Intentionality in user experience design

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The impossibility of modeling a future experience[1], due to its singular, subjective and unintentional character, leads us in this research to question what is "designable". With this research problem, we will empirically collect data from a creativity session on the experiences of various runners. The analysis of this data will lead, in an interpretative logic, to the elaboration of a systemic and dynamic conceptual model of the "designable" dimensions in a future experience.

Keywords
Design, experience, Intentionality, User, Systemic, Dimensions of an experience

1. Introduction

As part of a comprehensive epistemology that mobilizes an empirico-inductive approach[2], the present research aims to question what is "designable" in a future experience. Editorially, the article is structured in three parts. After setting out the theoretical framework, highlighting the research problem, question and objective, we will present the methodology applied to analyze the data collected from our case study. Finally, using an inductive-interpretive approach, we developed and put into perspective a conceptual, systemic and dynamic model which takes into account the "designable" dimensions of a future experiment.

[1] By experience to live, we mean the experience that a subject is preparing to have through the use of an artefact (device, tool, service, etc.), participation in an event (sport event, any kind of competition, humanitarian mission, etc.), and so on.
[2] In contrast to the hypothetico-deductive approach used in positivist epistemology, where the methodological sequence is such as: observation of phenomena based on a theory-hypothesis-experimentation-demonstration (confirmation or refutation of the hypothesis): observation of phenomena on the basis of a theory-hypothesis-experimentation-demonstration (confirmation or invalidation of said hypothesis); the empirico-inductive approach, on the other hand, starts from a problem that gives rise to the collection of empirical data, leading, in fine, to the formulation of a scheme for understanding the overall functioning of the phenomenon studied (this is the inductive effort of the approach) [1].

2. Theoretical framework: problem, research question and objective

2.1 The problem

In a process of designing-realizing-operating of an artifact, whether material (apartment, furniture, etc.) or immaterial (service, training, etc.), the designers' actions and the usage practices put in place by the target of the said artifacts have a mutual impact. Certainly, the designer's intentionality, embodied in the various choices and biases injected into the artifact (form, functionality, etc.), influences the user's experience and use of the artifact. But, in turn, the user, through his or her cognitive style, personality traits, previous experience and the result of his or her interaction with the circumstantial considerations of the artifact's use situation, etc., can lead to uses, or even misuses, which completely contradict the original intentions of the designers. This, in turn, may invite the designer to (re)think about their design in order to execute it. Thus, the terms design and experience, without considering them as antagonistic, are to be learned in a "co-determination loop". This will enable us to place the needs, expectations and experiences (lived or to be lived) of the users at the center of the specifications of different project approaches (in architecture and urban planning, in design with all its variations: service design, experience design, public policy design, etc.).
Let's focus on the field of experience design.

So, design[3], on one hand, and experience on the other, what can we say about these two terms? What link (logical, semantic, functional, etc.) exists between them?
What part does the intentional play in designing[44] future experiences?
These are just some of the questions that we asked ourselves. To get a clearer picture, let's start by clearing up the terminology of these two terms, and then try to link them together and make sense of them.

2.1.1 Clearing terminology

What can we say about Design? As Stéphane Vial points out [2], with its two meanings, deriving from Latinism (de-signare: to mark with a sign) and Anglicism (de-sign), design can be taken as both formalization and conceptualization. Formalization, in the sense that it refers to a method of designing with signs ("projetto" in Italian, "dessin" in French). It's the project that's being realized (design doing). Conceptualization, in the sense of the thinking activity aimed at conceiving the ideas that structure the process ("Progettazione" in Italian, "Dessein" in French). This is design thinking.

[3] Given the positioning of our research in the field of experience design, we'll be substituting the term "conception" for "design" in the next section (1.1.1. Terminological clarification).
[4] The verb "designer" is used in the text to signify the elaboration of an immaterial artifact (the model) designed to model certain aspects of a future experience

Beyond this etymological-significative aspect, design (as a practice), by freeing itself from industrial tutelage, has in recent decades become the concern of several fields. This, in turn, has led to the dilation of the very notion of design [2]. As a result, new forms of design have emerged, manifesting themselves in a variety linked to professions, purposes, methods and fields of application. We can cite: eco-design, user-centered design, interaction design, service design, social design, participatory design (codesgin), Design Thinking, user experience design (UXD), and so on. As they are all actor-centered and human-centered, these forms of design have one objective in common: the humanization of society in all its dimensions. As Alain Findeli explains, design aims to "improve or at least maintain the habitability of the world in all its dimensions" [3]. It takes a projective look at the world in order to perfect it.

Regardless of the type of design (authorial or systemic) and the nature of the artifact conceived [4], this brief review of the state of the art suggests that design is "a forward-looking thinking practice that, by drawing on a variety of knowledge and methods (technical and sensitive) and by placing the user in an active and engaging posture, creates artifacts that contribute to the humanization of human life". In other words, in our view, design means articulating, in an interacting logic, what we call the 3Us:

- Usefulness: where, in a learning process that encourages trial and error, backtracking and controversy, the users in the situation mobilize technical and sensitive knowledge that are helpful to the process;
- User: no asymmetry in the actorial positions distinguishing, on one hand, the designer, as a knowing-experienced-true subject and, on the other hand, the user, as an ignorant-errant-target that can easily be influenced;
- hUmanization: the artifacts created are designed to re-enchant, empower and moralize society in all its dimensions.

Let's return to the term experience. For more than a century, experience, whether used alone or accompanied by a qualifier (customer, user, lived, perceived, etc.), has been a widely explored theme in SHS (educational sciences, ergonomics, SIC, etc.), and is now attracting interest from a variety of fields (governance, culture, arts, management, etc.).

So, what can we say about it? John Dewey's work on the subject is crucial in helping us finding an answer this question. As a psychological process of interiority, reconciling the emotional, the corporeal and the intellectual [5], experience is purely subjective, abstract and invisible as far as it is linked to individual perception. A perception that is mixed with a significant proportion of the unintentional. This, in turn, precludes any attempt to model in advance the unfolding of any future experience.

It is also dynamic, constantly changing over time as a result of evolving circumstances of use and changes in the social systems themselves. This dynamic is driven by the context in which the actor

finds himself. Speaking of the actor and the context (the world, in a certain sense), according to Dewey's work, experience refers to two faces: one active, which concerns the actor's action on the world, and the other passive, which corresponds to the trace (cognitive, affective, etc.) left by the world's action on the actor. In keeping with this idea of the dual relationship between the actor and the world, Jean Vincens [6] distinguishes between experience-acquisition (experience as knowledge acquired through practice, combined with reflection) and experience-revelation (experience as a test, an attempt).

From this summary of scientific literature, we have selected three features, known as the 3Cs, which characterize an experience:

- Continuity: everything in life is experience (Living eXperience), even if, as Dewey points out, we can distinguish between experience, synonymous with the flow of life itself, and an experience (differentiated from other experiences by having characteristics that set it apart);
- Comodality: an experience is the fruit of an interactional game involving practices and emotions;
- Construction of meaning: wanting to access the full essence of an experience, by identifying its full complexity, is a matter of meaning. Otherwise, the meaning that emerges from an experience, with the same circumstantial considerations (time, place, devices, unfolding, etc.), is not the same according to the individuals who have participated in and lived through the said experience.

How can we link these two terms and make sense of them?

2.1.2 Design, Experience: an attempt to connect and make sense

On one side, as mentioned above, its emancipation from industrial tutelage has enabled design to expand into diverse fields, forms, practices, methods and fields of application. As a result, experience has contributed to a "dilation" of design, both terminologically (emergence of the concept of user experience design UXD) and applicatively (business, medicine, tourism, etc. as new fields of design). On the other side, since the work of Donald Norman, an emblematic figure and promoter of "user-centered design", the notion of experience, lived and/or perceived by the user in an act of design, has become inescapable. In this respect, design contributes to the "performance"[5] of experience. In other words, through the arsenal of its situated and circumstantiated methods implemented with and for the user, design enables us to better define the various dimensions of an experience in order to perform it. We can also say, by invoking our 3Us and 3Cs forged to think

[5] A term to be understood in a linguistic sense, where it's a matter of transforming and carrying out an action through theory and statement.

about design and experience, that there is experience in design (design is experienced[6] in certain aspects) and, in return, there is also design in experience (experience is lived as an act of design[7]). In the light of this connection between the two terms, what are we trying to understand? The following section presents the question and the objective of our research.

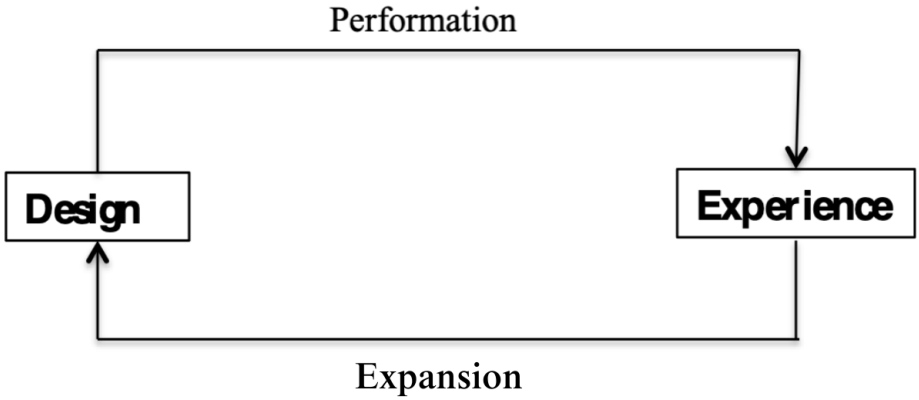

Figure1. Linking and making sense of design and experience. Source: author

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2.2 The research question and objective

Focusing on the experience lived and/or perceived by the user in a design approach, the form given to this research starts from a doubt: what can we intentionally design into a future experience, if, as seen in the state of the art above, due to its unique, singular, subjective, irreproducible, emotional and unintentional character, it is, strictly speaking, impossible to design it as such? We believe that it would be possible, right from the project design stage, to design the dimensions[8] (material and immaterial) to be put in place to make the experience as meaningful[9] as possible for the user. Thus, the aim of the present research is to develop a conceptual model, both systemic and dynamic, of the "designable" dimensions in a future experience. To this end, as announced above in our epistemological positioning, an application case, enabling the collection of empirical data, is convened within the framework of this research.

[6] As seen in U in Utility, the act of design proceeds through trial and error, experimentation, retraction, and controversy. In this respect, experimentation, testing, prototyping, etc. are the essence of the designer's action.
[7] As seen in the 2Cs of comodality and construction of meaning, experience is lived in a holistic way, encompassing practices, affect (emotions), and intellect (construction of meaning). Practices and emotions are of the "doing" order. Meaning making, on the other hand, is about 'thinking.' In a sense, then, experience is an act of design that essentially articulates 'thinking' and 'doing' in a 'co-determination loop.'
[8] The term "dimensions" is used here in the sense of conditions, configurations, dispositions, etc.
[9] In contrast to signification, which is the product of normalization (social, cultural, etc.), meaning is understood here in the sense of Michael Riffaterre, who defines it as "a practice of transformation by the reader" [7]. By signifying, we mean that it's up to the user to construct the meaning of what happens in the experience.

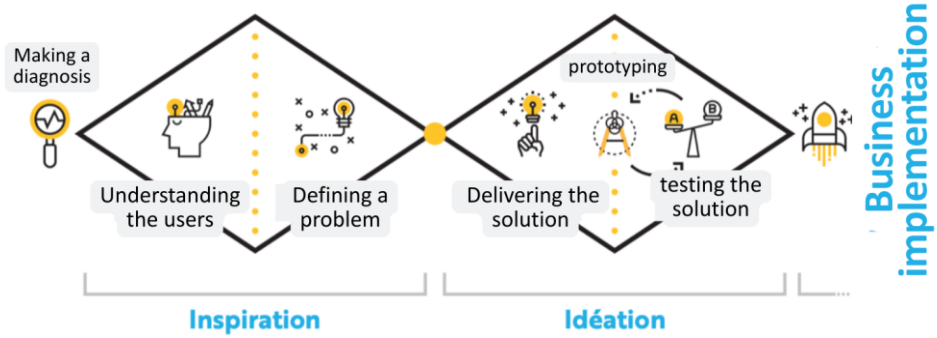
The following section first introduces the institutional framework of the project. Next, the organization of the creative session, set up by the project's actors to meet the needs of the client (the MeMovie agency), is described. Finally, the significant results of the session are presented and discussed.

3. Methodological framework: an empirical approach to data collection and analysis

3.1. Case study presentation

In the field of digital creativity, the C2L3PLAY project is a cross-border cooperation program funded by the European Union. This inter-regional project promotes exchanges between artists, researchers, businesses and citizens, with a view of contributing to the development of cultural and creative industries. This takes the form of personalized support for project creators. It is made up of various institutional partners: University of Mons, the louvre Lens Vallée , Transcultures, Cluster Twist, Designregio Kortrijk, the Fresnoy and University of Polytechnic Hauts de France.

Every four months, a call for projects is launched to enable the various participants to move their projects forward. As part of the Smart Stadium call for projects, the sponsor Memovie, a transmedia stroytelling agency, asked the project partners and CLICK Living Lab to work together to define service proposals for runners. After the diagnostic[10] phase, it was necessary for the client to understand the needs of future users, to define one or more general issues and to sketch out one or several solutions for and with them, using digital tools. The process is illustrated in the diagram below.



[10] The diagnostic represents a phase of consultation between partners, allowing us to know "where we're starting from," "where we want to go," and "what steps we need to take

Figure 2. Diagram of the C2L3PLAY project's creative accompaniment. Source: inspired by the Design Council's Double Diamond model

3.2 Organizing the creative session

The purpose of this part is to deepen our understanding of the marathon runners' previous experiences (lived individually) in order to see what is designable for future experiences. This session enables us to break down the running experience into moments and dimensions of varying significance in the runners' experience. The 3-hour creativity session takes place on February 22, 2019 at the Mundaneum in Mons. It brings together 13 participants, all runners and marathon enthusiasts. The 13 participants followed these two phases;

- an "inspiration phase: through the exploration of previous experiences;
- a "conception" phase with the formulation of solutions.

The diagram below shows the deployed process in detail

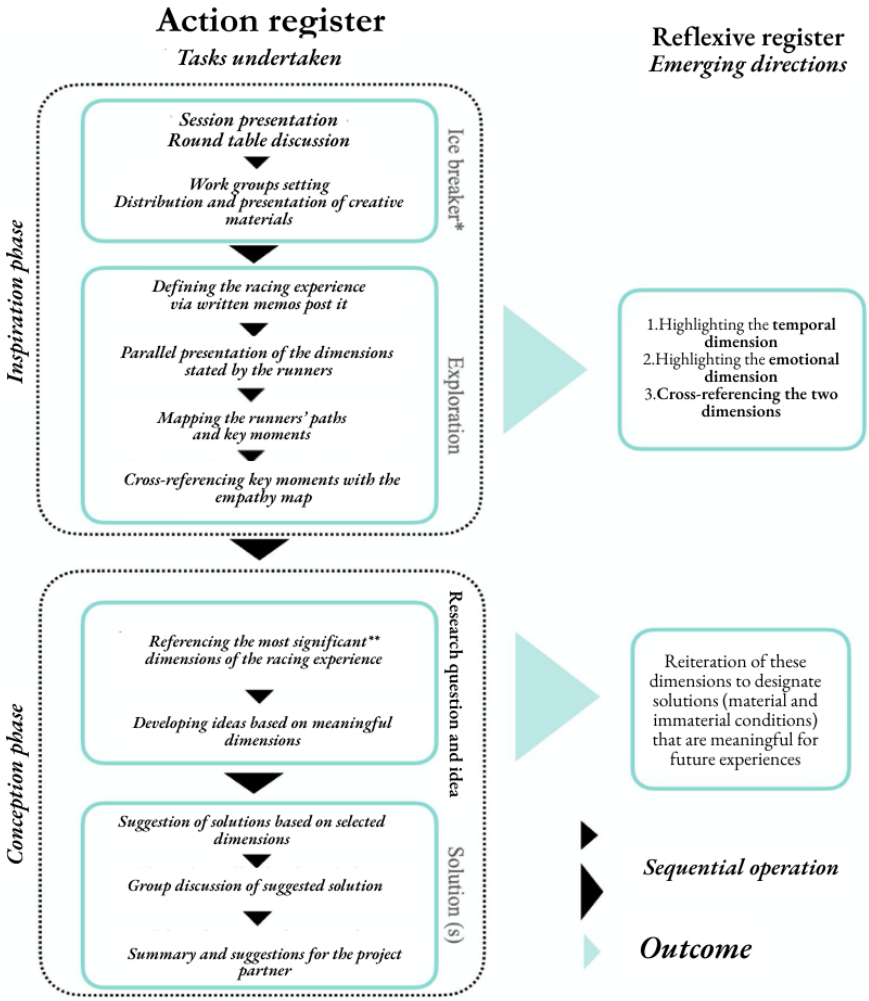


Figure 3: Deployed process detailing the creativity session. Source: author

3.3 Significant results

The creativity session enabled us, during discussions with the participants, to use their accumulated experiences to formalize a typical race experience, listing the highlights and their emotional impact throughout the runners' journey [11]. The results are shown in the diagram below.

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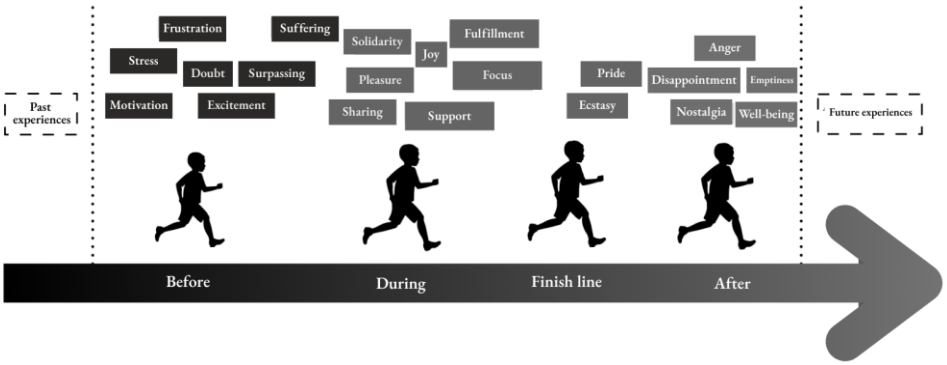

Figure 4: Diagram of the path crossing with the empathy map[12]. Source: author

This cross-referencing enables us to identify the dimensions that impact new running experiences. The analysis of these feedbacks (Grouping responses according to semantic affinities) has led us to highlight the most significant dimensions of our 13 runners course. They are presented here in order of importance[13]:

- The hedonic dimension: the search for fulfillment, pride, self-improvement and pleasure ("I feel free when I run", "I like to give it my all", "I get great satisfaction");
- The social dimension: based on sharing, cohesion, encouragement and a sense of belonging ("creating running groups", "sharing my exploits on social networks");
- The cognitive dimension: race monitoring and management, performance evolution, memorization of the race and its restitution ("I'd like to review and relive my race", "I'd like to create a logbook").

[11] See the first reflexive register insert in Figure 3.
[12] An empathy map is a tool for representing how an actual or potential user feels. It is used to understand the feelings and emotions that might be experienced as part of the user journey.
[13] By order of importance, we mean by that is the weighting of the data collected, both quantitatively (number of responses) and qualitatively (intensity of comments).

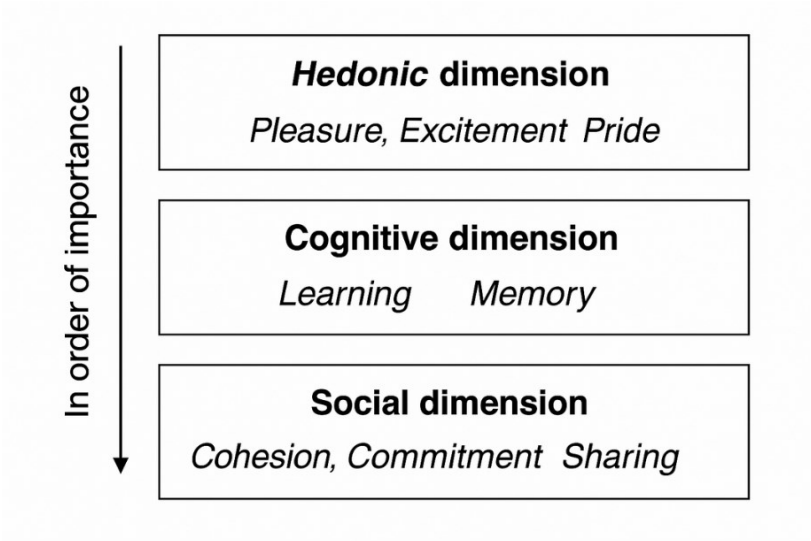

Figure 5: Diagram of the most significant dimensions for runners. Source: author

4. Inductive framework: towards a systemic and dynamic conceptual model of the "designable" dimensions of a future experience

The three dimensions, impacting future running experiences, identified from our application case and organized by order of importance are relevant. This is because, echoing our 2Cs (comodality and meaning construction), they emphasize the importance of taking emotions (hedonic dimension), practices (social dimension) and meaning construction (cognitive dimension) into account. However, they do not highlight the "how" of the interaction of these dimensions (compartmentalized character) and, above all, the "how" of the evolution of said interaction over time (static character). In fact, this double character is common to all the scientific elaborations we consulted during our documentary research into the various dimensions that go into making up an experiment.

In order to go beyond the three dimensions identified in our empirical study, and beyond their compartmentalization and statism, we propose a conceptual, systemic and dynamic model of what is "designable" in a future experience. What does it look like? What is its contribution to research in general? Elements of an answer to these two questions are put forward in the following lines.

With regard to the first question, we start from the premise that every experience takes place within a framework (encompassing environment, context, place, etc.) that is both material (physical, spatial, tangible, containing devices, etc.) and immaterial (untouchable, made up of connotations, perceptions, imaginaries, etc.). In an interacting logic, the two frameworks - material and immaterial

- influence each other and shape the user's experience. What vacationer wouldn't be sensitive to the history and architectural features of his or her vacation spot (hotel, B&B, residence, guest house, etc.)? Intensifying the experience would therefore mean acting, differently and in varying proportions, on these settings. In our view, each setting is made up of three dimensions that influence each other systemically and continuously. Thus, for the material framework of experience, we need to distinguish:

- the informative dimension: this concerns all data relating to the experience to be lived (the validity of the experience to be lived, its usefulness, how it will be carried out, etc.);
- the motor-sensory dimension: this refers to the audiovisual and physiological data that characterize the experience to be lived (body postures to be adopted, various contacts with the environment of the experience (visual location of targets, manual manipulation of devices, etc.), etc.);
- the urban-technical dimension: including both the physical setting in which the experiment takes place (spatial location, planning and landscaping framework, etc.) and the characteristics of the tools and devices to be used during the experiment.

The immaterial framework is made up of the following dimensions:

- the individual dimension: this includes all cognitive and behavioral parameters relating to the user (perception, comprehension, memorization, adaptation, etc.).
- the social dimension: this relates to the group dynamics surrounding the user (social ties, sharing, cohesion, sense of belonging, etc.).
- the hedonic dimension: this takes the form of a zone of intersection and contact between the two previous dimensions (the pleasure of sharing, helping, competing, etc.).

Using graphical reasoning, Figure 6 below presents the model, with its dual systemic and dynamic aspects.

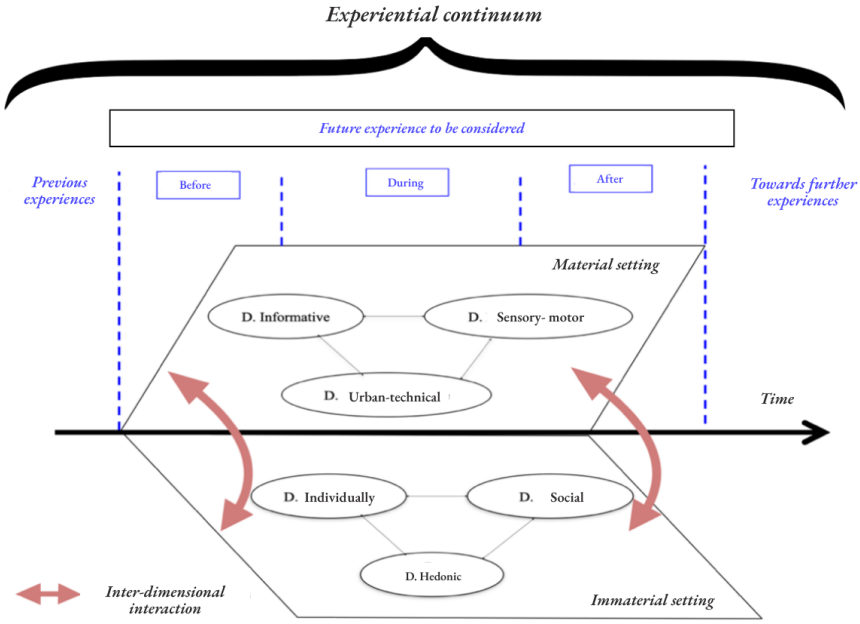

Figure 6: Development of a dynamic, systemic conceptual model of the "designable" dimensions of a future experience. Source: author

What about the second question, concerning the contribution of our model to scientific research in general? Indeed, its innovative character lies in the fact that it reconciles two aspects that account for the complexity of experience as an elusive human phenomenon. These are:

- on one hand, take the dimensions of each of the two frameworks (tangible and intangible) and;
- on the other hand, to set all this in time, where it would be a question of thinking, conducting and managing the said interactional game before, during and after the experience to be lived.

As for its usability[14] in future experiments, we propose the following method. In any experiment, the participants in the situation are supposed to proceed in three sequentially articulated stages. This is achieved by implementing actions of various kinds (cognitive, organizational, communicational, physical, etc.) to enhance the user's experiential potential[15]. The table below highlights the time-action pairing.

[14] This term is taken from the ISO 9241-11 standard, which defines it as "the degree to which a product can be used, by identified users, to achieve defined goals with effectiveness, efficiency, and satisfaction in a specified context of use."
[15] By utilizing this term, we indicate the expression, by the model developed, of the possibilities and sine qua non conditions for a meaningful experience to the user.

Time	*Actions*
Before the experiment	- identify the six dimensions of the experience; - develop interrelationships between these dimensions.
During the experiment	- activate levers to make these dimensions effective; - activate feedback loops to adjust actions in progress.
After the experiment	- go back over their experience with users, using a narratological approach; - learn lessons to improve the performance of future experiments.

Table 1: Model usability. Source: author

5. Conclusion

This study was an opportunity for us to question what is designable in a future experience. This is so even though, due to its subjective, singular and unintentional nature, an experience is not designable as it is. this in mind, we empirically collected and analyzed data relating to a creative session on the theme of running. The result was an inductive model designed to help us understand the overall functioning of the phenomenon under study.

As limits to our present research, we can point to two aspects. On one side, this research does not cover the entire Memovie support project, as explained earlier in the article. Monitoring all stages of the support process, including prototyping, in situ testing, etc., would have enabled us to refine the various dimensions of our model. On the other side, the epistemological choice made here (comprehensive approach and its methodological approach: empirico-inductive) placed us in a logic of "discovery". We didn't know which model we'd end up with. In itself, this is not a problem, as it is the very essence of this kind of inductive approach. That's why, as a logical next step, we plan to further develop our model by comparing it with other research fields (urbanity, health, tourism, etc.). We hope to formulate a more general theory in the future.

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