

What is ludic about ludic design ?

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Abstract

This paper focuses on ludic design as part of the paradigm of design research that explores new ways to implement computer systems. In this paper, we want to further explore the specificity of ludic design. First, we introduce Bill Gaver's definition. Second, we compare his claim to theories of ludicity that were developed in sociology and psychology. We then analyze a portfolio of artifacts to better understand how ludicity is embedded in the designs. Finally, we come up with three additional characteristics of ludic design: unconventionality, serendipity, and reflexivity through breaching experiment. These three dimensions of ludic artifacts also help us better define ludicity as openness that is an activity that is generative of meaning and ultimately new artifacts and practices.

Keywords: Design research, ludic design, theory, portfolios, serendipity, reflexivity, breaching experiment

What is ludic about ludic design ?

Motivated in part by the quest for new markets, and in part by the progress of miniaturization in electronic components, “Ubiquitous Computing” described by Mark Weiser (Weiser, 1999) seems every year a little more real. New devices, digital systems, connected objects take place in our domestic environment. They range from refrigerators to scales and include toothbrush, home automation systems, picture frames, weather stations, medical devices...

Despite progress, many of these objects are too often thought of as machines for work and developed with the same criteria: control, effectiveness, efficiency... But these criteria and features are probably less relevant when artifacts are implemented in everybody’s home and everyday activities.

This paper focuses on ludic design as part of the paradigm of design research that explores new ways to implement computer systems. “Design exploration” research, as defined by Fallman, explores how to expand the field of design outside of the current paradigms. Design exploration “often seeks to test ideas and to ask “What if?”—but also to provoke, criticize, and experiment to reveal alternatives to the expected and traditional, to transcend accepted paradigms, to bring matters to a head, and to be proactive and societal in its expression.”(Fallman, 2008). Daniel Fallman points out that these approaches are good at “problem-setting” (Schön, 1983).

Ludic design is defined by Sengers (Sengers, Boehner, David, & Kaye, 2005) as belonging to design exploration. The goal is not only to create original systems but also to introduce a reflective practice. “In the context of HCI, ludic design explores the limits of technology design practice - what it is we may design for, what methods we may use - by proposing a specific set of

values that contrasts sharply with the values currently at the center of technical practice.” Ludic design explores the values and aesthetics of a material with probably unparalleled plasticity.

In this paper, we want to further explore the specificity of ludic design. First, we introduce Bill Gaver’s definition. Second, we compare his claim to theories of ludicity that were developed in anthropology and psychology. We then analyze a portfolio of artifacts to better understand how ludicity is embedded in the designs. Finally, we come up with three additional characteristics of ludic design: unconventionality, serendipity, and reflexivity through breaching experiment. These three dimensions of ludic artifacts also help us better define ludicity as openness.

Defining Ludic Design

In this section, we want first to address Bill Gaver’s definition of ludic design. He has coined the word and, in a series of papers, develops and refines the concept. We will give only a short summary of his thoughts here. Secondly, we want to tap into theories of ludicity to relate ludic design to a broader field of studies that explore playfulness in individuals and society.

Bill Gaver’s program of ludic design

The claim of Bill Gaver’s ludic design program is not to tackle issues of efficiency either technical (that is augmenting people’s activity) or social (solving problems of coordination, or communication), or even psychological (identity). The focus is on meaning making. Ludic design is specifically deployed to support meaning making activities. This definition applies to the development of these artifacts – the design space itself and in particular the probes (W. W. Gaver, Boucher, Pennington, & Walker, 2004) – as well as the reception and use of these artifacts. “If people are to find their own meaning for activities, or to pursue them without worrying about their meaning, designs should avoid clear narratives of use. Instead they should

be open-ended or ambiguous in terms of their cultural interpretation and the meanings—including personal and ethical ones—people ascribe to them”(William Gaver et al., 2004). Bill Gaver therefore describes artifacts with use scripts (Akrish, 1992) that are “under defined”. The focus is not on the task but on the global aesthetics experience and how people make sense of it through gestures and comments.

In (B. Gaver, s. d.), Gaver defines these activities as based on curiosity, and sustained by exploration. They eventually support a reflexive state about our engagement with the world, its representations, and each other. While reflexivity can be brought about by readings, or discussions, Bill Gaver explores how objects can be designed with that purpose. “In other words, ludic design focuses on reflection and engagement through the experience of using the designed object.”(Sengers et al., 2005)

Reflexivity could also be triggered by unpleasant and challenging experiences. But the objective is also to foster creativity. Ludic design therefore creates pleasurable artifacts and enjoyable and playful situations so that the users do not reject the experience but actually use it to explore the potential of technologies. Ludic design is geared to support design or at least meaning making activities in users. Bill Gaver tries to arouse curiosity and encourage an attitude of speculation through the original composition of contents (images, news, videos), the re-framing of information (from screen to viewport), the novelty of tangible artifacts (like a cross or a coffee table).

The concern is that traditional HCI is too confident in its ability to surmise the needs of users and their practices. This idea of “homo ludens” has been taken over by Bill Gaver, who considers “ludicity” as an antidote to the different facets of technological “hubris”. “There is a kind of disciplinary hubris in the assumption that HCI can define systems that reflect

comprehensive understandings of users, whether in terms of tasks, problems or communities of use. Such a stance casts HCI practitioners as the powerful champions of feeble users, but our understandings are liable to be imperfect provisional and incomplete". Ludic design is therefore a method that under plays the use scripts of its artifacts so that users have more leeway to find their own ways with them.

Bill Gaver's ludic design program focuses on meaning making with an emphasis on the creativity that people have to deploy in conjunction with artifacts that do not fit any fixed definition. In the next section, we see how this program fits into a broader definition of ludicity in the literature of "play". We start with Huizinga as he is explicitly referred to by Bill Gaver.

What is ludicity ?

Game is consubstantial with culture and society. Within this paradigm introduced by Johan Huizinga (Huizinga, 1955), a human being is not only defined as a "homo faber", who builds, but as a "homo ludens", who plays. In the context of homo ludens, we are characterized not only by our tasks but also by our ability to enjoy ourselves, to discover, to be curious, to invent...

Johan Huizinga defines play as follows: "Summing up the formal characteristic of play, we might call it a free activity standing quite consciously outside 'ordinary' life as being 'not serious' but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it."(Huizinga, 1955).

Huizinga describes ludic activities as playful experiences that are not organized as goal-oriented tasks where people optimize the means for an action on the world. The motivation is not to pursue an effective action on reality but to give some space to the the free expression of subjective tendencies.

Following Johan Huizinga, Roger Caillois (Caillois & Barash, 2001), another game theorist, describes the game as an activity that has the characteristic of being free (the activity should be chosen to keep its playful character), separate (circumscribed within the limits of space and time) uncertain (the outcome is not known in advance), unproductive (which does not produce goods or wealth), set (it is subjected to rules that suspend ordinary laws) and imaginary (with a fictitious rendering of reality). This definition bears several similarities with Huizinga's, however Caillois adds an important characteristic: uncertainty. Without an uncertain outcome, there is no surprise or possible error. Without uncertainty the game would no longer be pleasing. But more importantly it would fix the choices and prevent creativity and freedom. It is necessary to give some latitude to the player so that he can imagine and invent.

But playing is not just entertainment. Psychological theories of play in children (Piaget, 1962; Winnicott, 2005) show that playing is an essential practice and commitment to creativity, to learning and understanding the world. When we play with things and words, when we tell stories and when we dream, we find new perspectives for the world and ourselves, and new ways to address problems. We create new relations between things, discover new facets of our personalities, and develop new ideas. Ludicity is the human ability to get out of the fixed meaning of words, and fixed order of things. Playful activities are a deliberate approach to put into play the meaning of signs and the use of things.

From the standpoint of psychoanalysis, the ludic experience is the time interval during which the encounter between internal reality of a subject and external reality of an object takes the form of a transcendent pleasure. Winnicott describes the concept of an intermediate area of experience, as "an area where we play is not the inner psychic reality. It is outside of the individual, but it does not belong either to the outside world." (Winnicott, 2005).

When he adopts a ludic attitude and enters in the intermediate area of experience, an individual composes with a set of rules and resources (Caillois), a fictional world (Juul), and a pragmatic context (the outside world serves as a reference of “ordinary life” and common world). Jesper Juul describes fiction in the context of games, not as a world in the game but as something that the player can imagine. He says “the job of the designer is to make the player imagine the world” (Juul, 2005).

While we can see that these definitions are the underlying principles in Bill Gaver’s claim for ludic design and designing for Homo ludens, we still need to analyze objects that belong to the ludic design paradigm to get a more detailed definition of ludic design characteristics. First, we want to see how these characteristics are embedded in tangible artifacts and situations. Second we want to see if other characteristics appear and augment our definition of ludicity.

Design case studies

In the previous sections, we outlined why ludic design is a principle and outcome for technology design. In developing our stance, we have drawn from several foundations. At this point, however, it may be helpful to concretize our approach with the attempts to embody ludic design. We will discuss three case studies, united by the underlying objectives but different in their target audience and ultimate enactment. These case studies are described only briefly here, for more elaborate accounts, see (W. Gaver, 2006; William Gaver et al., 2004, 2010).

Method: “annotating” a corpus of ludic artifacts

Following Gaver’s discussion about research through design, we proceeded to make a “portfolio” of artifacts. Gaver’s concept of “portfolio” is a reformulation of what humanities call a “corpus” (Rastier, 2001). Corpus and portfolios are a selection of artworks (linguistic, visual, tangible) that belong to the same genre (Genette, 1979). Artifacts of the same genre share

structural and pragmatic characteristics in so far as they are not only similar in style, narrative structure, or visual organization, but also as they are discussed by social actors as targeting the same audiences, for the same purposes, with similar textual or tangible strategies. The constitution of a corpus does not pretend to be exhaustive. It is always but a segment of the actual production. The purpose is to gather enough material to answer a research question. Here the selection of Bill Gaver's artifacts is dedicated to an in depth analysis of a few objects to understand some qualities of ludic design. "Comparing different individual items can make clear a domain of design, its relevant dimensions, and the designer's opinion about the relevant places and configurations to adopt on those dimensions(William Gaver, 2012)".

The epistemic quality of portfolios is that they determine genres and styles, underlying values, contemporary concerns, embedded forms of memory, traces and anticipations of activities.

We followed two methodologies: a semiotic analysis of the artifacts themselves, and a communicational analysis of the situations where the objects were "tested". One of the challenges of this type of analyses is that it is inductive and therefore the amount and variety of details of each artifact and experience tends to be overwhelming. Bill Gaver himself emphasizes the fact that each retains clear particularities. Focusing on only a few items is a way to start collecting the particulars and the regularities that should later be confronted to other productions, Gaver's and others'.

Bill Gaver developed multiple objects over time, working on sound, writing tools, images... We chose to analyze only three artifacts that were placed in his home, in a convent, and in people's homes. We wanted to go into the details of these artifacts. Our interest is to find

the rationale of such objects and to get a better understanding of the role of these experiments in the HCI community.

The difficulty is therefore to limit these practices to a set of semiotic characteristics or to a set of methods. By definition, ludic design is more concerned by being generative than by being a strict “genre” of design. Still we can assume that studying the process, the production and the reception of these design activities and products can tell us what the philosophical and aesthetical groundings of these practices are. As pointed out by Gaver: “juxtaposing designs with annotations supports appreciation of the conceptual dimensions of designs on the one hand, and, by yoking them to particular design manifestations, grounds and specifies theoretical concepts on the other(William Gaver, 2012).”

Case study I: Prayer Companion

Bill Gaver’s team designed a “Prayer companion” in the form of a device displaying “a stream of information sourced from RSS news feeds and social networking sites to suggest possible topics for prayers” (William Gaver et al., 2010). It was developed in collaboration with a group of cloistered nuns and was aimed at bringing something relevant to their lives. While the project was initiated within a larger framework of HCI for elderly people, the designers were more eager to deal with what seemed more relevant than age: the nuns’ spiritual lives and the central place of prayers.

Two aspects of the design of this artifact are particularly striking. On the one hand, the aesthetics of the tangible artifact itself is highly crafted with numerous discussions about its “unobstrusiveness” and cultural features that must be harmonious with the rest of the place. The team eventually chose a design that resembled a specific cross: the Tao Cross.

On the other, hand, the design team and the nuns worked hard on defining the type of information that they needed for their prayers. While the nuns are removed from the world, their prayers have to be “relevant ” to the state of the world: “for us having news is not keeping in touch with what's going on, it's to keep the prayer pertinent to what's going on... I mean if there's an earthquake in Indonesia well... if we're still praying for the situation in Northern Ireland” (Sister Peter). The nuns therefore use a number of media: radio, newspapers from Catholic news agencies, and more recently the internet. The team had to choose the right news feeds and the design implied an extremely fine editorial work.

The Prayer Companion therefore deals with the delicate design of a media that organizes topics of prayer.

It redefines what a media is because:

- It mixes different news feeds, considering that the sources are less important than the subject matter. In particular, the designers decided to introduce new media in addition to the ones that the nuns already listened to and statements of personal feelings (“I feels”).
- It redefines the format of reception of news: something that can be done “in passing” since it is situated in a corridor and not in any proper room. News are not developed. They are presented more like a small “tweet”, limited to 8 word long titles. The nuns can glance at them while attending to their chores.

Case study II: Video Window

“The Video Window is a video screen hanging next to a window on my bedroom wall, showing the image from a camera mounted to show the skyline from outside that same window.” (W. Gaver, 2006)

The Video Window is part of a family of creations by Gaver who worked on media spaces in the framework of Computer Supported Collaborative Work. In the article, he notices that other interesting activities and aesthetic experiences are supported by these new media but not necessarily taken seriously in the CSCW community: “Though usually justified along utilitarian lines, mediaspace systems were often used in more playful ways as well—for instance to view a nearby public green, or to watch a birds nest being built outside an office. Such activities were never taken very seriously, but were a continual feature of mediaspaces I experienced.”

He was also interested by the experience of one of his students, Sebastian Irrgang, who “attached a video camera to a weather balloon and tethered it to his roof, displaying the image in his home to alleviate the claustrophobia of living in a basement flat”. The Video Window therefore questions the relationship between the architecture of a place, and the experience of its inhabitants. It also questions the remediation (Jay David Bolter & Grusin, 2000) of a century old metaphor: the window in paintings, now in computers.

What is interesting in this project is how the author describes the subjective experience: it is an aesthetic experience very close to contemporary art in the fact that it does not look for a “representation” of the world, a photorealistic figurative image, as such but more for an abstract experience of colors, an attention to tiny changes:

“Often the view from the Video Window is apparently static and unremarkable. Still, it is almost always interesting. The clouds and lights change slowly but continuously, punctuated by the small drama of a bird flying past or a plane on its decent into Heathrow.”

The Video Window thus offers: First, a redefinition of what a video image is: not the idea of video surveillance but of bringing “outside in” as in a number of works of art based on webcams. Second, a redefinition of how a screen is also a frame: Gaver describes how the

framing of the view from the real window is very different from one side of the bed and the other. The Video Window reorganizes a point of view that no longer depends on the physical situation of the viewer. Third, a question about the nature of the image in the screen: because it is close to the house, it changes the feeling of living in it. In both experiences (his and his student's), the Video Window augments the home potential space: the representative space and the actual light brought by the device.

Case study III: Drift Table

“The Drift Table is a coffee table with a small viewport showing a slowly changing aerial view of the British landscape. Shifting weights on the table changes its apparent height, direction and speed. With about a terabyte of photography of England and Wales available for viewing, the table may be used to explore the countryside, travel to a friend's house, explore questions about geography, or simply to watch the world go by.” (William Gaver et al., 2004)

Along with other artists and designers (J. David Bolter & Gromala, 2003) Gaver questions what it means to introduce yet another computer system in the home, and what form it can take. The Drift Table was developed as part of a project on domestic technologies led by designers, social and computer scientists. In particular, it explores a third way in addition to two trends in HCI: on the one hand, the disappearing computer heralded by Weiser (Weiser & Brown, 1996) and subsequently Norman (Norman, 1999), and on the other hand, the growing number of computing systems with screens in the home. While Gaver wanted to “avoid the appearance of a computer”, he still designed a specific screen.

The Drift Table is close to the Video Window project because it reflects on the “Veduta”, the window and its place in the home. It explores two major questions: Our relation to locus and

space and the place of tangible artifacts, information and media in human interactions and in particular conversations.

While Gaver mentions that the digital window can be considered as a “real window” in terms of light for instance and openness to another space “escaping the confines of the home in ones’ imagination”, the Drift Table is more an intellectual device that explores first our relation to images and maps in the home and second the way the display of images contributes to the intimate way people interact in our homes.

An important clue to the meaning of the Drift Table is given by a reference to a work of art: an installation by Ilya Kabakov who built the model of a room in plywood with a hole in it. For Kabakov, the problem is that our environment – even when we personalize it - limits our capacity to think - literally - out of the box. “This atmosphere, this "order," even if you have arranged it yourself in your own image and likeness, now it itself will start to affect you, with its daily presence it forces the very same thoughts to go round in your head, and with its weighty, material immobility the same thoughts and feelings press toward the "earth," remain within the confines of the low, "room" horizon.” (Kabakov, s. d.)

The challenge for the Drift Table is to open the locus and its predictability to a production of images with a life of their own and the ensuing reflection that such a poetic artifact can trigger. The Drift Table is therefore a device that explores aesthetic questions of scale, angle of view and scope. It also questions our relation to representations of space and of our ways to anticipate our moves in that space: several options that made the representation of space “useful” were finally discarded.

Another key to the Drift Table is the mention of Harvey Sacks (Jefferson, 1995): “the table enables the uncovering of details that can serve as ‘tickets for talk’.” Harvey Sacks, an ethno-

methodologist, studied the structure of conversations, in particular pointing out the role of turn taking in interactions. While his point was to analyze the dimensions of conversation, Bill Gaver explores how a conversation can be sustained, fed, supported by new media.

The Drift Table is a coffee table situated in a “living room” which is amongst the most communal places of the house. The Drift Table is therefore an exploration of means to build a conversation that can be started by other media (for instance, he mentions that the beginning of the conversations is often in relation to news delivered by mass media or the press). The table therefore reinforces the purpose of the living room as a communication hub.

Discussion

The analysis of these objects tends to open multiple dimensions of ludic design. In particular, Bill Gaver makes it very clear - and his objects testify to the fact - that aesthetics is a key to ludic design. In this respect, these ludic artifacts are very close to art as pointed out by Morrison (Morrison, Mitchell, & Brereton, 2007). This is to be related to Huizinga’s analysis of aesthetics in ludicity (Huizinga, 1955). In the different experiments, what is striking is the amount of efforts that are necessary to achieve the perfect technical, practical solution as well as the desired aesthetic solution: fine details of color, shape, and text editing, quality and angle of image, composition, etc. were taken into consideration. But aesthetics encompass more than the image or the tangible artifact.

Bill Gaver describes a whole environment. He shows that emotions and enjoyment are related to the situation, locus, actors, objects, and representations as well as information.

The aesthetics of ludic design is made of a space of experience including: Tinkering, maintaining, social sharing, relation to space and time of the tangible artifact, representations and in particular the poetic rendering of time and space, evocation / information.

Users are not only oriented by tasks (pleasant: tinkering, unpleasant: maintaining), by cognitive interests (the weather), but also moved by shapes, forms, affected by time and space. Information technologies move us. The question is how to design the way they affect us, how to design our action and passion.

In the discussion, we want to focus on only three aspects of ludic of design as they appear through our analysis. We think that ludic design is: Unconventional, serendipitous, reflexive.

Unconventional

Bill Norman describes the importance of affordance and conventions in efficient design (Norman, 2002). On the contrary, Bill Gaver theoretical stance is that designers always challenge conventions: aesthetic, political and social conventions. In particular, Bill Gaver - as well as other designers claiming ludic design like Tek-Jin Nam et Changwon Kim (Nam & Kim, 2011) – indirectly criticize mass media. While mass media convey a standardized, oversimplified, static, and complacent vision that masks the real complexity of things and implicitly deny the possibility of change, ludic designs encourage to question information, formats, media. Ludic design is a critical program that goes against another type of design that “may commodify personal experience, encouraging people to consume activities and meanings defined by others and alienating them from their own meaning-making.”

When one looks at the Prayer Companion, it seems like a slightly old-fashioned text message device mounted on a stand. It fits in the architecture and design of the convent. In this respect, it does not challenge the aesthetics of the place. It does not open a new activity either. It is a recipient of information. The nuns cannot change or interact with its features or write with it. The object is static both because its processes are automated and because it is in a fixed place.

Still it is unconventional in the sense that it introduces new types of information therefore questioning the legitimacy and the format of mass media news. Appropriate readings in a convent are either the Bible or the news. While they do not touch the Bible, the designers mix with the legitimate news, personal, egocentric, feeds “I feel”, reflective of the “selfie” trend on the net. This intrusion is immediately discussed by the nuns and reinterpreted as a humorous input or sometimes a moving input.

In other words, the Prayer Companion challenges the notion of legitimate information and genre. It is a light, non obtrusive questioning of what we call news and the agenda setting role of media that designates what is of importance or not.

“Ludic designs should sit between several product genres [...] without clearly belonging to any. Ludic pursuits may develop into more traditionally defined ones, but their self-definition and motivation is incompatible with the meanings and motivations implied by known genres”.

The Drift Table is also unconventional as it advocates a form of leisurely mobility rather than the certainty of a point fixed in time and space. The table moves, “drifts” of its own, questioning the value of maps and our utilitarian as well as political relation to it.

Bill Gaver maintains a stance against practical, work oriented, types of design, but he also builds his design against mass culture. His design is not expected in the sense that he offers an aesthetic research that deals with contemporary features.

Serendipity

In the systems that we analyzed, there are several spaces/concepts of serendipity. While the word “serendipity” is often used to mean chance, the ambiguous definition given by Walpole: “making discoveries, by accidents and sagacity, of things which [you] were not in quest of” (Walpole, 1857) points more to the “sagacity” of characters (in the novel the Princes of

Serendip) who are able to pay attention to a surprising event, to interpret it correctly, and - more importantly for design - to work something with it. Serendipity therefore seems to play a large part in the creative process. Tek-Jin Nam finds it in four domains: science, technology, art, everyday life (Nam & Kim, 2011). “If I define true serendipity as the art of making an 'unsought finding', what do I mean by a 'finding'? I speak of a 'finding' when two or more elements (observations, hypotheses, ideas, facts, relations or insights) are combined originally, for the finder or anybody, to something new and true (science), new and useful (technology), or new and fascinating (arts)”. As a designer, Bill Gaver questions the possibility to plan for chance. While Van Andel considers that no computer can emulate serendipity (Andel, 1994), Gaver, along with other HCI researchers (Liang, 2012; Newman et al., 2002), gives another answer by developing one ludic design after another. As pointed out by Hatchuel (Hatchuel, Weil, & Masson, 2012), designers either generate surprises (Schön, 1983) or use unexpected accidents as a resource - serendipity. In any event, the design practice can be described as a combination of intentionality and indeterminacy (Braha & Reich, 2003; Gero, 1996).

The analysis of Bill Gaver’s different artifacts shows that serendipity is an essential part of ludic design in interactive systems. On the basis of the three artifacts described here, we can point out five inclusions of serendipity in ludic design:

Information as event: Bill Gaver works with news. He relies on the unpredictability of world events and crises. In the Prayer Companion, serendipity is based on events that are foregrounded by mass media. Serendipity is dependent on the intimate workings of media: picking up events that define the news, and agenda setting (Mc Combs & Shaw, 1972) (that is the ability of media to define, stage, express, frame (Scheufele, 2000) topics that structure the public agenda). In this framework, embedding serendipity implies to connect the artifact to news.

Random production of information: in the Drift Table, the number of information is not infinite (though it is important enough to be experienced as such) but it opens a space of exhibition that does not show obvious patterns and appears like free moves of images. Serendipity is left to the user's capacity for observation, interpretation and capacity to find common points, features and patterns behind the seemingly random access.

Serendipity as access to information: the Drift Table, is a space of exhibition that is related to the activity of the user herself and the objects that are left to interact with the table. Participants explore different gestures, postures, with the artifact. They invent a rhythm of interaction with the artifact, everyday, from time to time, slowly or fast. They drop certain objects on the table to see where they will lead the view. The more the object allows for a diversity of interactions, the more the object is opened to play.

Real serendipity: in the Video Window, Bill Gaver mentions how a bird that passes creates a sudden attraction to the view. The "outward clash of reality" (Peirce, 1932), and the fact that webcams seem to be in wait for anything to happen without premeditation, relay the infinite variations of the world.

Serendipity is also based on users' contributions or folksonomies (Auray, 2007). Users' contributions are explored in the Prayer companion through RSS that relay personal feelings and impressions ("I feel"). This has more to do with the unexpected, personal, intimate lives of people who have no connections with the nuns.

In the information base serendipity, the challenge is to select the right flux of news and to pace it to avoid overwhelming the audience by the sheer amount of world news. The correlated challenge is to understand what kind of information is relevant for the audience. Many discussions with the nuns involve their activity of prayer and the extremely complex role of

events in their prayer. It means that what is designed is an editorial policy as well as a technical artifact.

In the random access to information, the challenge is to choose the artifact in a situation that compensates for the randomness and the apparent lack of pattern by relying on the capacity of interpretation and the capacity of dialog around the artifact. Choosing a table (in the Drift Table example) instance is not trivial because it is a convivial space around which people sit and talk.

In the gesture based serendipity, the question is how to semiotize the interaction of the user so that she understands the impact of her input on the system so that it makes sense with the system and gives some reflexive feedback (Pachet, 2008).

In the serendipity based on folksonomy, the question of triviality and propriety is underlined by the nuns. How close can we be to other's people way of thinking, what kind of trust do we develop with strangers' contributions.

What these examples also show is that the other facet of serendipity is reflexivity (Catellin, 2012) and that reflexivity is not left to chance. Pattle, quoted by Van Andel (Andel, 1994), remarks that "some writers refer to a discovery based on observation of something which was not what was actually being investigated, as a 'chance' or 'accidental' discovery. This is never true. Observations are made because the observer is on the outlook of anything strange".

Bill Gaver not only creates an artifact that plays with the unexpected, he also describes discussions and engagement that place a special emphasis on the whole experience and the way the artifact is perceived. VideoWindow is discussed within the family. The designers and the nuns as well as the nuns between themselves discuss the role, impact and meaning of the Prayer Companion. Each time, the objects are qualified as experimental and to be played with. In these

examples, this setting is obviously part of the ludic experience as a reflexive experience. This leads us to consider that ludic design also works as a breaching experiment.

Reflexivity through breaching experiment

"Breaching experiments", as Harold Garfinkel defines them in ethnomethodology (Garfinkel, 1991), are experiments - designed by researchers - to better understand how people adjust to each other and to circumstances in very elaborate ways. A "breaching experiment" disturbs situations of everyday life so as to get to some of its meaning, a meaning that is hidden under the guise of "naturalness", or of "obviousness". This concept and method have also been used by researchers in engineering to focus on the reactions of testers to a new technology. Scientists rely on users' ability to build a coherent interpretation of the situation and of the technology to improve the latter. In "techno methodology", to use the neologism defined by Crabtree (Crabtree, 2004) who describes ethnomethodology used in engineering, the meaning of the situation is at the intersection of the user's activity and the tangible object. Indeed, users understand the "scripts" that are embedded in a specific artifact, whether they are "enrolled" (Akrish, 1992) by the designer expectations of use (Davallon, Noël-Cadet, & Brochu, 2003) or the objects show the general logic of communication (Jeanneret, 2008). Users also make sense of the object because they actively relate it to their activities, way of living, and environment and define how the artifact is relevant for them in context.

When Bill Gaver describes precisely the adjustments for the Prayer Companion, he balances the originality of the device with a fine tuning to the nuns' circulation in the monastery (that helps choose the place to have the Prayer Companion), and more importantly their understanding of prayer.

In the cases that we analyzed, the breaching experiment is actually for the benefit, first of the users themselves, and for the design and HCI team. Because ludic design introduces non conventional media and serendipity, the participants are led to manipulate and discuss the meaning of the artifacts. The user's reactions are both to correct and expand the meaning of the object. The benefit also goes to HCI scientists who want to develop new interactive systems.

Conclusion: ludic design and openness

The problematic of openness is central to ludic design. Analyzing the processes and the formal qualities of the objects helps explain what it means to be open.

The literary analyst and semiotician Umberto Eco in (Eco, 1989) makes it clear that certain works of art are more opened to interpretation than others... Speaking of contemporary art, he stated that it offered us a "new way of seeing, feeling, understanding, and accepting a universe in which traditional relationships have been shattered and new possibilities of relationship are being laboriously sketched out." While art mostly remains in specific structures like galleries and museums, ludic design targets homes and everyday activity but can be considered as pursuing the same goal.

Openness could be glossed in terms of its unfinished state: the object communicates its transient state through techno-semiotic characteristics (the artifact cannot work without some implementation from the user) or communicational (the artifact is presented as a starting point: a tool (Brown, 2013), a platform, or a first example for a lineage of similar products (Chrysos, 2013)) and invite the user to tinker with it. But Bill Gaver's openness is on another level. The objects are "finished", technically robust, and semiotically coherent. They are also presented as objects that are their own end and not here to do something else (in the sense of developing another application).

The openness is more about: The process of meaning making (it allows for a diversity of interpretations) and the avoidance of “clichés” (ludic design does not rely on a combination of archetypes: well known gestures, metaphors, tangible aspect. In other words, ludic design is a poetic work that tries to elaborate new forms (either tangible or symbolical) that are not what everyday objects already do or not what everyday objects mean).

Ludic design - as it is claimed by its artisans and developed in its artifacts - also helps us define more precisely what ludicity means. In particular it uncovers the critical, political dimension of playful activities based on unconventional ludic designs. It also reaffirms the role of serendipity in playful activities, while showing different forms of serendipity: from the actual hazard to information built as news, from random production to exploration of gestures. Finally, ludicity can be defined as a breaching experiment in the two senses that this word holds. It creates an unusual situation that reflects both on the users and the technology. This development of the concept points to a move from personal quest (that is Winnicott and Piaget’s standpoints) to a social quest: a redefinition of how we interact with the world in particular through media.

The openness and the specificity are part of a global system and not only the artifact. A very strong point that Gaver makes is the generative value of ludic design: on the basis of Lakatos’ theory of programs of research, he emphasizes that good designs are generative designs that is designs that open to new venues of development. Design as conception has to be evaluated through its generative potential. Wittgenstein’s “family of resemblance” (Wittgenstein & Anscombe, 1958) is therefore closer to his analysis: that is the interpretive faculty of doer and user to qualify commonalities.

It is in fact his theoretical basis for ludic design. The value of ludic design is that it is generative on many levels: Technically, socially, culturally, aesthetically.

In this article, the selection of artifacts has helped us uncover several features of ludic design in an inductive way. The next steps of our research will consist in augmenting our corpus of objects, not only built by Bill Gaver but also by other designers or HCI researchers. Other objects might fall in the ludic design paradigm while not claiming to be. We are thinking of Helen Evans (Evans, s. d.), Douglas Edric Stanley (Stanley, s. d.), Jean-Louis Frechin (Frechin, s. d.), Newman (Newman et al., 2002), to broaden our understanding of the range of ludic strategies and to come up with more recommendations for ludic design.

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