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Negative Experiences as Learning Trigger:
A Play Experience Empirical Research on a Game for Social Change Case Study

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ABSTRACT

This study shows the results gathered from 141 subjects playing the persuasive urban game *A Hostile World* via a post-game-experience quantitative questionnaire. The aim is to problematize and deepen the role of negative emotions (e.g., frustration, rage) – explicitly fostered by *A Hostile World* to increase empathy toward immigrants and foreigners – in triggering an effective learning outcome. A multidisciplinary approach that draws its principles from Sociology, Game Design and Education Studies was applied to lead and structure the analysis. Empirically, a quantitative survey was disseminated to n:141 players addressing negativity and play. Results show that negative experiences in ludic environments offer a precious support if well pondered. Findings are noteworthy because they allow to reflect on negativity and gaming with the support of an empirical investigation, which is a significant source of data for grounded and tangible follow-ups. Therefore, implications concern both scholars and practitioners who intend to use and explore negative emotions in gaming.

KEYWORDS

Failure, Immigration, Individual Attitudes, Meaningful Experience, Negative Feelings, Quantitative Methods, Social Change, Social Impact

1. INTRODUCTION

Games have to be challenging: they do not have to be boring, or not fun enough and therefore not *worthy* to be played (Mitgutsch, 2009). Moreover, games have to make the player fail in order to push for learning (Juul, 2009; 2013).

In the gaming experience, players face obstacles hindering their progress, and they are supposed to fail (at least sometimes); this process motivates them to persist and improve their skills, acquire new abilities and perfect their strategies, *learn* from their own mistakes (Kapur, 2008) and overcome *insurmountable* obstacles, and finally success with the game and enjoy it. In the article, we investigate how negative experiences within a particular game can be transformed into actual remarkable learning (Bertolo & Mariani, 2013; 2014a). Albeit the stimulating potential of play is acknowledged by academics and leading scholars (e.g., Gee, 2007; Prensky, 2007; Flanagan & Nissenbaum, 2007; Salen, 2008), little efforts were done in investigating empirically how players deal with apparently disturbing and negative emotions (e.g., frustration and boredom) willingly embodied in the game system.

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In the study, we analyse the gaming experience of 141 of the about 200 players who took part in *A Hostile World* (AHW), a persuasive game intended to raise awareness on immigration (see par. 2.3) by harnessing negative feelings. Indeed, the current emergency that is characterising this issue (irregular flows, intercultural debates, integration, etc.) entails stereotypes, misunderstandings and even prejudices among the public opinion; consequently, it represents the ideal topic to deepen by pondering negativity and meaningful play. Taking a step forward, we purpose to comprehend if this case study activates a certain response to the matter of social concern that it covers; specifically, we want to understand if and how the negativity of the game experience (Mariani, 2016a) triggers a learning process.

After the gameplay, 141 players completed a qualitative questionnaire related to ludic attitudes, the game experience and the topic of immigration. Our focus was on how players reacted, how they assimilated the experience triggered by the game and its rules, and what it meant to them. Coherently, the research questions that led the analysis are: (1) what kind of experience is generated when a game like AHW triggers negative feelings and emotions? (2) consequently, can such an experience activate a learning process?

This research presents two levels of contribution for researchers and designers. At a Research level, this study provides designers and researchers with theoretical and empirical insights, as well as with an overview on the results of the process of enquiry we applied. At a Design level, the contribution expands the awareness of the experience created by the game per se: designers will find operative suggestions for including negative emotions into their creations as allies and not something to avoid.

As a result, this study seeks to extend the exploratory research on situated games for social change (G4SC henceforth) as a branch of the category that Bogost (2007) named Persuasive Games; in particular, the research focuses on games that require embodiment by examining the relationship between negative experiences and how they affect players. The primary contribution of this analysis is to clarify the role of negative experiences and failure as processes of learning. A further intent is to contribute to the current need of the game research and design field to validate the efficacy and understand the potential type of social impact that G4SCs can have.

The article is divided in five sections. (2) presents a close view on the concept of meaningful experience and on G4SCs as means for meaning transfer. (3) introduces the case study and the research questions, followed by (4) the research methodology. Then in (5) the research findings are discussed. To conclude (6) synthesises the critical contribution of this article, and its relevance.

2. OVERVIEW

In order to set the premises of our proposal, three topics should be deepened: first, the play as a meaningful activity with a significant educational outcome; second, the application of such a potential in G4SC field; third, the multi-cultural issue addressed by *A Hostile World* that represents the learning object of this specific ludic experience.

2.1. Play as Meaningful Experience

According to Juul (2013, p. 74), "Games are fundamentally about learning", because they ask for a progressive improvement of skills and ability to strategically reflect, to achieve certain knowledge and succeed. The thesis advanced by the author is that learning happens mainly through failure. Accordingly, we argue that negative experiences (Mariani, 2016a) – i.e. experiences characterised by failures – may engender remarkable learning outcomes if intentionally planned. Failure is commonly acknowledged and recognised as a *negative experience*, but its meaning might be more than that. To

address the topic of "negative experience as a learning trigger", recalling the significant function of the play activity in our lives can help. The role that the game plays in human growth has been widely investigated and discussed by scholars such as Piaget (1962), Mead and Morris (1934), and Bateson (1972). Since childhood, it represents a key activity for discovering and learning about the world surrounding us, and its elements and dynamics (Piaget & Inhelder, 1971). As adults, however, our relationship with play seems to change dramatically: it becomes a tool to pleasantly spend spare time instead of being an impulse to investigate. According to the researches of Winnicott (1971), Bateson (1972), Turner (1983) and Salen (2008) about the relationship between games and individuals, play has the potential to address reality with a meaningful approach and then stimulate specific learning processes: "The mind, based on biology, not only follows instructions and fixed rules. It has a complex behaviour and manifests a profound ability to change itself as a result of an experience, introducing new properties in its operation, and selecting, from time to time, the paths considered optimal" (Trans. of Anolli & Mantovani 2011, p. 38). Experiences (usually repeated over time) involve multiple cognitive functions, including attention, memory and thinking, and are on the ground of the learning activity – intending learning both as acquisition of new knowledge and a persistent change in behaviour.

Play is nowadays a quotidian activity: every day, an increasing quantity of people plays to a burgeoning amount of games (at home, travelling, waiting for something, and so on). Games can occupy specific moments of our time or occur as casual activities, however we spend a lot of time playing. For instance, concerning digital entertainment, in 2014 155 millions of Americans have played video games and four out of five households in U.S. own a gaming device (ESA, 2015). In Italy, Newzoo recorded an annual average of 32 thousands of hours, with +15% of growth every year[1]. As the gaming industry continues to grow, educators, advocates, and other socially-minded concerns are increasingly turning to games to engage their audiences around social issues. Accordingly, there is an increasing number of products specifically designed to positively affect ordinary predispositions (e.g., by improving collaboration and dialogue among people), increase problem solving abilities, and cause a reflection on problematic issues and daily behaviours (health, resources exploitation, mutual comprehension, and so on). This trend surely helps to undermine the firmly established perception of games as childish and frivolous practices (Fink, 1957). Concerning this point, the increasing calls for games with a social and civic transformative potential in international projects like Horizon 2020 are indicative: the change of perspective that the ludic experience may imply is increasingly recognized by Institutions and policy makers.

2.2. Games for Social Change: Transferring Knowledge and Affecting Attitudes

Reviewing the scientific literature – from Sociology and Psychology to Game Studies and Design –, it is acknowledged that games can encourage people to become receptive to specific issues. For example, educational and serious games have been explored and designed since the early 1970s to train and educate (Fluegelman, 1976). It is also well-known that they can provide the amount of motivation that lies on the ground of the game-based-learning process (Gee, 2007; Prensky, 2007). However, the article focuses on a different type of games, which is intended to transfer knowledge through an experiential approach rather than didactic one: Persuasive Games (Bogost, 2007; Swain, 2007, p. 805).

To sum, this genre is based on the assumption that an assimilation of both concepts and practices (Gee, 2007; Zagal, 2011) can be activated by circumstances (namely actions with clear consequences) that move players to change their point of view (Lavender, 2001). Persuasive Games with social, civic, political and/or educational (broadly speaking) goals are known as social issues games or G4SCs.

G4SCs can be considered a subcategory of persuasive games (Bogost, 2007, p. 54) that specifically question social issues.

However, these games are not just stages in which the discourse on cultural, social, or political practices is smoothed; as systems of communication, they can be the ground where cultural values per

se can be represented for critique, satire, education, or commentary (Bogost, 2008, p. 119; Brathwaite & Sharp, 2010; Mariani, 2016a). Every G4SC aims to be a space where players are allowed and assisted in increasing their own awareness, reconsidering preconceptions and ideas, and then changing their attitudes towards a specific issue. Through those game experiences, players can face sensitive topics, learn specific information, and achieve a deeper awareness of the issue depicted. Pertinent examples are: *Oiligarchy* (Molleindustria, 2008)[2] is a digital game to reflect on energy sources and their maintenance; *Massively Multiplayer Urban Games: Soba* (Tiltfactor, 2008)[3] tries to convey the human values of tolerance and diversity; *Earthsploitation* (Ruffino, 2013)[4] is a card game focused on the system of animal and environmental exploitation for food supply; *Bounce* (Chien, Goldberg, McGonigal, Niemeyer & Tang, 2006)[5] is a situated game to connect young technologically-skilled players toolder non-digital-partners; *This War of Mine* (11 bit studios, 2014) addresses the tragedy of war from the civil victims' perspective; *Papers, Please!* (Pope, 2013) aims to communicate the immigration issue; and, not finally yet, the object of our study, *A Hostile World* (AHW, henceforth) (Bertolo & Mariani, 2013)[6], which is a urban game that deals with the multicultural coexistence, and aims to sensitise players towards the immigrants' critical situation and increase empathy and comprehension. The attention given to this topic is because of the relevance of the immigration issue in Italy in terms of integration, mutual coexistence and societal cohesion. Thus, as designers (who plan and create experiences for people) and researchers (who investigate the output of these experiences to further improve the design activity) our intent is to explore how effective and communicative is a game that is intentionally designed to cover such a delicate topic. As anticipated, AHW will be the main object of this study; regardless, the reason of this analytic attention goes beyond the mere theme. Indeed, the motivation that moved us to study this specific game was its explicit intent to trigger negative feelings to transfer a social message. Although several studies address play associated with sensible issues (e.g., Bogost, 2011; McGonigal, 2011; Flanagan, 2006; Swain, 2007; Stokes, Seggerman & Rejeski, 2010; Stokes, 2014), the role of negativity as a ludic factor – i.e., something embodied and/or harnessed by the game system – is still an overlooked topic. So far, the research on the "negative experience" approach and its potentialities is still incomplete/green; and especially from an empirical perspective, it is lack of enquiry.

2.3. Multicultural Issue, Integration Models and Ludic Perspectives

Before extendedly covering our enquiry on AHW, it is necessary to further investigate multiculturalism. As we will see, the insights and the models of inclusion described in this paragraph affected the way in which we have structured our investigation.

First of all, multiculturalism is today a particularly sensitive and relevant issue. Whereas the cultural diversity has progressively increased, our society has to handle the demographic coexistence of different ethnic groups, and, as a consequence, of a variety of perspectives, traditions, and lifestyles. In particular, the state of being diverse can generate dissensions and feed misunderstandings and tensions that can consequently turn into conflicts within the same community. The sensitivity of this condition is becoming further remarkable as the world is increasingly globalized and the society is becoming more and more *hybrid* because of the heterogeneity of its components. Migratory flows and the coexistence between citizens and newcomers are the most critical and challenging issues that hosting governments have to face. This is particularly true for Italy considering that, mainly because of its geographical position, it is one of the major access points of migration in Europe. According to The UN Refugee Agency (UNHCR), the European migrant crisis that began in 2015 led a rising number of refugees and migrants to travel across the Mediterranean Sea or through Southeast Europe to the European Union. In the first months of 2015 the irregular disembarkation on Italian coasts counted +30% units in comparison with the previous year, with 170,000 arrivals from the sea and 63,600 requests for political asylum (UNHCR-Italian Home Office data, 2015). In January 2016 the arrivals by sea have already exceed 6,000 migrants; in January 2015 they were 3,582.

Considering the reaction of the social majority toward the presence of minority groups, we see that over the decades three socio-cultural integration models emerged (Cesareo, 1998, p. 16), diffused both in government policies and formulations of scholars and experts:

1. **The model of assimilation:** The priority is the adoption of the culture of the hosting society by abandoning the previous original one;
2. **The pluralist model:** It accepts and tolerates the otherness to the extent that the coexistence of different cultures within the same society is conceived;
3. **The model of cultural exchange:** In this model the otherness is not simply admitted, but it is even recognized as a positive, constructive and respected element.

Among the various classifications, the one synthesised above is particularly appropriate because it analyses cultural differences as labels founded on both subjective and collective identities. The models see other cultures (1) as something to conform and equalize, (2) as a reality to be respected, or (3) as a resource to harness and learn from. These attitudes respond to the spontaneous human tendency toward simplification and categorization, and has been used in our enquiry to understand players' propensity and position speaking of immigration and coexistence.

According to Kelly (1955), Lakoff (2014) and Giddens (1984) the propensity to segment and simplify the experiential flow, gathering them together into mental frames and patterns that can be repeated and reapplied, is a human innate practice. Unsurprisingly, stereotypes and prejudices are spread because they are tools to reduce the complexity and somehow face the unknown. We took advantage of this tendency to push our players to take a stand and state their potentially tacit bent. Even the concepts of *otherness* and *generalized other* to which we refer throughout our enquiry, allude to a character built through clichés and stigmas (Goffman, 1963), which count on and summarize indicative and evaluative superficial attributes such as good, bad, criminal, noisy, lazy, clean and so on. This categorization a priori causes minorities to be tagged, subordinated and misunderstood by the majority, if not for this superficial and objectifying representation (Hall, 1997). We investigate if and how the possibility to experience the condition of a member of a subgroup may have been an important access point to confirm or overturn some previous assumptions and bias. We employed the three models presented above as a guide to structure the items of our questionnaire. In particular, since in Italy the most shared models are the assimilationist and pluralist (Cesareo, in Demarchi, Papa & Storti, 1998), we used their features to build a specific section of the questionnaire (par. 5.1.2), where players are asked to clearly define their position.

As written above, ludic experiences may enable us to adopt *others'* conditions and prospects, while in the everyday life we are limited in the assumption of ordinary roles; in other words, by entering in the magic circle staged by a game we can put on masks of alternative roles and, consequently, enrich our own personality (Caillois, 1957; 1964; Goffman, 1974; Mariani, 2016a). At an agential level, we can play specific games to live non-ordinary experiences that allow us to understand and develop a heightened awareness. Playing, we are often led to make choices that differ from those we would make in our real life, that is different from those we would take in similar circumstances out of the fictional ludic world (Bogost, 2011; Huizinga, 1938; Juul, 2013). Echoing Sicart (2011), we can experience our being moral agents in a protected space. Specifically, accessing the point of view of the immigrant may invite to a more deep reflection on the three models outlined above and their degree of respect and inclusion of both immigrants and their culture. Concerning the intercultural issue, this unusual and often uncomfortable identification can foster an empathy that is usually hard to reach because of pre-existent prejudices and biases.

3. A HOSTILE WORLD: A CASE STUDY ON THE MULTICULTURAL ISSUE

As said, the topic of immigration is remarkably actual and urgent. Acknowledging the potential for certain G4SCs, especially when they are situated, to act as tools for empowerment, understanding, community building, and cultural change (Flanagan, 2006), the purpose of AHW is to create an "empathic bridge" towards the foreigner. Involving players in processes of peculiar and often uncomfortable identification (i.e., negative feelings and emotions), AHW aims to increase the comprehension of immigrants' conditions with an expected outcome in terms of learning (in Figure 1 some pictures from the playing sessions). As researchers, our objective is to test the effectiveness of the experience that this G4SC engenders (the reasoning can be extended to similar G4SCs based on embodiment and intended for creating empathy). To conduct the enquiry, we used tools and concepts belonging to multiple fields of study, from Design to Game Studies and Sociology.

Designed for a context with a high level of multiethnic presence, AHW is an urban persuasive game that intends to lead players to empathise with canonical situations that a foreigner in a hosting land has to daily face – a common condition for those who have moved to a host country without knowing or sharing its customs and traditions – to increase their level of understanding (Another Bertolo & Mariani, 2014b). In short, it tackles multicultural issues to relax the intercultural tensions that so often are exacerbated by the diffused reluctance to put ourselves in the shoes of others.

The game is composed of simple missions based on everyday-life activities (renting a book, buying food, etc.). However, their fulfilment is not an easy task in AHW; indeed, the player has to face a linguistic barrier. As the player starts to play, she is assigned a map with the location of some points of interest and at least a mission to accomplish. She is required to reach the physical place in the game space connected to her mission, and interact with the actors named *Karacteros*, who populate that space and are more or less willing to help and allow her to resolve the mission. Karacteros express and understand just esperanto, and a successful interaction with the player depends on (a) their mood, (b) her ability to *somehow* communicate with them even if they do not have a shared

Figure 1. Some moments of play during a session of AHW

language, and (c) her ability to find a way to the Karactero's heart. Once the player succeeds in the difficult cross-cultural interaction, she obtains the solution of a mission and she can go back to the starting point to obtain a new mission.

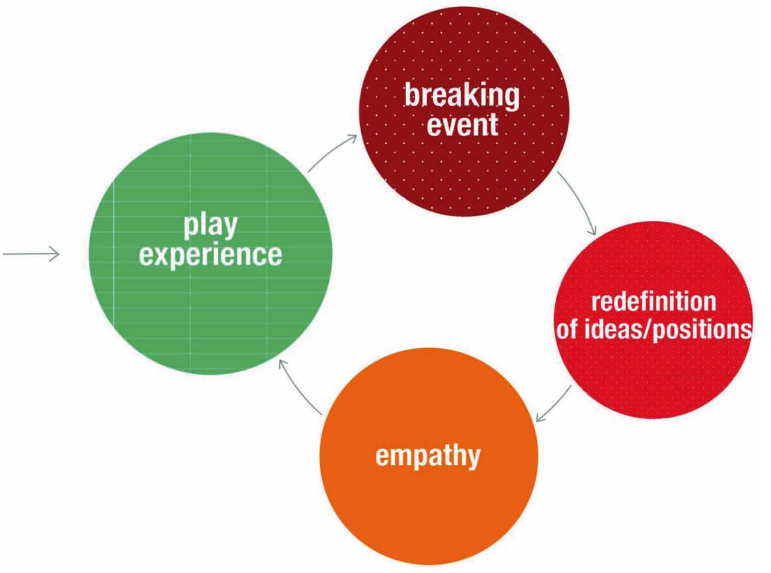
Each mission is ground on a concept we named *performative emptiness* that identifies those experiences that take place without previous references nor guidelines, causing struggles and clashes with the normal experience of everyone that feed intense feelings like frustration and powerlessness. Such *negativity* is expected to initiate a change of perspective. Therefore, the focus of AHW is strictly on an individual and direct level, because it means to feature, stage and provide a reduced experience of certain situations typical of the everyday life of the immigrant minority group; a group toward which the designer wants to create identification, taking advantage of the immediacy and tangibility of the apparently normal experience generated by playing. The Esperanto language is hence a key game element: a barrier to explicitly make understandable the not obvious experience of a foreigner (immigrant or newcomer).

3.1. Design Notes

AHW is designed to be performed as a game-event in the urban space in order to nurture a physical, concrete, situated immersion into the gamespace, and trigger a more significant, hands-on experience[7] (Flanagan, 2007). The value of learning, as acquiring knowledge, is usually in the act of *doing/performing* something. It takes the distance from knowledge as a domain potentiality to enter the realm of actualisation (Mariani, 2016a). To start to comprehend the game experience, we performed an observation activity, shadowing in particular. In so doing, we noticed the existence of a scheme that we can define recursive (Figure 2):

1. **Play experience:** Players start and try to complete their missions using a direct approach (for example speaking in Italian), mainly because of the apparent/illusory ease of the task to accomplish;
2. **Breaking event:** Failing to complete the task because of the language barrier, players are in a stall, negative, breaking condition/situation;

Figure 2. The process that describes the game experience on the ground of the game



3. **Redefinition of ideas/positions:** Players are led to switch from their usual perspective and reformulate their own behaviours to devise alternative strategies that are similar to the migrant ones;
4. **Empathy:** The new approach works and it is validated by the success in completing tasks, mission after mission. The process of identification led players to make sense of the play experience and empathise with the *foreigner's condition*.

The individual awareness and her knowledge are pushed forward by the realization that it subsists an evident discrepancy between the actual performance and its structure, and the ideal one. This process can be associated with the approach suggested by Chee (2011) toward an effective game-based learning: insufficiency of previous knowledge, inefficacy of the consequent interpretation, and need to refine them through the (ludic) practice. In essence, these steps may be visualized as an empowerment of the widespread concept of "learning by doing" (e.g., Gee, 2003) in order to foster critical thinking.

Taking a step forward, we can read such a cycle by using the concepts of *frame* and *pattern*. The former, as described in Goffman (1974) and Bateson's (1972) works, is the overall understanding of the situation itself: what we supposed to be happening "here and now". According to this interpretation, we activate peculiar behaviours and habits that are pertinent to that specific frame. The latter, as presented in Alexander's study (1979), is a working connection among situations and actions, but also attitudes and approaches that people keep in mind to overcome social interactions. They could be interpreted as efficient rules, tips or way to do that work in everyday life or in special conditions.

Thus, we apparently observed a *switch* of frames through a recalibration of patterns propelled by the performance and the awareness it created (Gandolfi & Mariani, 2014; Chee, 2011; 2016). In this study the intent is to understand if that change fostered an empathic impulse and raised consciousness about the immigrant condition.

3.2. Research Questions

As written above, AHW intends to facilitate the identification with unusual roles by putting the player in awkward conditions and producing negative experiences that are the consequence of a break of our ordinary schemata/frame. The cognitive dissonance that the game generates is an empirical source of comprehension.

The point is that there is a significant difference between failing inside the protected space of the game magic circle, and failing in the real life (Juul, 2013; Bogost, 2007). In the first case, we run into a negative experience with the awareness of being in a game (Mariani, 2016a; 2016b). The mere act of dealing with a broken frame – that is the core mechanic of the game – originates a negative experience because it is a way to suspend, create tension and even fear (Goffman, 1974, p. 379). The tension between the expected and the actual advances learning. It creates a liminal space (Turner, 1982) where meaning can be negotiated and new/other practice can be tested. The player realises that a frame is not working, namely something is neither acting nor reacting as expected; this means he/she is failing. But, by playing AHW, the breaking and the consequent failure happen within the game safe space, and the player is aware of that. Hence, what is interesting is the fact that it opens up the possibility to safely explore the different perspectives that come from the combination of both failure and breaking. Coherently, our aim is to understand *if* and *how* this cycle of "breaking previous standards" and "reformulating standards" effectively brings to a learning, empathy-based outcome (Figure 2).

In the light of that and as anticipated, we reformulate our research questions as follows:

1. What kind of experience is generated when a game like AHW suggests the abandon of usual patterns/frames?

2. Consequently, can such an experience activate a learning process, triggering (in our case) empathy and reflection that move towards a mutual understanding?

From our point of view, the challenge is to realise if AHW is actually able to provoke a "negative" play experience, and whether it enables comprehension, which is a fundamental driver of learning (Ferdig, 2014). In order to get our pulse on this issue we decided to adopt an empirical approach and perform a quantitative research. Specifically, the following analysis is based on a questionnaire (par. 2.3) enquiring how players recognize the message of the game and their consequent emotional response. This choice is due to the scarcity of grounded empirical suggestions and proposals to deal with the effects of pervasive games on players. Actually, as stated by Swain (2007), a large extent of studies and analyses is represented by design cases and impressionist portraits; we intend to take a step forward. To sum, we analyse a still overlooked topic (negativity as a game element) and answered to related research questions in a roughly explored way in Game Studies – i.e., an extended empirical enquiry.

4. METHODS

The research is based on four AHW sessions performed between 2013 and 2014.

Before the main enquiry, the design and research group organised and observed two initial playtest sessions at Politecnico di Milano with a double purpose: to examine and consolidate the game dynamics, mechanics, and aesthetics; to develop and refine the questionnaire – see par. 2.3 – necessary to analyse the game experience and its outcomes. The first task was accomplished by the game design branch of the research group; the latter was mainly performed by the authors of this paper.

Once the necessary improvements emerged from the playtest were made, we obtained both the final version of the game and the current questionnaire. AHW was then performed:

- Twice in Politecnico di Milano, School of Design, university campus, June 2013 and June 2014;
- In the centre of Modena (Italy), March 2014;
- In Bicocca, university campus, March 2014.

These instances involved about 200 players, of which a total amount of 141 – details in par.3.1 – answered to our questionnaire allowing us to document their experiences in terms of feelings perceived, values communicated, meanings acquired and learnt[9].

4.1. Procedure

The analysis is based on quantitative data collected from 141 questionnaires distributed after the play experience to voluntary participants. The game activity per se lasts between 60 and 90 minutes, involving about 60 individuals each time. Each time the game sessions have been active for 5-6 hours to incentive a gradual access and avoid both overlaps and *overpopulation* during the quests. In so doing, individuals and groups finished the game in different moments, allowing to master the fulfilment of questionnaires.

4.2. Data Collection Tool

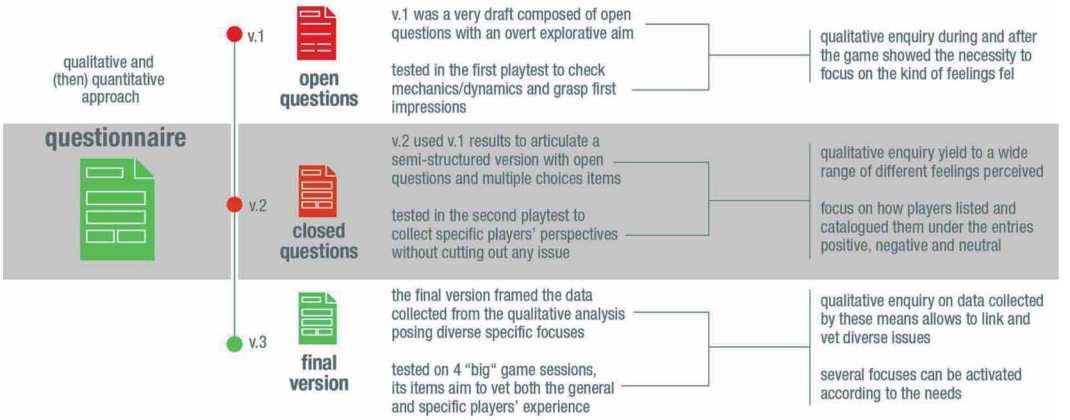
The questionnaire and its items applied in the four play sessions were built on the basis of the data gathered from a previous draft questionnaire (n = 37), and the notes and insights collected through the two playtests (n = 2). In this early stage, we observed the gameplay and play experiences of some groups (n = 3), immediately after the game session we conducted short interviews (n = 10) and follow ups (n = 15) to capture general impressions and feelings. Our purpose was to point out a grounded set of items (Morse et al., 2009) to structure the final survey and enhance the definition of its items.

Specifically, as shown in Figure 3, the preliminary draft-questionnaire was mainly composed of open answers (rather than closed ones), which invited players to freely express their points of view, providing a large collection of replies. The actual items ensue from the analysis and categorization of these replies. From the large and complex amount of keywords obtained, we extrapolated, summarized and synthesized the actual items, laying the foundation of the multiple-choice-questions and Likert scales.

In the light of the results, the final questionnaire identifies 5 sections describing players' in-game behaviours and their attitudes towards the topic covered:

1. **General profiling:** This section requires "yes or no" answers, and aims to profile players' demography and their main motivation for playing – e.g. fun, learning, skills improvement. The basic assumption is that no player can be an ideal player or a tabula rasa, and our point is to understand what moves him/her to play;
2. **Specific profiling:** This section is composed of forced choice questions on multiculturalism (5 sentences, each with two counterposed variations) (see par. 5.1.2) that specifically address the position of the participants in relation to the immigration topic and encourage them to take a clear stand. Indeed, although this method may appear constraining, it effectively fosters the subject's feedback toward a question advanced by the researcher (Marradi, 2007). In this case, the objective is to frame the opinion about immigrants of our sample according to the assimilationist model or the pluralist one. As a consequence, each sentence is formulated in two different versions, and each is built to reflect one model or the other one. The peculiar range of choices is because these two alternatives are concise and diametrically opposed: while the assimilationist perspective suggests a lack of empathy toward immigrants, the pluralist approach states the contrary; in comparison, the cultural exchange lens is more blurry and relative. To sum, the intention is to record the general propensity of players towards immigrants in the Italian context, which in essence is the main theme of AHW;
3. **Feelings perceived:** This section requires players to check values from 0 to 3 on a set of sensations perceived during the experience, both positive and negative; from satisfaction due to succeeding in completing a mission to frustration and helplessness in front of a difficult situation. This point consists of a subjective dimension of the play experience that is an evaluation subsequent to the game session;

Figure 3. The process that leads to the final questionnaire, between early versions, their aim and results



4. **Significant traits:** This section requires "yes or no" answers to depict the aspects of the experience players considered most significant and relevant, answering to the question "What struck me most is ...". Players could choose a maximum of three items from a given list;
5. **Aspects of Experience:** This selection requires players to set a value from 0 to 3 to a list of characteristics describing their general as well as particular level of satisfaction. It consists of a judgment on the game and its various aspects, and it allows to outline potential conditions that may have influenced the results emerged through questionnaires.

Specifically, third, fourth and fifth sections' items derived from the empirical tools applied during the playtests. The main objective of the quantitative questionnaire was to get an extended overview of the game experience and related perceptions by players about its learning goal. Further qualitative methods (rapid ethnography, interviews and focus groups) were also applied although they are not the focus of this article.

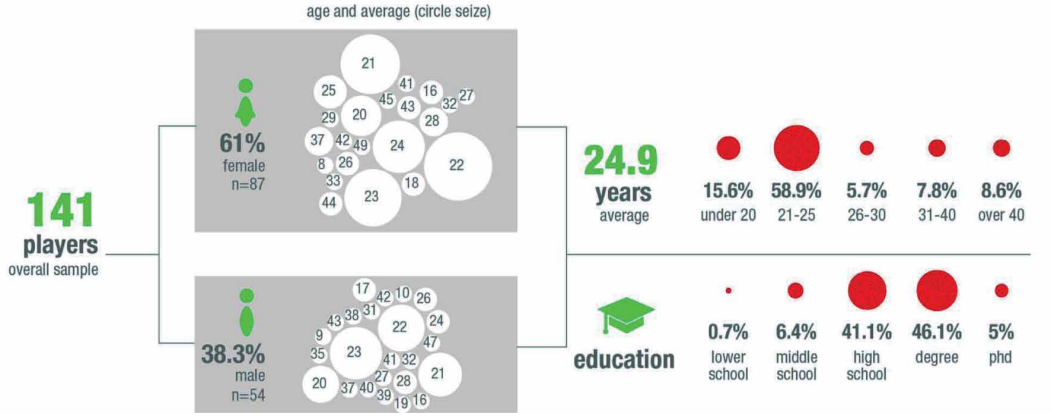
4.3. Players Enquired

Our sampling consists of the 141 players who took part to the four game sessions conducted. It is mainly composed of university students among 20 and 27 years old (three sessions out of four were performed in university campuses), with an average age of 24.9. Mainly Italians, the sampling was composed of 38.3% males and 61.7% females, with different level of education (Figure 4).

45.4% of players said they have been in a Country whose language was unknown to them: the data was useful to comprehend a potential familiarity with the dynamics proposed by the game. Although this percentage is combined with players notes underlying that abroad, unlike in the game, the information exchange is actually easier, since it is made possible thanks to English. Furthermore, 80.9% said to devote part of their time to help others, defining a potential predisposition to mutual understanding and to be empathetic.

Intuitively, the composition of the sample does not pretend to be representative of the whole Italian population; the voluntary-based method of recruitment and the peculiar setting wherein the experience analysed took place – i.e., an urban game performed almost in university locations – made such an objective impossible to reach. However, the enquired group is a significant one whereas urban games are usually experienced by young people. As a result, it can be argued that we are dealing with the average player.

Figure 4. Overall sample: General information about gender, age, education



5. RESEARCH FINDINGS AND ANALYSIS

5.1. General and Specific Profiling

To deepen our knowledge of players and understand both the reasons that move them to play and their general relationship with the game, we introduced the questionnaire with general and specific profiling items.

5.1.1. Why do You Usually Play?

The general and specific profiling sections ask each player why he/she plays, choosing a maximum of three items from a selection of seven (plus the standard option "other" which was selected by an irrelevant number of players[10]). It emerged (Figure 5) that most of our sample plays because they see games as a good way to have fun (92.9%), spend time with friends (72.3%), pass their time (58.9%). Then there are smaller but still significant percentages who stated to play for learning (32.6%) and improve capacities/abilities (33.3%). The prevalence of the "game-fun" combination is not unexpected (Koster, 2005); indeed, it was largely taken into account during the design process. However, instances of play as an activity that suggests growth and improvement are for us meaningful, especially because they were openly declared in a third of the sample.

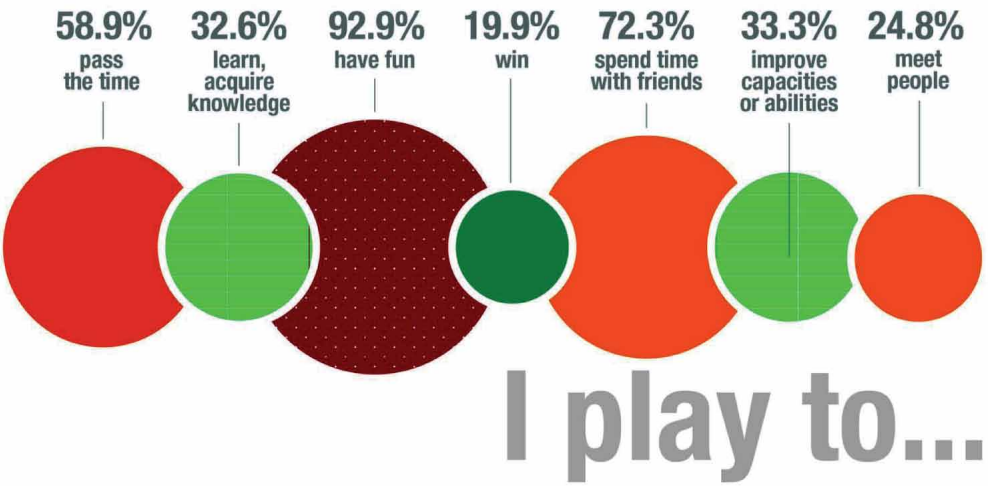
5.1.2. Multicultural Issue

This part is based on forced-choice questions (5 items), each proposing two alternative/opposed possibilities inspired by either the assimilative model or the pluralist one (considered the most diffused and intuitive perspectives in our society). The topic addressed are:

Q1: Learning the language of the host country (Assimilationist: Foreigners should make an effort to learn the language of the host country - Pluralist: Foreigners should be supported in understanding/learning the language of the host country).

Q2: Maintenance or abandonment of previous values and customs (Assimilationist: A foreigner has the duty to adhere to the system of values and customs of the society in which s/he's living - Pluralist: A foreigner has the right to keep his/her system of values and customs even if it means not integrating with the society he/she's living into).

Figure 5. Answers to the question "Why do you usually play?"

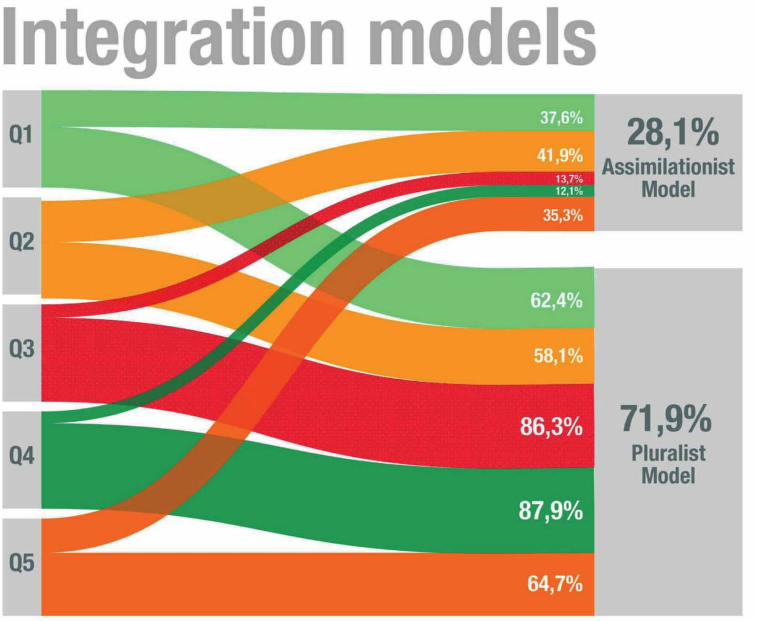


Q3: The inclusion in the new country (Assimilationist: Usually foreigners do not try hard enough in order to be accepted in the hosting Country - Pluralist: Usually foreigners are not sufficiently assisted and helped in the integration with the hosting society).
Q4: The relationship with local institutions (Assimilationist: In Italy the foreigner can easily deal with Institutions and access important facilities (public offices, hospitals, etc. - Pluralist: In Italy the foreigner has many difficulties in relating to Institutions and important facilities (public offices, hospitals, etc.).
Q5: The relationship with the society (Assimilationist: In Italy the foreigner meets a society (culture, public opinion, etc.) mainly favourable to his/her needs - Pluralist: In Italy the foreigner meets a society (culture, public opinion, etc.) mainly adverse to his/her needs).

Each question refers to a topic directly or indirectly experienced during the game: in the form of reduction or simplification, these various levels of difficulty or hostility were staged mission after mission (difficulty of language, relation with different institutions and people, etc.). However, while Q1, Q3, Q4 and Q5 concern these issues in a direct and intuitive way, empowering the openness as effective in-game attitude, Q2 implies a broader and non-game-mediated reflection about cultural identity and individual background. AHW deals with this argument with an experiential openness: it aims to arise the question rather than suggest a defined, static and constraining solution (even because there is not a standard, univocal or correct answer to the problem). Q2 addresses the same crucial point – i.e. the legacy with well-established ideas, customs, and social behaviours of a particular culture/society –, however its scope has such an ample extent that this question is probably the least addressed by the game experience itself.

What we observe (Figure 6) is a general desire of living in a society with a Pluralist propensity (71.9%): the preference is chosen with a clear majority in almost all the questions, highlighting a widespread need for tolerance and exchange. Q2, however, is the only item that outlines a real balance in its choices: 41.9% of respondents show an assimilationist tendency towards a foreigner who does

Figure 6. Answers to the forced questions investigating players' propensity to see the society as belonging to the assimilationist or pluralist integration model



not sufficiently strive to be accepted by the local culture. This question results particularly delicate and simultaneously meaningful to us because it concerns an aspect that players were not able to investigate though the game, and therefore they lack of a direct (ludic) experience in this regard. We believe this fact largely contributed to distribute players' answers on the two items of Q2, allocating almost uniformly to the two models, with only a slight preference for the pluralist one – a model, we remember, that promotes cultural inclusion and the conservation of ethnic different mores and customs, as long as they do not violate the general values of the host society.

However, the propensity towards integration feeling empathy with foreigners – namely the comprehension towards the other that the game aims to communicate (71.9% of the participants shows approval and preference for the pluralistic model) – is not a guarantee of succeeding in impacting on players' attitudes or mindsets, and as such in transferring knowledge. On the contrary, one of the preliminary hypotheses was that such a predisposition could have made the ludic experience redundant and, to a certain extent, less meaningful. Thus, the design of AHW kept it into consideration, aiming at succeeding in "saying something new" to an already apparently informed and engaged audience. In order to understand if this goal was reached, we have to explore the feelings and the highlights evoked by the game.

5.1.3. Did You Enjoy the Game

After some general questions, we enquire into players' level of satisfaction. It is evident that the game is generally much or very much liked (stated by more than 70% of players). To the question "Did you enjoy to play A Hostile World?" we received the answers (Figure 7), showing that the game apparently works and succeeds in involving players.

This finding is also confirmed by the answers to the question "Would you play again?"[11]: 91.5% of the sample answered "Yes". Whereas only 2.1% asserts not to like the game, and 1.4% says to little enjoy it, we believe very significant that 12 players (8.5% of the total) said they are not willing to be redo the experience.

5.2. Feelings

As shown in Figure 8, most of the players claimed they had fun (89% high-medium - i.e., 2 or 3 on the Likert Scale) and they got satisfaction (91% high-medium) without feeling bored (93% low-none - i.e., 0 or 1 on the Likert Scale), fulfilling their general expectation of the ludic experience. However, when we asked about feelings experienced, a peculiar result emerged: as Figure 9 shows, players themselves admitted that they repeatedly faced difficult and bewildering situations, and we can say they are on the ground of their mixed emotions such as confusion and indecision, but also satisfaction and competition. This recognition provides a partial response to our first research question. When

Figure 7. Answers to the question "Did you enjoy to play A Hostile World?"

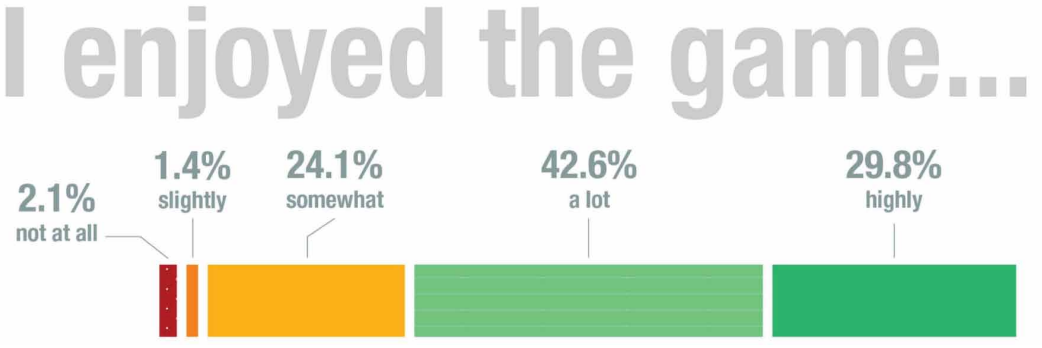


Figure 8. The values attributed to each of the items composing the question "What did you feel during the game?"

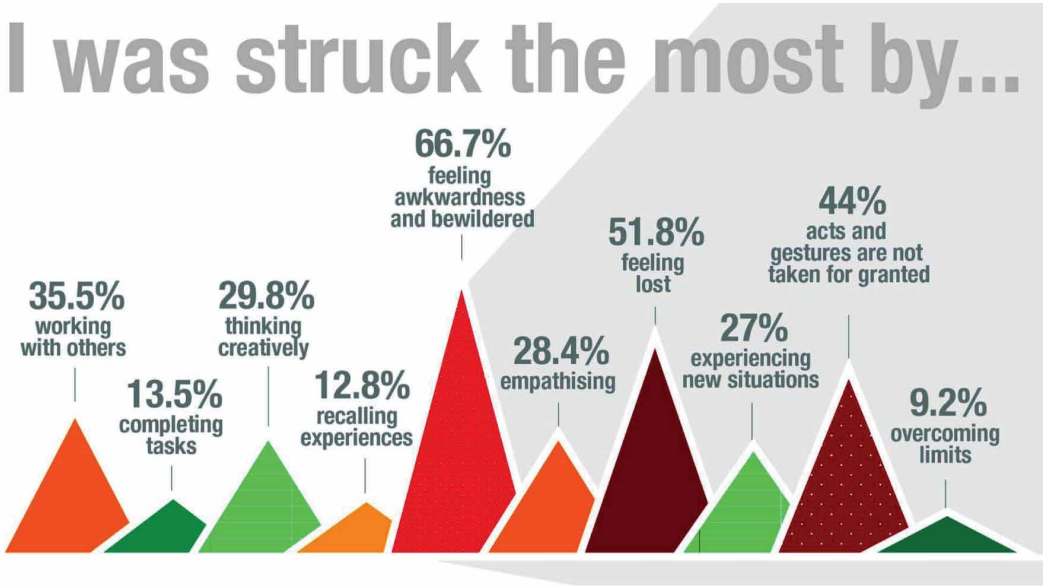
	fun	loneliness	put yourself to the test	anger	learning	misunderstanding, indecision, stall	shame	positive competetiton	new experience	boredom	helpless, powerless	discomfort, frustration	confusion, disorientation	unease, fear of failure	solidarity	hostility	satisfaction
high	62	6	56	8	26	43	9	23	57	1	13	18	25	13	38	10	74
medium	26	11	37	23	49	34	21	40	26	6	28	28	38	18	33	17	17
low	8	23	6	30	18	18	24	20	12	14	34	30	22	26	16	23	7
none	4	60	1	39	7	5	46	18	4	79	26	23	16	42	13	50	2

Values in % on a sample of 141 players

the game system urged the abandon of ordinary patterns and frames, feelings of bewilderment and confusion arise: a breaking moment produces a condition of difficulty and inability to resolution. As a consequence, it emerges a set of "negative" feelings and often, as recorded, a resulting change of perspective.

Nevertheless, there is a significant difference between running into a negative experience inside the game protected space, and do it in the real life: in the former, we can indeed accept and overcome failure and try again without feeling really incompetent. Coherently, the feeling of putting yourself to the test was predominant (93% high-medium) as the one of having learned something (75% high-medium). Concerning negative feelings, we notice an elevated percentage of indecision/frustration (77% high-medium) and confusion (63% high-medium) (we suppose due to the breaking of normal frames), but significantly lower levels of frustration (53% low-none), powerlessness (60% low-none), unease and fear of failure (68% low-none), anger (69% low-none), shame (70% low-none) and hostility (83% low-none). To sum, we discovered that the learning outcome does not seem to be damaged by frustration and confusion, as well as other feelings that the designers wanted to trigger because typical of the role of the immigrant as other more positive ones like solidarity (81% high-medium) and aggregation (71% high-medium). In other words, we are referring to a *positive negativity* able to communicate without ruining the overall experience. Other unconformable sensations were

Figure 9. Answers to the question "What did you strike the most of the play experience?"



present in a minority: for example, shame, unease and hostility, feelings that can block the player's performance, are secondary. We can interpret this fact as an evidence that the magic circle and its secure environment worked against the concept of *negativity as barrier*. As further proof, the newness of the experience is confirmed (83% high-medium) and the positive competition results relevant (63% high-medium). At this point, the question is about the elements of the gaming experience that have contributed to these statements.

5.3. Significant Traits

The aspects emerged as those which most affected and impressed the players confirm that a negativity can astonish and concurrently communicate (Figure 9): the percentages of feelings such as awkwardness and bewildered (66.7%), and of being lost (51.8%) pointed out that we successfully broke players' ordinary standards and schemata, producing an unprecedented and meaningful opportunity for learning. This achievement is further emphasised by the 44% recorded by the item "acts and gestures not taken for granted" that states apparently simple actions and procedures became complex when frame, condition, and/or setting changes; a condition that suggests a valid opportunity for comprehending additional frames, patterns and perspectives. This process is on the ground of a learning process focused on triggering empathy and mutual understanding.

As suggested by Argyris and Schön (1974) and Bateson (1972), and speaking of games by Chee (2011) and Mitgutsch (2012), when our previous knowledge does not work in interpreting and ruling a specific situation, we have to adopt and perform a different solution, that is, an important, transformative learning outcome if carefully designed, and the framed experience can be transferred to other contexts. As Gee states, from a semiotic perspective, such a condition of reframing and learning can be called "value-laden deep learning" (Gee 2008, p. 32); however, in this case we can't speak of real life-based skills conveyed from the game space to real life, but of game-based meaning experienced within the game, which overcome the boundaries of the magic circle and extends into a potential long-lasting knowledge/understanding.

We want to highlight that an experience emerges and stands out from the mass when it shows elements of peculiarity; as, for example, a strong discontinuity with routines and common expectations.

Such a result is neither a coincidence nor automatic if we consider that the initial players' lusory attitude (Suits, 1978) was mainly a mere entertainment.

In summary, the creation of a *positive negativity* seems to be successfully achieved (also noticing the low score of the boredom). The grounded performance staged by AHW was able to involve and surprise players putting them in the immigrants' shoes with and because of the related struggling feelings. To sum, the second research question was positively answered.

To conclude, we also observed that 35.5% of players was struck by the importance of working with others and join a team to tackle the difficulties the game generated: it appears to be a shared attitude and a problem-solving approach; accordingly, it is a dynamic that reflects the human general behaviour of grouping together to overcome a problem and a chance for fostering relations and community feelings.

5.4. Aspects of Experience: Relevant Combinations of Results

As seen, only 2.1% claimed that the game was not to their liking, and 1,4% said to have little enjoyed; we believe significant that 8.5% of the total (12 players) stated they do not intend to participate to the experience again: a curious position if we compare this result with their positive evaluations and declarations to have experienced something new (Figure 5) (an assessment that we intuitively associate with the desire to play again). Looking at the data of low appreciation (2.1% + 1.4%) we could expect an amount of players equal to 3.5% not willing to repeat the experience. On the contrary, it emerges that the game session was so intense that it does not always involve the desire to re-experience feelings and moods: a single experience can be enough also considering the negative feelings often reported; once it is exhausted, it is stored and as such there is no need not repeat it.

It is therefore interesting to further investigate this 8.5% of respondents who did not want to play again. We consider relevant that, focusing on the feelings perceived, the 91.7% of this sub-sample states to have felt "incomprehension" (as to be stuck); the same percentage felt "to be put to the test" and "solidarity", and as such a remarkable motivation to join other players. Regardless, the evident highlights are that the 83.3% declared to have lived a significant experience, the 91.6% felt satisfaction and the 100% was stimulated to reflect. Furthermore, for the 83.3% the game has triggered a learning instance: in other words, a strong majority of who did not want to play again was conscious of having learnt something during the play. According to Goffman (1974) and the overall approach of the Symbolic Interactionism (Mead & Morris, 1934), such apparently incoherent results find an explanation in the fact that negative experiences are particularly effective in engaging and educating audiences on the condition that they embody a switch of perspectives. In essence, breaking the routine is both shocking and singular enough to attract people's interest and assertiveness to learn.

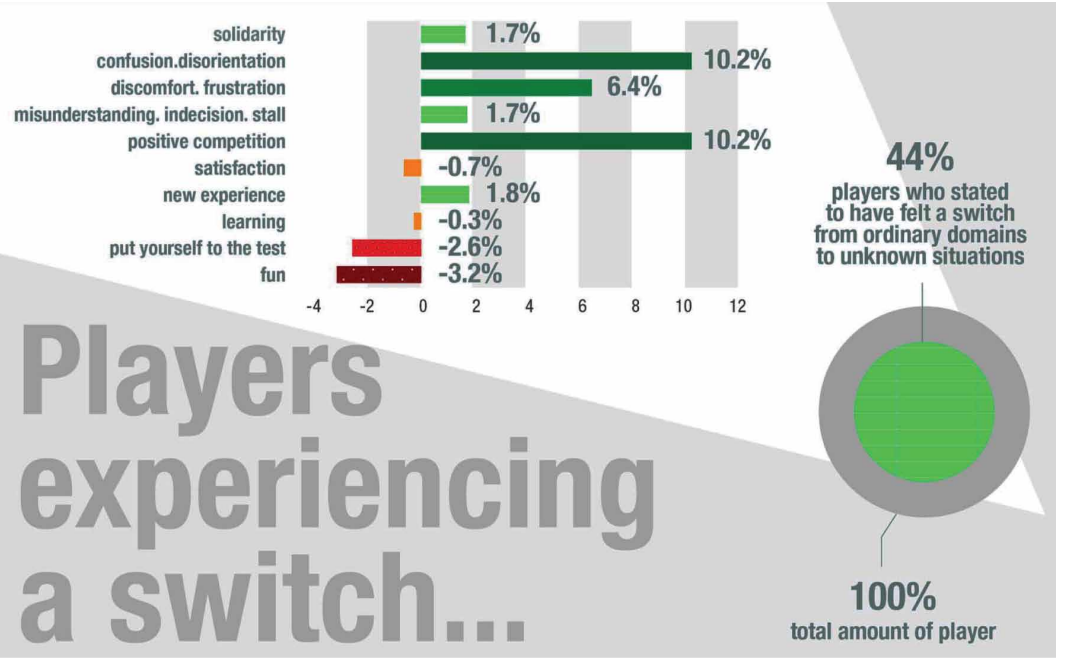
Returning to the whole sample, we consider significant also that the high grade of incomprehension perceived (91.7%) goes along with, and probably causes, the feeling to be put to the test (91.7%) and the need to cooperate (91.7%). Unsurprisingly, this tendency to aggregate and collaborate is frequent among immigrants and foreigners in similar conditions: in real life negative and problematic situations move us to find allies and support in people who are experiencing the same. The same behaviour emerged during the game, showing a certain similarity to the way people act in their ordinary life.

Unsurprisingly, rage was a quite redundant emotion (66.7%) despite shame (considered a limiting driver) resulted reduced (16.7%). Other singular points are that the 58.3% claimed to have experienced a new situation and the 66.7% was satisfied. Even if only the 41.7% stated to have learnt something, the 100% admitted that the game fostered and stimulated reflections.

As described above, framing the experience is usually an act based on insufficient information. The human tendency is to label, categorize and fix what is happening in order to explain and control it. However, when we lack of models and terms able to deal with, we find ourselves lost, feeling the desire to elaborate effective ways to handle the new situation.

In Figure 10 we focus on the general sample and on the amount of players who stated to have felt a switch from an ordinary domain to an unknown situation, 62 participants (44%). The difference

Figure 10. The variance on a selection of items between the value of the sample of players who stated to have felt a switch (44%), and the overall sample



between the feelings stated by the total amount and the ones felt by the sample who stated to have felt this switch is significant.

Concerning the sample, it is worth to notice that the score of positive competition is higher than the general average (+10.2%) as the ones of discomfort/frustration (+6.4%) and confusion/disorientation (+10.2%). According also to the comments collected after the ludic session, the subjects who felt the switch state to have particularly understood that change to the extent that they experienced more negativity. However, observing the data, such "negativity" did not mean a loss in terms of communication and involvement. On the contrary, they pursue the line of other participants.

Furthermore, data show that among the 40 players who claimed to be mostly struck by fact of being the shoes of someone else, playing different roles, understanding the feelings of another, and hence feeling empathy:

- The 90% significantly felt to be involved in situations that were alien and new compared to the usual;
- The 95% felt put to the test, showing that the activity was demanding and challenging in terms of performance.

Finally, shedding light on the 94 players struck by living a situation of awkwardness (66.67% of the sample), as expected in "feelings perceived" we found high values (2 or 3 out of 3) of frustration (57.4%), confusion and disorientation (72.3%), and misunderstanding (85.1%); however, we collected a significant absence (values equal to 1 or 0) of boredom (not perceived in the 94.7%), shame (67%), hostility (71.3%) and rage (67%). Consequently, the first negative overwhelming sensations were not followed by feelings such those able to ruin the whole gaming experience.

6. DISCUSSION AND CONCLUSION

The main insight that emerges from our analysis is the fundamental role played by what we can define a *positive negativity*: we noticed the learning outcome generated through an experience that involved failure, delusion and resilience, and we discovered how much these apparently undesired feelings and emotions can be effective in eliciting a switch of perspective.

As a consequence, both the research issues were addressed and deepened. In particular, the game experience described recalls the flow concept proposed by Csikszentmihalyi (1975; 1990): the satisfaction that follows the experience of negative breaking moments and their overcoming is closely related to the sense of exhilaration and enjoyment we feel when we succeed in tasks we long cherished to master. As Csikszentmihalyi declared, gratification does not come as a result of passive, receptive, relaxing times; on the contrary, it follows strong and demanding efforts (not necessary physical: body or mind). The most significant and impactful moments of play usually occur when players are stretched to their limits to accomplish something that is simultaneously difficult and worthwhile. As it emerged from the data presented, such experiences are not necessarily pleasant, especially at the time they take place, however in the long-run they create a sense of participation, comprehension, accomplishment due to the consciousness achieved.

As a result, the *negative experiences* that we described correspond to the tough moments of failure as temporary lack of success which characterise every good and challenging game (Gee, 2007): the analysis of the data showed that players felt to be powerless and frustrated, followed by stimulating states of satisfaction and gratification due to the enjoyable awareness of overcoming an obstacle and achieving a goal. The wavy structure between negative and positive feelings and their succession in time is the very nature of both the flow experience and the challenging process of learning.

These findings confirmed the original assumption on the ground of AHW.

In essence, the game succeeds in staging a safe setting in which embrace breaking/negative experiences. The experience generated was able to move the players to detach from several original preconceptions and positions that are stereotypical and deeply rooted in our culture – the pre-given knowledge (Chee, 2011) –, inviting them to think in a creative and unusual way: specifically, this leap consists (1) in the adoption of new viewpoints, or (2) in the acceptance of different frames, otherwise (3) in the modification/transformation of their perspectives to create new combinations capable to appropriately react to specific situation. This switch is made possible by the alternative performance triggered by the G4SC analysed. Every experience refers to and is intertwined with prior experiences and sedimented knowledge, to our ability to recognise patterns and to anticipate events (Koster, 2005).

The distance from the routine, even when disturbing, is harnessed in order to foster an engaging and propulsive attitude; in other words, learning. Players had fun despite the ongoing hostility characterizing the experience. In such way, we noticed that not-positive feelings such as disorientation, confusion and awkwardness can work in conjunction with satisfaction and virtuous competition if the ludic system is conveniently planned. We associate this outcome with what we have defined the *breaking moment*: when we put ourselves to the test, incomprehension and disorientation can represent relevant drivers to reach new solutions and then trigger a change.

Our conviction is to have explored and assessed in-game negative experiences in a innovative way, outlining and investigating its functioning on an empirical and systematic level. In light of that, we explored an area of the academic production that is generally theoretical and presents several and not grounded strategies/tools of enquiry, especially considering the tangible experience lived by players during games that explore critical topics arising controversial feelings. Consequently, our procedure and findings can be easily reformulated and adapted to a multitude of case studies and objectives; the implications are noteworthy for both scholars and practitioners who intend to study, use and harness negative emotions as a gaming element in order to stage a meaningful experience. Our intent is to proceed with the experimentation to give the research a push, furthering the analysis

of the player' experience within different games and learning topics based on negativity. In particular, we intend to stress our proposal and understand its range of application.

Indeed, the methods described in the article measured only the near-in-time effectiveness of the ludic experience staged by AHW. We were able to understand that a switch of perspectives took place during the play and because of the specific experience this G4SC provoked, but the adoption of a more incisive triangulation of tools (e.g., focus groups, in-depth interviews) along with a repetition of the enquiry over time (longitudinal study) would help in enlightening learning dynamics and outcomes further (e.g., reconsidering also the Cultural Exchange Model, which was not possible to address with quantitative methods because of its broad meaning). Therefore, as anticipated above, the article covers only a part of the data collected during AHW sessions and future expansions are already under-development: first, a pre-post assessment was performed with the aim to measure the tangible influence enabled by the game toward the immigration issue; second, a reduced sample was involved through qualitative instruments to gather subjective and shared positions about the play.

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ENDNOTES

1. See: http://www.newzoo.com/wp-content/uploads/Italy_summary_deck_new1.pdf
2. See: http://www.molleindustria.org/oiligarchy-postmortem/
3. See: http://www.maryflanagan.com/wp-content/uploads/CriticalPlay-ArtistsRethinkingGames-WithImages.rtf.pdf
4. *Earthsploitation* is the output of a MSc Degree thesis supervised by Maresa Bertolo and Ilaria Mariani; further information is available in Bertolo, Mariani & Ruffino 2015. The full text of the thesis is available at: https://www.politesi.polimi.it/handle/10589/89145
5. See: http://heidegger.ieor.berkeley.edu/bounce/
6. The concept of the project was conceived by Bertolo and Mariani as part of their research on games for social change; the game was then designed and developed in 2013 as the outcome of the MSc thesis of Lavinia Ierardi in Communication Design (School of Design, Politecnico di Milano). The full text of the thesis is available at: https://www.politesi.polimi.it/handle/10589/76801. A further description of the game, its structure and mechanics is presented by Bertolo & Mariani in Ruggiero (2014); the specific chapter is available at: http://www.igi-global.com/chapter/a-hostile-world/113490. An extended study on the research methods used to observe the game by Gandolfi & Mariani (2015) is available at:http://www.stsitalia.org/conferences/STSITALIA_2014/STS_Italia_AMoD_Proceedings_2014.pdf, pp. 51-68.
7. Data source: http://www.cestim.it/index01dati.htm#tavolecittadinistranieribilanciodemograficohttp://www.tuttitalia.it/statistiche/ cittadini-stranieri- 2013/
8. This immersion is facilitated because of the reduced technological mediation between players and the game space wherein they move.
9. A further study based on specific samples, methods and asset of data was conducted during the same sessions to measure the social and emphatic impact of the game. This study it will be published in the next future.
10. The item “other” was selected by 2,1% of players.

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