ARCHITECTURE HERITAGE and DESIGN

Carmine Gambardella

XVI INTERNATIONAL FORUM
Le Vie dei
Mercanti

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WORLD HERITAGE
and KNOWLEDGE

WORLD HERITAGE and KNOWLEDGE
Representation | Restoration | Redesign | Resilience

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Collana fondata e diretta da Carmine Gambardella

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WORLD HERITAGE and KNOWLEDGE
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Carmine Gambardella

WORLD HERITAGE and KNOWLEDGE
Representation, Restoration, Redesign, Resilience

Le Vie dei Mercanti _ XVI International Forum

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Scholars has been invited to submit researches on theoretical and methodological aspects related to Smart Design, Planning and Technologies, and show real applications and experiences carried out on this themes. Based on blind peer review, abstracts has been accepted, conditionally accepted, or rejected. Authors of accepted and conditionally accepted papers has been invited to submit full papers. These has been again peer-reviewed and selected for the oral session and publication, or only for the publication in the conference proceedings.

Conference report

300 abstracts and 650 authors from 36 countries:

Albania, Australia, Benin, Belgium, Bosnia and Herzegovina, Brasil, Bulgaria, California, Chile, China, Cipro, Cuba, Egypt, France, Germany, Italy, Japan, Jordan, Kosovo, Malta, Massachusetts, Michigan, Montserrat, New Jersey, New York, New Zealand, Poland, Portugal, Russia, Slovakia, Spain, Switzerland, Texas, Tunisia, Turkey, United Kingdom.

160 papers published after double blind review by the International Scientific Committee

Preface

In the present era, technologies are becoming increasingly important in helping and supporting man in research, knowledge and production activities, almost as if they were smart prostheses. With the theme of the XVI Forum "World Heritage and Knowledge", I propose to the International Scientific Community to debate and establish a comparison of knowledge carriers to communicate methodologies of good practices adopted and experiences in the use in the protection, conservation and safeguarding of cultural heritage and landscape as well as in the design of the "new, "that, adopting in the building processes and building construction Innovative Building Modelling, can realise a non-contemporaneity of what has the same date (Giulio Carlo Argan) respectful of the values of the pre-existing, legitimate because it participated ex ante and monitored becoming all its ethical, aesthetic and performance connotations.

With the Internet of things, for example, sensors that are used to produce data autonomously that widen the processes of knowledge on all levels, from the territory with its infrastructures, to the environment, to the artefacts entering into the body itself of their physicality, or, in the case of the new, building the project as a prediction throughout physical consistency.

Nevertheless, the use of new technologies allows for economies of scale, both temporal and economical, not only for the surveying and representation of the built and the territory in the analysis phase but above all for the management of the resulting data that makes the design activity of the restoration of the historical heritage and landscape or of the newly constructed in a single process no longer divided into steps but also unitary in concrete constructions and the realisation of the works, in the intermediate checks, in the testing, in the monitoring and in the programmed maintenance.

In conclusion, it is indispensable for the scientific community to highlight how technologies, without a responsible attitude that commit man's choices and knowledge in dealing with and planning appropriate responses to the issues and needs of the collective, can create a deception that unfortunately materialises with the subtle persuasion of uncontrolled astonishment that overwhelms the imagination.

Carmine Gambardella

President and Founder of the Forum

Design 4.0. Practices and processes of diffuse and circular design for the enhancement and development of local cultural heritage.

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Abstract
The production of cultural heritage has for a long time found a privileged position within manufacturing and inside the factory (of goods and construction), where innovations were developed and quickly translated into production actions. Alongside his fragmentation, today we learn the horizontal distribution of design centers, due to the strengthening of communication networks and enabled by new value emergencies, which no longer belong only to production sites but are closer to the world of consumption.
If the contribution of ICT on one hand has influenced the organization of production, new technologies, such as information highways and big data analytics, also generate an impact on the design processes, up to generate new project practices (i.e. co-design), increasingly open to the contribution of an "unskilled" audience of users and amateurs. Thus the design matter is transferred from the factory to the market or, better said, in the society where every product builts his meaning and value matrix.
In this context surrounding factors become relevant, and they are precisely expressed by the local user, through the connotation of the cultural heritage of a tribe, a buying group, or a local community, which builds a cluster of relationships, through the lattice aggregation of people around a common fire. The research try to highlight how local enhancement processes can be useful in the contemporary project and analyzes how co-design practices contribute to generate innovation in the everywhere cultural heritage.

Keywords: Local community, focus cluster, co-design, circular process, DIY (Do It Yourself)

1.   Introduction

The research tries to contextualize the design processes within the framework of growing interaction among the subjects involved in the market and society, starting from the pervasive diffusion of ICT's (information and communication technologies) and the relational valorization of the object that, from Latour onwards, it becomes part of every contemporary social composition.
So beginning from the conviction that any product, object, good (material or immaterial), service or building acquires semantic consistency when it comes into contact with any other actor of the scenario it's part of, we here choose an extensive and inclusive approach, such as the one adopted by the Anglo-Saxon socio-semiotic in the eighties, to bring back under the lens of preventive analysis and design action that follows, that fabric of contextual relationships, that surround the object and now become determinant in the value chain, to define acceptance and satisfaction on the part of the public.
If it is true that design produces relationship patterns in which bodies, users, objects, services, non-user actors and many others are involved, according to the specific context of practical enhancement or use of the product, the research investigates what kind of effects indirect relationships and contextual factors can produce on the project and its market relevance.
How many and what are the elements influencing the design process today?
And then is there any form of design which is completely disconnected from external factors, different from the user or the public whom it is intended for?

What emerges is a diffused reticular map, which is subject to continuous and ever more rapid change, due to the speed with which information is conveyed between the nodes of the data global network and to the system's aptitude of building "weak" links between points even distant of the network through the new technologies, from which derives cultural evolution, transformation, growth, and innovation.

The relational model we applied is that one Mark Granovetter created in 1973 to describe the social phenomena of the "small worlds", by the which, in a famous experimental investigation on the search for jobs by ordinary people, he reveals how the main part of positive results was depending on sporadic or casual contacts with people not included in the circle of direct and frequent relationships, thus recognizing to weak ties a key role in defining changes in every context. In that model we find not only the idea of a relational panorama extended far beyond the number of Dunbar (150), but also the first intuition of weak and indirect ties, as main responsible for the evolutionary and regenerative quality of design.

The market appears as a global network made up of many interconnected minor (local) monads, in which the very most peripheral portions of the system express a remarkably effective regenerative potential today. Here the designer can, for the present research, activate design-driven innovation practices and gain effectiveness and relevance with respect to each local culture and interest heritage, through surveying activities, widespread planning (design displacement strategy) and production.

Thus, design shifts its activity centers to the borders through design displacement strategies, while the society takes part in the most faithful story of itself, delivering to the demiurge of the form (the designer) the keys to reading their own contexts. This process corresponds to the proliferation of design centers and, in practice, implements a model of widespread operation, already widely experimented in the field of material production and now subject to being transferred to the ideational and design phase.

1.2 What's the frame of reference

Without realizing it, we live immersed in the flow of a continuous technological evolution, which is transforming, sometimes in a radical way, the society that surrounds us and the way the context we live in takes shape. The recent digital revolution and the emergence of new modes of transversal communication have paved the way for changes of an unusual scope. The last century, inaugurated under the banner of massive material revolutions and marked by a superlative exploitation of resources (equivalent to all that had been used in the two thousand years that had preceded it), is aimed at the end showing the sprouts of an informative revolution equally formidable. Today, information and communication technologies are at the centre of a global revision of systems and, after acting as the driving force behind a process of general globalization (cultural, market, relationship, etc.), they now reveal more clearly a possible instrumental, effective contribution, as well as for the manipulation and transmission of data and information (direct contribution), also to achieve economic and savings objectives (indirect contribution), as in the exploitation of resources (circular sustainability objectives).

The Internet remains one of the most important historical events of the last centuries; certainly the most revolutionary phenomenon on the side of the consequences and reflections for the entire world population. It has partly affected the intellectual processes of cognitive knowledge and often, in the scientific debate of neuro-psychic research, there are still discussions about the possible influence that such a mean of communication can exert towards production, for example artistic and literary, and deterministic analysis processes.

We live in what Jeremy Rifkin called "the Age of Access" (Rifkin, 2006), a passe-par-tout that is more and more enabling for the existence of each man, in relation to a pattern of different subjects that make up the contemporary society, in which the theme of ownership has gradually given way to the concept of experience.

Access to knowledge, in this post-industrial phase (soon to become even post-digital) in which knowledge has become an economic resource as important as and perhaps more than the material ones (so much so that we often hear about the knowledge based economy or knowledge-based economy), is one of the foundations of the information society and is at the same time the main objective in ICT adoption processes, especially in the integrated configuration in network systems, which allow continuous, cyclic, iterative interaction.

The number of relationships that each actor has with the rest of the components of each group is growing today, the radius of the relationship framework around each person and the frequency of interaction increases along each relationship.

This phenomenon is fuelled by at least two main factors: on the one hand the development of ICT technologies, on the other hand the greater people ability to move and travel, even over long distances.

The Internet version of social networks (Social Media) can therefore be assumed to be one of the most evolved forms of online communication, and certainly today represents an attempt to violate the

"rule of 150" by Robin Dunbar. The network of social relations that each of us weaves every day in the various areas of our lives, it can therefore be "materialized" even through digital lattice, organized in a more or less dense form, and can enrich the plot of contacts of each beyond the limit set by evolutionary anthropology. Modern man is today a homo-communicans, constantly immersed in the flow of information. Each of these in some way influences the decision-making processes and the choice of the public and helps to build that part of the cultural heritage, traditions and local values, on which interest, acceptance and satisfaction of users depend on any good or service.

The sharing of knowledge, the transfer of information, the widespread participation in their construction determines a new condition of distributed intelligence, which Pierre Levy calls "collective intelligence" which today suggests the revision of some decision-making processes based on the principle of delegation, in the direction of greater participation by new subjects.

The ease of interaction conveyed by technologies and the growth of the number of subjects involved in every relational context (now including objects and devices) generated an increasingly extensive and articulated network inside the which each part is potentially connected to each other by weak bonds.

At the same time, the same factors have made available a huge amount of information, multiplying the number of topics around which network actors tend to catalyze their attention by creating membership numbers and smaller circumstantial identity factors (the values of the brands for example or the statutory principles of autonomous associations and groups of purchase). What derives from it is a global network, made up of many small minor networks, each one "rotates" around topics of circumscribed and often well-defined identities, moreover in constant change.

It is the manifestation of what Vanni Codeluppi theorises in a long-term prophecy, analyzing the influence of lifestyles on consumption and evaluating their strategic effectiveness with respect to market segmentation: "all these research systems will face even greater difficulties caused by the realization of a "planetary village" where there is a process of increasing homogenization of individuals and cultures. Alongside this, however, it should be considered that societies become even more and more differentiated, because individual and social aspirations and lifestyles always multiply. In the field of consumption, this inevitably translates into an increase in consumption styles, but also results in consumption patterns that are articulated within and in constant change» (Codeluppi, 2016).

We can therefore summarize that it is changing the way of choosing, the way of evaluating things, the cultural or identity segmentation of the public... quickly and continuously fickle.

2. Changing context means changing strategies

German Gerd Gerken has argued that companies or governments can no longer build their strategies by thinking about stable and passive consumer groups, because demand is formed today in the increasingly rapid dynamics of change in society, that are growing inside the networks of consumers who they organize thanks to new electronic technologies and therefore change continuously. For this reason, companies must learn to "live among these groups, instead of analyzing them only from the outside" (Gerken, 1994).

In the same way, Francesco Zurlo, recognizing characteristics of rapid evolution in today's markets, identifies a strategic quality of design (and enterprise) in the ability to "see, [that] is about to observe attentively and participant users, culture and society [...] and since we only see what we know, this means living in culture, becoming "intellectual", able to grasp the nuances that culture takes on continuously "(Zurlo, 2012).

Ezio Manzini in "Design when everybody designs" talking about social innovation and after describing today's social structure as a sociotechnological system as result of close integration between relationships and technology, wherein relatively autonomous parts are always linked to the main global network (through long distance links), recognizes in localism and permeability to external stresses (locality and openness) the main characteristics of social organizations, which trigger and conduct innovative practices on the territory.

Each of these positions highlights how volatile and variable is the social structures within the product is inserted and where the use and consumption practices, the mechanisms of choice, the consent, the user acceptance and satisfaction grow up.

Flaviano Celaschi states "The exchange of the market is surely the most complex and at the same time most important phenomenon in which we are more or less consciously immersed, both in quality of consumers and in quality of participants in the production and value-coproduction process" (Celaschi, 2007).

Today the exclusive link between form and function is inexorably dissolved, crushed by that process of dematerialization of industrial products, that's why the hard part, through which the practical ability to perform certain functions or to physically satisfy the needs of the consumer is expressed, progressively gives way to a multiplicity of soft components, more effective in terms of the signification of goods. This is what Baudrillard calls "the tendential crisis of the value of the use of goods" (Baudrillard, 2014), a universal condition, but which finds evident manifestation in the transition from

the initial procurement phase to that one of re-supplying or replacing fungible goods. In this framework, functionality becomes a pre-requisite essential to production and consumption, towards more and more external factors of value are added, no longer defined in the factory but increasingly in the contexts in which the objects "live". Part of those factors characterize the relational landscape in which the object or service is inserted and it conditions design for the means of direct and indirect links surrounding it.

The resulting paorama is characterized by three main factors:

a. the sense-making processes are increasingly positioned outside the traditional places of production;

b. public/customers values and interests change and become more and more varied and fragmented;

c. as the factors of interest and the values change quickly and unpredictably, the time of cultural "amortization" of each product is reduced, being it referred to an object, a building, a lifestyle model.

2.2 Towards a model of Design 4.0

In the points just outlined at the end of the previous paragraph we can recognize some of the factors that have recently led one of the last revolutions in the world of production, better known as the fourth industrial revolution.

From that revision process a new model of industry was born, called Industry 4.0. It arises from the increasingly evident need for continuous review of production systems, with the aim of improving product quality, process yield, and overall sustainability of production practices.

The technologies, indicated as responsible or enablers in the model of Industry 4.0, coincide in large part with those that in the most recent course of history have determined and conditioned the development of a widespread relational fabric even among subjects not traditionally belonging to the chain of production, as users, non users and external observers (opinion leaders, journalists, critics, etc.).

This fact legitimizes, through transitivity, the hypothesis for which models that are at least similar (when not identical) can be extended or used to describe, for example, potential and plausible guidelines for the development of user and consumption systems, implementing a process of horizontal transfer of paradigm, able ultimately to integrate the two segments into a single model of economy and circular society.

This leads us to consider hypotheses of integration between the two systems of production and consumption, capable of activating innovation precisely in that area of overlap in which all the components linked to the product system are placed and which, in the most recent analysis of scholars and researchers of design, of the sociology of consumption and sometimes of marketing, assumes a product relevance that is prevalent with respect to the characteristics of physicality and practical functionality, now relegated to status of essential pre-requisite.

2.3 A high potential solution: the horizontal distribution of design centers

The production (understood as the technical-realization of the goods) has for a long time represented the heart and soul of every manufacturing process, as can be deduced by observing how quickly the innovations were accepted and introduced into the factory until not many years ago, and then quickly translated into practical actions and operational structures. Today, alongside the fragmentation of production, we assist in the horizontal distribution of project centres, made available by the strengthening of communication networks and enabled by new value emergencies, which are difficult to mediate through ordinary or traditional tools.

The radical change we today are witnessing is the transition from the management of the project within the company walls, to its capillary propagation in the Network. That's why we today learn a new active effectiveness in collective mode of action as a key part in the project and co-design.

The general idea of co-design is to involve people's mentality and experience on many levels, breaking the company's physical barriers and extending information gathering to the global network. In this way the design process is decentralized up to the imaginable pulverization in an optimized evolved scenario.

The development of a new product, its refinement, as well as the design of a re-supplying good (mostly destined to replace objects in a satisfied state of need) feeds on essential feedback from the user. In those cases personal and extreme situations are considered, like scenarios, sometimes unexplored by the company, but which contribute to considering different points of view, nuances and original facets. Knowledge increases if the idea is shared with the community and if a collaborative system is triggered, integrated through consumer experiences.

The next step will lead from community consultation to community design, ie the condition in which anyone can interact with the idea, propose solutions or improvements, cooperate in the definition of a project. No longer focus-group but extensive-community. This approach certainly has a viral effect: if the company learn to trigger processes of branched co-design, then the people, often passionate or willing to say their own, will contribute spontaneously generating return information. There are two distinct categories of application: the first one is intended to gather feedback for improving an idea, the

second one aims to receive different proposals from users and then develop all those will appear meaningful (back inside the traditional production places or continuing the collaboration off-site).

Fig. 1: Planet Smart Square was one of the projects of Torino Living Lab with which the public space of Piazza Risorgimento was redesigned to transform itself into the urban ecosystem of an "intelligent" city, thanks to the inclusion in an area of 5200 square meters of 25 innovations designed to improve the quality and simplicity of access to services by the inhabitants of the neighborhood and to encourage new opportunities for socializing.

2.4 Circularity in design processes

Among the most important objectives of the Industry 4.0 strategies, there is the aim of circularity (or cyclicality) of the processes, through which the process gain at the same time economy and instrumental enhancement.

At the base of the circular model is the effective use of resources in a continuous cycle, in a perpetually open system in which the output of each activity is never to be considered definitively resolved, but subject to implementation through the acquisition of new data or inputs arriving from the verification filters.

The best example of a circular system, nowadays adopted almost universally, is linked to the theme of sustainability when applied to the entire life cycle referred to any industrial product or construction activity. In this framework, the objective of reducing the waste fraction of materials is pursued through the continuous monitoring and reviewing in each phase of the process, from the procurement of raw materials, to delivery to production, from manufacturing, storage and distribution, to the use and consumption by the user (for example with the promotion of policies of conscious use or sharing-supply) and recovery and recycling of materials at the end of the product life cycle (assembled).

IC technologies have now led to consider an increasing number of variables in the deciphering of any scientific model, and today allow to reintegrate marginal factors (previously neglected) into the study model of fractals, which approaches the definition of "anarchist activity" described by Paul Feyerabend in 1975.

As Albert Einstein stated in Geometry and Existence: "When the laws of mathematics refer to reality, they are not certain. And when they are certain, they do not refer to reality». It is like reintroducing the friction component in the Galileo Galilei experiments!

The prospect of extending this paradigm to the field of the project, in addition to outlining new skills in reading contexts for design, leads to "closing the circle" of the product-centred system, through which the idea passes to the goods and its life-end, and then come back to the beginning of the project (that is the idea).

3.   Design Displacement Strategies

What has been said up here is a process of profound change in the product paradigm itself, inside which the design system must question itself in order to maintain and gain relevance and design quality. Design is part of a complex network of relationships and influential relationships, which, in line with the increasingly paradoxical eclectic nature of consumption (Codeluppi, 1997), are global and local, strong and weak, static and dynamic at the same time.

This condition of transition of the product (or building), from eminently physical individuality, assigned to the satisfaction of human needs (procurement) and to the performance of practical actions

(functionality), to commodity-product, in which intangible factors of meaning contribute more and more to define the semiological "text" of an object is superimposed on the radical transformation of all the social structures into extended and horizontal reticular forms, gradually more numerous and complex, characterized by extreme volatility and dynamism.

The design is thus transferred from the factory to the market or, better said, to the society in which every product produced today roots matrix of meaning and value. In this context, lateral factors (contextual) are important, even if not directly related to the good or service that one wants to design, but which characterize the habitat within which the product is inserted. For example, those factors that determine the connotation of the cultural or ideal heritage of a tribe, of a fair purchasing group, of any local community, which build a cluster of relationships through the reticular aggregation of people and objects around a common focus, which then becomes part of a global network articulated on a planetary scale.

Through sporadic and even weak relationships (such as those activated by information and communication technologies) each cluster exercises (or at least is able to exercise) influences and influences on any other subject belonging to the network and thus on products. In this way, consent and market acceptance towards a product are formed and the public (user and non-user) takes part in the project to build the meaning and value of the goods.

In this way the project is enriched by the weak and "peripheral" relational component in the context of use of each asset, acquiring a new relevance thanks to the valorization of unexpressed or newly formed units.

By investigating contextual links to the product and trying to outline operational modalities, aimed at enhancing that same component in the field of users, the research chooses to operate in the area that is halfway between product and consumption; in doing so it exploits the same widespread relational system in which designers, producers, builders and the researchers are inserted together with objects, users and non-users.

In this way the system generate relationships, which are realized in the real (physical) space of the survey fields or collaborative workshops and in the virtual space of web pages and software applications in which other forms of participatory design are implemented, such as the mass-customization.

In this way, new project operational tools appear, capable to redesign, even when they lead to the production of mock-ups or functional prototypes, the entire product system again, starting from the aesthetic enhancement of the processes and the participative sharing of phases of production, distribution and project.

3.1 Case study

This section contains some interesting examples of experience, practice, methodology and experimentation related to projects DDS (Design Displacement Strategy).

Each experience is introduced through a first general descriptive reading and analyzed more in depth on the operational and implementation methods, through which each one develops and culminates in the realization of a product or service available to the public and to the user (market).

Atomic Custom Studio
Founded in 1955, for more than 60 years the company is still in full development, monitoring trends, continuously testing new materials and the most innovative technologies. Over the years, the equipment they designed and built has conquered every podium in the various ski races, has reached the summit of Everest, accompanied athletes in all kinds of winter sports, helping everyone to differentiate and be unique, "to win with personality", according to one of the themes reported in the main B2B (business-to-business) company's briefing. The other motto of the brand is: "My skis, my story". So, starting from the premise of the scarce originality in fashion, clothing and ski equipment, the company develops the revolutionary idea of opening a mass-customization service scenario within its organizational structure, creating a new digital platform, which allows users to design custom skis and order them online.

Through the website the "brand new Ski Designer" has the ability to customize the appearance of the skis according to the desired style, creating something completely unique, simply and quickly. You can use pre-set types, upload images and personal photos and insert text. Alternatively, you can select a design from a drop-down menu and choose only the slope. The design software has been designed and produced in such a way as to be easy to use and suitable for everyone, experts and not in the field of design and skiing. Atomic Custom Studio guides the buyer through the whole process.

By this project Atomic aligns with that slice of the producers who, in parallel with the increasingly marked desemantisation of the function in re-supply goods, attributes to the theme of personalization a weight role in the value chain of goods.

The "Try and Learn" section is also useful for the company to check how the flow of the entire personalization process works perfectly, and it is equally important to find out more about how people

use the tool for design and what results they obtained, simulating tools of continuous "sensoring" (monitoring) of all the different market clusters.

Fig. 2: A page of the Atomic Custom Studio web platform through which it is possible to customize the product.

Ikea Play Workshop

The intelligence specialist Lydia Choi-Johansson has been conducting research for Ikea on the theme of the game and on its possible implementations with respect to the generic furnishing product or complement for domestic life.

In the last ten years IKEA has conducted some of the largest research studies in the world on the subject of gaming. Beginning in 2009, he carried out research activities through structured and semi-structured survey tools and over time conducted over 10,000 interviews with parents and children around the world for the development of children's games.

In 2014, the project was extended and other more general objectives were added to the original research, linked to the possible inclusion of playful factors in all the products of the IKEA range. Nearly 30,000 individuals (between parents and children) were interviewed again, coming this time to include, among the topics of analysis, the perception of domestic life by adolescents.

In 2017, IKEA began a new study program specifically centred on the importance of gaming for adults and children. How can you make products more playful? This was the question that was asked during the workshop at the Älmhult IKEA museum, which was attended by both collaborators who work on the development of bathroom and children's products, employees in the innovation and management sector and fifteen aged Swedish consumers. between 27 and 65 years. The nature of the game was one of the first things discussed among the participants, who all agreed on the point that the game represents a deeply personal fact, which does not include the concept of right or wrong.

Providing insights rather than mountains of data allows the whole IKEA to move in the same direction. Doing an in-depth workshop is for Maria Thörn (Range Competence Manager) a way to enrich the product development process and "unleash creativity, which I think is fundamental already in this initial phase, where we create ideas for products, fantastic products ».

The results were varied and inspired the company's choice to introduce the theme of the game into the catalog of products in production

Before the 2017 Play Report is released, Ikea intends to develop more playful products and solutions across the range. "Through this workshop we want to see the game from the perspective of consumers, from their daily lives, from their everyday stories, we want to be inspired by their ideas".

Fig. 3: images related to the recent workshop organized by IKEA at the company museum in the city of Älmhult in Sweden.

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