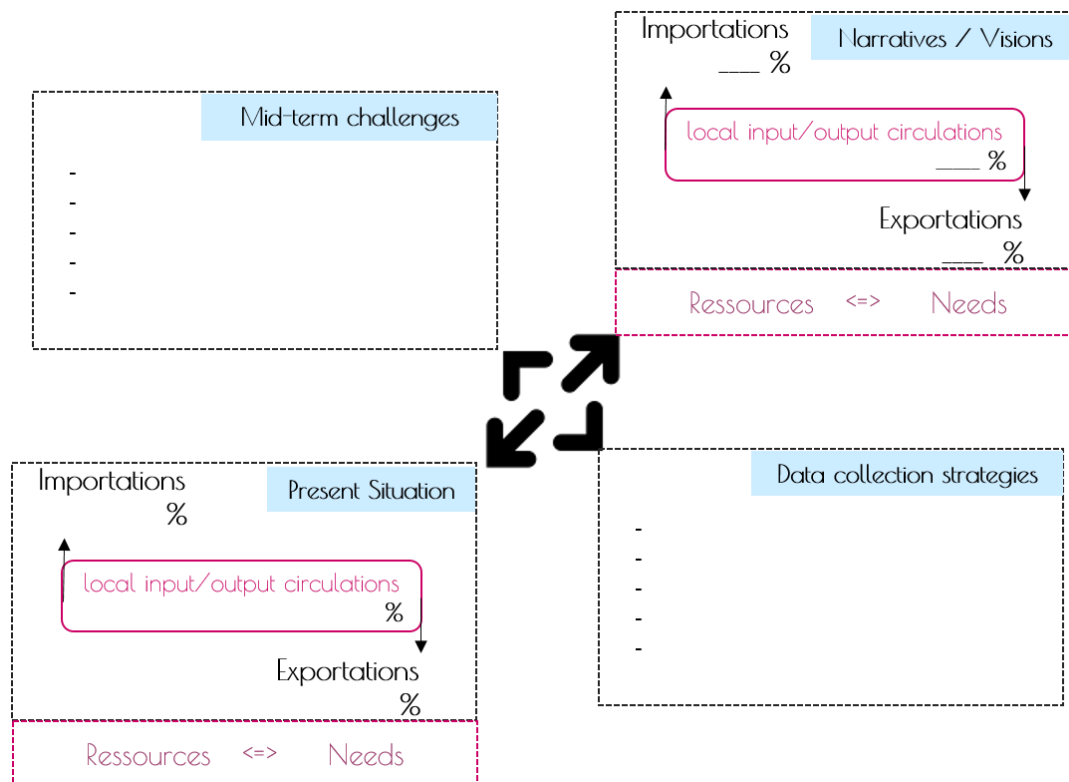

Figure 6: Territorial Resource Prospective framework

Conclusion and perspectives

The paper proposes a description of a set of tools for applying systemic design to the development of small-scale territories. More precisely, it looks for exploring through an action research how systemic design tools can be valuable during the emergence of a local community dedicated to circular fashion.

The originality of our work relied on the interaction between effective territorial actions and reflexive research design perspectives so to propose operational tools for encouraging systemic design in the development of territorial transitions. Perspectives are presented related to (1) the development of the Nouvelle Aquitaine regional community of circular fashion and to (2) further systemic design research hotspots.

Related to the regional community

The ambition of the Nouvelle Aquitaine region in circular textile and fashion area will be clearly defined by regional stakeholders through a roadmap that will be effective in the two following months. Presentation and documentations of the present analysis have been transmitted to referent stakeholders. Next steps will consist in facilitating the implementation of the result of the first tool (systemic view) and create a textile intermediary organization able (1) to source local materials, resources and eco-efficient processes, (2) to facilitate collaborative actions like material design driven

approaches or upcycling workshops and (3) to reinforce synergies and business model innovation for social entrepreneurs, industrial and public institutions.

Related to systemic design research

Three tools are presented here to help designers to collectively support the transformation of representations necessary to develop complex alternative projects. They are issued from the hybridization of ideation, prospective and business modelling tools. Further micro-experiments could be realized to compare the efficiency of selected tools with other recently developed tools. In the same line, propagating the use of these tools into different designer practices coming from different sectors and using several mode of animation can bring relevant feedbacks and give us new insights to adapt or customize tools for a better user appropriation.

Another perspective consists in enlarging the scope of analysis reminding that systemic designers cannot be reduced to their methodology and tools they are using. They are part of complex projects, influence them and have specific know-hows that need to be better defined and diffused in practices. Real and Larrasquet, (2017) highlights the importance of the *complex though* developed by Edgar Morin and embedded in a constructivist epistemology for systemic design practitioners. They remembered the key principles (dialogy, self-organization, hologram, regulation, emergence and system) and give some precautions for on ongoing systemic design projects as (1) ensuring the development of collective intelligence, solidarity and reflection on things to do or not to do in both strategical and operational actions; (2) adopting different systemic lenses (from local to global, global to local); (3) engaging discussions on the perimeter of their actions and looking for bridging the borders and creating synergies between them.

Acknowledgements

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