Character-driven Narrative Engine. Storytelling System for building interactive narrative experiences

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ABSTRACT

This paper discusses a design methodology for developing interactive storytelling projects based on character-driven stories. Shaped as a three-year research through design, it was applied in the educational context of Politecnico di Milano, School of Design, from 2015 to 2017. To open up the issue of the degree of interactiveness and agency that different media allow toward the story, we merged knowledge from cultural, media and game studies. Aiming at building brave, fresh interactive narratives for contemporary media (analogue, digital or hybrid), each year we experimented the implications of initiating the design activity from a different starting point: 1) archetypal characters, 2) thick and compelling storyworlds, and 3) real testimonies shaped as short stories and fragments of memories. We discuss the different tools and methods employed, and the reasons why behind their evolution through time. Then, we conclude with a critical analysis of the results obtained, looking at the consequences and potentialities of how this narrative process has been applied to the game design field.

Keywords

interactive narrative; storytelling system; cross-platform distribution; meaningful play experience; design practice

NARRATIVE WORLDS ACROSS INTERACTIVE STORYTELLING AND GAMING PRACTICES

Narratives constitute a complex and articulated subject of investigation, deeply rooted in different epistemologies. Their nature and above all of their potential make them a regular object of investigation in many fields. Throughout the centuries scholars and pioneering intellectuals enquired and researched the topics of narrative, storytelling and their surroundings, covering the issues of its construction (Freytag 1900; Propp 1928; Vogler 1992; Laurel 1991), comprehension (Campbell, 1949; Wolf, 2012), circulation/diffusion (Ryan 2004; Ryan and Thon 2014) and consumption (Lévy 1994; Jenkins 2006; Jenkins, Ford and Green 2013).

Narratives accomplish different functions, being a way to systematize experiences and memories and a way to frame and understand reality. However, the way we look at narratives here is as triggers for creativity and imagination, particularly by taking a (game) design perspective. If we can take for granted the fact that narratives have a

key role in communication and its design, as they are able to produce meaning and involvement, in the gaming field the situation is rather different. In terms of game design, the potential of narratives as creative spurs is often left as such, that means not translated into actual facts. Narratives are often overlooked by other aspects such as mechanics, dynamics or aesthetics (Hunicke, LeBlanc and Zubek 2004), which take the role of activators of ideas that lead the design activity. However, narratives have the possibility to open perspectives and represent scenarios that show and activate existing or potential interactions, reinterpret aesthetics, and above all reason in a logic of meaning-making through experiences and interpretations. Because of their potential, when games use narratives, they need to be thoroughly designed, with attention to meanings, not simply wrapped around some game mechanics to make the game charming and attractive (Dena 2017; Dansky 2017).

Especially today, contemporary audiences tend to push themselves to cross the boundaries of the single-line story and medium (Murray 1997), often going through thresholds that transport narratives into the real world (Jenkins 2006; Rose 2012). We make particular reference to the cultural phenomenon of users that start exploring new storylines, searching for spin-offs, investigating secondary characters and their backgrounds, becoming to a certain degree part of these *imaginary worlds* (Wolf 2012), in order to deepen their knowledge. In addition, gaming is increasingly opening up to narratives that move through different media (Ryan and Thon 2014), in a perspective of *inclusion* and *presence*. In fact, both the fields of narrative and gaming are showing a growing interest towards hybrid experiences, that encourage overlappings of real and virtual as well as new forms of interaction and participation (*Bandersnatch* by Netflix & *Black Game* by Netflix Italia). Taking advantage of such a formal ambiguity that stimulates openness towards fresh experimentations, gaming progressively reached out to other media, looking for more immersive and engaging experiences (Mariani 2018). Considering the role of the medium/media involved implies to deepen the reasoning about features and hence implications that come from the media themselves, both in terms of affordances (Jensen and Dyrby 2013; Cardona-Rivera and Young 2014), potentialities and limitations. This means including them into the design phase not just as idiosyncrasies, but as unique, meaningful boosters.

To take full advantage of designing games triggered and based on character-driven narratives, we consider key to start the discourse from the narrative itself both in terms of known properties and not-fully-expressed possibilities, aiming at unfolding their potential in terms of game design. Acknowledging that interactive imaginary worlds enable the audience to take action within the story, activating a reflection on the choices and actions they made, we challenged the construction of secondary worlds experienced starting from already existing characters, worlds, or stories.

Recognizing that narratives are interactive because of the technology involved, it is therefore crucial to consider and unpack the affordances and limitations of the media for which they are developed, and hence ruminate about the role and levels of agency during the design process (Wardrip-Fruin et al. 2009; Harrell and Zhu 2009; McMahan 2003; Frasca 2001). As a consequence, what are the implications that come from starting designing from 1) archetypal characters, 2) suggestive storyworlds, or 3) dramatic stories? How these starting points *activate new ways of designing character-driven interactive narratives?*

Interactive Transmedia Narrative

Narratives and storytelling are able to build images of reality and transfer them to others, resulting in representations of the world or parts of it (Pinardi 2010, 10-11).

Stories reduce pieces of the world (*reduction and keying;* Goffman 1974, 79), expressing situations, events and contexts while giving the audience the chance to experience and understand how these systems, real or fictional, work (Korte and Ferri 2018). Now more than ever, the audience is invited and encouraged to interact with the storyworlds in which such narrative are situated and originate, forming judgments about them (Mariani 2016a). A growing body of imaginary worlds challenges audiences to spend a certain amount of time exploring and living these narratives (Ciancia 2016), learning linguistic and cultural codes, gaining knowledge of systems of references. This empowers the audience to interpret and sometimes even build their own narratives (Pinardi 2010; Jenkins 1992). This situation depicts a cultural model wherein people use dramatic simulation of experiences (Williams 2000), and wherein stories tend to remain open. The possibility and potential to spread stories start from the existing storyworld and its established characters, settings and/or events, and the possibility to elaborate new stories results into an increasing circulation of stories that contributes to feeding and maintaining them alive and flourishing, but also impacting on the logic of production and consumption (Ciancia 2018). The practice can be further enriched by adding interactivity which activates shared experiences and provides the audience with agency.

Moreover, it is necessary to consider that "[...] in terms of the richness of audience engagement, the experience of a *storyworld* is different from the experience of a story, even though narrative worlds are usually experienced through stories set within them" (Ciancia 2016, 74). They engage the audience by enabling it to grasp the sense of a world as a complex system: "it is the world [...] that supports all the narratives set in it and that is constantly present during the audience's experience" (Wolf 2012, 17). Indeed, now more than ever, audiences are willing to consume storylines that spread across channels, bonding emotionally with the story, enabled by the characters. Despite the specific typology of the story, characters encourage the connection with the audience, prompting engagement (Bernardo 2014). Central in this process is the assumption that people activate connections and develop empathic relationships with the story's protagonists. Well designed characters allow to connect and profoundly emphasize with them, fostering the audience to vicariously enter the storyworld, transforming a passive telling in a personal, even sharable experience. That said, characters can be designed to support stories that unfold within meaningful storyworlds.

Thereby, we decided to work on character-driven stories intended for making the audience enter imaginary worlds vicariously, triggering at the same time the viewer/user/player's (VUP; Dinehart 2010) agency. Pursuing the investigation of the design process beyond the construction of interactive narratives, we challenged the development of characters and the building of worlds with approximately 150 students from the "Complex Artefact and System Design Studio" MSc course of the School of Design of the Politecnico di Milano. We aimed at increasing our awareness and knowledge on how to build stories potentially interactive, also opening up the issue of the degree of interactiveness and agency toward the story that different media allow. To structure interactive stories, we challenged students to build narrative contents adopting each year a different starting point (Figure 1). First 1) from archetypal characters permeated with sense and values, afterward 2) from thick and compelling storyworlds, and then 3) from real testimonies shaped as short stories and fragments of memories. Our research, which includes three years of through-design research conducted as a set of three practice-based experimentations with MSc students, has a constant interest in researching on how character-driven narrative can trigger meaning-making, enhance audience agency, and prompt different levels of interpretation in the meanwhile.

EXPERIMENTATIONS

EXP 1 — AY 2015/16 — CHARACTERS FROM ARCHETYPES — Tarot

EXP 2 — AY 2016/17 — STORYWORLD FROM GIVEN STORIES — Invisible Cities (Calvino 1976)

EXP 3 — AY 2017/18 — STORIES AND VALUES FROM TESTIMONIES — Migrants' memories

Figure 1: The three starting points adopted to design interactive narratives.

Transversally to the three experimentations, we asked designers in training to look at characters as repositories of stories able to activate the understanding of their inner meanings, suggesting further possibilities and knowledge. Building characters means crafting a set of potential stories, aiming at engaging the audience and further: it means empowering audiences with the possibility to act and express themselves, becoming active agents within the fictional world and its storylines. Focusing in particular on the games, outputs of the courses, such an intent turned to be as challenging and provocative as stimulating. Relying on the insights from our qualitative analyses, such games will be explored focusing on how the methodology and design processes (tools and methods) proposed contributed in developing their projects.

METHODOLOGY

Since the spring semester of the AY 2015/16, three classes from about 50 to 60 students each year were involved in a through-design, practice-based research aimed at deepening our knowledge on the development of interactive storytelling concepts, starting from given story elements in order to create a storyworld, multiple storylines and characters. The teaching activity was structured as follows: (1) basics of narrative structure, transmedia design and enactive media, and focuses on uses of narratives in games; (2) the screening of paradigmatic examples related to the main topics addressed during the lessons, and collective discussions; (3) tutoring of the individual and group design exercises; (4) project presentation for collecting comments and feedback from peers.

As anticipated, in order to test and verify the possibilities and constraints of interactive narratives, a specific starting point was defined for each editions of the course.

1. From March to June 2016 a class of 59 students was involved in the development of interactive storytelling concepts, starting from the creation of a character inspired by the statues that cover the Dome of Milano facades, using Tarot cards as a set of potential meanings and values.

2. From March to June 2017, 45 design students were asked to unpack and reframe given storyworlds from Italo Calvino's *Invisible Cities* (1972), using a set of tools developed to support storytelling practice and storyworld creation (Piredda et al. 2015; Venditti 2017).

3. From February to June 2018, 63 students were asked to start from given testimonies, shaped as written or representative stories for developing character-driven interactive narratives, using the *Interactive Narrative Architecture* diagram as a way to shape the interactive structure of the project.

To achieve its objectives and develop specific genres of interactive narratives, the course combined critical analysis of the existing case studies and literature with some tools developed. To advance our knowledge, we considered interesting to trigger the design activity from a different starting point, aiming at studying how this variation would affect the design process as well as its outcomes. To understand and compare the effectiveness of the different approaches in triggering interactive storytelling based on character-driven stories, and verify in the meanwhile the effectiveness of the tools introduced, the design(er)'s storytelling and world-making experience has been observed conducting each time a four-month ethnography and a participant observation (moderate participation) (DeWalt and DeWalt 2010), adding the data gathered through the evaluation reports provided by our university. Therefore, we propose in the following a reasoning grounded on:

- Qualitative analysis based on observation and ethnography on working prototypes, aimed at grasping if the methodology positively impacted the design process.

- Quantitative and qualitative analysis based on university reports to understand how the tools and methods proposed throughout the courses and its overall methodology have evaluated by students, who provided useful feedback for improvement.

These analyses ran for the three edition of the course, while are still in progress for the fourth one.

CHARACTERS, STORIES, AND IN-BETWEENS. EXPERIMENTATIONS AND CRITIQUE

One of the main interrogations we posed to our students was related to question what a medium can do and permit in terms of interaction with a narrative and a storyworld that another medium cannot. As a result of this challenge that made students dwell on the topic, we witnessed a growing desire of experimenting with new forms of both interaction and hybridization, and in parallel we became aware that further tools and methods were needed to keep the pace with the increasing complexity, taking full advantage of different media, their affordances and possibilities (Jensen and Dyrby 2013; Cardona-Rivera and Young 2014). Especially in a transmedia perspective, it is necessary to keep into consideration that every medium own its peculiar features allowing various levels of interactions. Reaching out to the design and gaming field, the term affordance can be broadly used to identify an opportunity for action, describing how a designed system operates. Therefore, starting from affordance, we can identify how to leverage the different possibilities and opportunities of each medium and their becoming intertwined into a system.

To do that, for three consecutive years we conducted hands-on experimentations by using different narrative elements to trigger the design. In so doing, we employed and tested different methodologies, with various tools and methods intended to support designers in building characters, stories, and storyworlds (Figure 2).

	PHASE 1	PHASE 2	PHASE 3
EXP 1 — AY 2015/16	Tarot CHARACTER	Bardic Technique STORIES	Storyworld canvas STORYWORLD
EXP 2 — AY 2016/17	Storyworld canvas STORYWORLD	Moodboard + Character wheel + Vogler's archetypes CHARACTER	Story maps STORIES
EXP 3 — AY 2017/18	Storyworld canvas STORYWORLD	Moodboard + Character wheel + Vogler's archetypes + Story maps CHARACTER	Interactive Narrative Architecture STORIES

TOOLS AND PROCESSES

Figure 2*:* The tools and methods used to design different narrative elements and their evolution over the three years.

We anticipate that independently of the starting point chosen (characters, storyworlds or stories), each year designers designed the storyline(s) and the interactive storytelling structure following the Hero's Journey (Campbell 1949; Vogler 1992) and the four basic structures described by Philip Parker (1999, 22-23) – linear, episodic, thematic and associational. To conduct the design activity, we suggested our students to team up into heterogeneous groups, namely containing diverse design competencies and expertise (strategic thinking, visual and graphics skills, storytelling ability, technological skills, software knowledge, and so on), in order to cover the multiple design needs of the studio. In the following, we describe the methods and tools applied in the three consecutive experimentations, and we present one of the games obtained to exemplify how this methodology impacted the design phase.

Experimentation #1. From archetypes to characters: Tarot as storytelling system

The first year we started from considering characters as archetypes that can be used to boost worldbuilding and the construction of sets of storylines. We chose Tarot as a storytelling system for building *dramatis personae*. Meant to help those who are not used to write stories, this method is aimed at developing compelling characters from a Tarot deck. Then, from characters students moved to build interactive narratives.

This reasoning has given way to the application of Tarot as a system for character-creation to the Dome of Milano and its apparatus of sculptures, which is seen as an ancient as well as contemporary system of storytelling. Each statue can be indeed seen as a character telling its story and the ones of its period. As a Gothic cathedral and a Medieval building, Milano's Cathedral was originally built to convey meanings and information through its architectures and decorations, values of Christianity and salvation as well as stories of its protagonists. By doing so, the use of Tarot as a system for character-creation offered the possibility to read the Dome's statues applying a double paradigm shift: (1) taking the distance from the conventional theory and practice of using Minor Arcana as a divination tool, as well as to (2) look at the Cathedral as a space where statues as characters are spatially arranged to build a navigable story space. The projects designed represent the merging of these two perspectives and are another way to bring history to life, including the presence of multiple points of view. Interpretations, attribution of sensemaking, creation of links

contribute to moving the stories away from every linearity, becoming complex and dynamic stories with intertwined structures.

If the development of character-driven interactive stories was supported by Tarot that served as a character-driven narrative engine, to psychologically develop round and consistent characters, we suggested students to rely on the archetypical adventure narrative pattern known as *The Hero's Journey* (Vogler 1992). From *The Hero with a Thousand Faces* (1949), the seminal work of Joseph Campbell that introduces the idea of the journey as a threefold structure of the rite of passage (Van Gennep 1909; Campbell 1949), Vogler (1992) adapted the monomyth model and the evolution of the archetypal hero to the scriptwriting.

The methodology consists of three phases.

1. After a guided tour at the Dome and its museum, we asked students to conduct an individual research on the design, history, and stories of the Cathedral, choosing among its statues a fictional/factual character to individually develop. After that, designers used the **Tarot deck** as a system functional for developing compelling characters, applying the Minor Arcana system as a grid of archetypical behaviours and values. In doing so, we provided a poster containing all the 56 cards with their meanings, asking the students to place their character in the spot they considered more suitable according to the values portrayed, obtaining a general mapping of the class. The aim was obtaining a bigger picture of the characters at play, allowing the students to get inspired in the creation of teams. Then we asked to produced the Minor Arcana of their own character in the form of an A5 card, containing a short biography and the visual representation.

2. Designers grouped themselves applying the Donaldson's **Bardic Technique** (1995, 18-19). Design teams were made according to the interpretation of their Minor Arcana cards, using the pictures of a set of cards as a source of inspiration to make up a story.

3. Designers started developing interactive narrative prototypes. To perform such task, we equipped students with the so-called **Storyworld Canvas** (Piredda et al. 2015; Venditti 2017): a tool that leads the in-training designers to make a qualitative description of the created narrative world, following seven items (Pinardi and De Angelis 2006): *topos* (environment), *epos* (background story), *ethos* (value system), *telos* (life goals and objectives), *logos* (language), *genos* (system of relations).

The design studio course produced nine interactive narrative projects, many of whom took the form of game experiences such as location-based games, social media experiences and mobile puzzle game. One of the projects developed during the first year of experimentation is *Dome Crime[1]*, a location-based murder game aimed at engaging tourists in exploring the space around the Dome Cathedral and learn its history (Figure 3). Setting up a narrative background based on a crime happened in the XVI Century, players are invited to solve a murder case. To find the killer of Einar "the Viking", players are asked to thoroughly investigate the whereabouts of Elinar as well as the ones of a bunch of suspect characters: Draco, a gargoyle; Freda,

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[1] Project developed by Ilaria Bernareggi, Francesca Bossi, Chiara Cacciola, Giorgia Capuzzo, Chiara Galli, Siyu Zhan and Michela Viale.

a rich woman; Biagio, a marble carrier; Venturina, an orphan; Giorgio, the Deputy; Silvia, a young helper. The gameplay uses distributed and geo-localized narratives containing what allows to progress in the story and in the game. To find such clues and information, players need to visit several spots in the surroundings of the Dome. The story and its ending follow a multi-linear structure inspired by *Clue* (Jonathan Lynn 1985). As a matter of fact, the storytelling doesn't end up in a determined way, but it opens multiple possibilities to the audience who decides how to proceed, thus winking at possible other developments in terms of further stories set in the same storyworld.

Figure 3*: Screenshots from the prototype of the location-based mobile game D*ome Crime*.

To design the location-based game *Dome Crime*, students started choosing one of the statues of the Dome to turn into a fictional character to develop through the course. The statue was then re-interpreted making use of Tarot deck, also relying on Aristotle's theories (Aristotle 2002, 1448*a*). When starting from factual characters, their story has been transformed into fictional by including, twisting and conflating real and imaginary elements to obtain more complex character depth (Sheldon 2004). Providing complexity to a character implies making it round and deep. In terms of design, this means endowing it with a background story and interweaving it with not only to the storyworld, but also with the other characters who populate it. Moreover, it also means building a character so that it can embed certain values and reflect them throughout its storyline – past, present, and future.

Grasping from the card a set of values, potentially able to initiate infinite stories, students developed their own version of the Minor Arcana cards representing the sculpted character they chose. In a week, a selection of the Dome statues has been presented to the class and collectively discussed, in order to identify related *dramatis personae* with the potential to enter a shared imaginary world (Paiva et al. 2001). Relying on their background as communication designers, students transposed the meanings and values of the chosen Minor Arcana into illustrations, using the outcomes as sources of inspiration for developing the character's story. The consequent step was the development of the interactive storytelling concept. Each group was required to identify the characters' *Transformational Arc* (Marks, 2006), leading them to consider the intentions and the drivers behind each *dramatis personae* within the storyworld created (using the Storyworld Canvas). A special focus was the identification of each character's specific aim(s), a key element that allows to build the engagement with the audience: "The central dramatic question which forms the

climax of the narrative and ultimately forms the basis on which an audience will be engaged with the work" (Parker 1999, 43).

Even though the characters and the background stories were well defined, we encountered some problems in the construction of the stories at the center of the interactive narratives, affecting the overall entire system. In creating characters that can sustain interactive stories, it is necessary to consider that the role they play in and throughout the story has to be credible. Notwithstanding the tools provided and the several reviews, in developing stories, each group outlined a good general structure, but they could not fully succeed in building characters that develop/evolve in tune with the world in which they are situated, with the story in which they participate, and with the other characters with whom they (can) interact. Moreover, we observed a general lack in the deepness of the user experience, which impacted on the overall experience. The learning-by-doing approach worked well in providing students knowledge about the design of complex systems, but the set of tools was not fully functional. The Tarot deck and the Storyworld Canvas were useful in supporting students to develop relatable characters, but not in the design of interactive narrative structures. According to this experience, we decided to introduce another tool for supporting the stories' writing.

Experimentation #2. From stories to storyworlds, and backward

Maintaining central the aforementioned reasoning on the psychological construction of the characters, and therefore the works of Campbell (1949) and Vogler (1992), in the second iteration we made a step further. Although we recognize that the Tarot, as a storytelling system, were strong enough to create relatable characters, they didn't work in supporting students in the development of consistent storylines. Echoing Herman's (2009, p. VII) perspective on storyworlds "as the worlds evoked by narratives", where narratives play the role of "blueprints for world-creation", in the second year we decided to start unpacking and reframing a given storyworld. We chose from Italo Calvino's *Invisible Cities* (1972): through short narratives told by an explorer, Marco Polo, to the emperor Kublai Khan, the book explores imagination and depict the imaginable of 55 fictitious cities. The decision of using Calvino's book is due to the fact that the cities portrayed can be read as allegories and reflections on the nature of human experience – like culture, interaction, language, time, memory, death. These fictional cities imbued with meanings became the starting points for developing character-driven interactive narratives grounded on these poetically constructed short stories. Each of the *Invisible City* took origin from the combinatorial game of Calvino, as the result of the researches on structuralism and semiotics that led the author to "break down" the communicative message to analyse its parts. Consequently, starting the design from a piece as apparently short and simple as deep and provided with multiple levels of reading has nourished the creativity of the designers.

The methodology was a three-fold process.

1. Young designers were asked to pick up one of the 55 Calvino' short poems, describing a city, and to create their own storyworld from it. To support this activity, we provided them with the *Storyworld Canvas* tool (Piredda et al. 2015; Venditti 2017).

2. Students split into teams were asked to individually develop fictional/factual characters (one for each student), taking into consideration the ones developed by the other members of the group. For each character, they had to provide the visual representation shaped as a mood board, the main characteristics, and the background story. For the character development, we

equipped them two other tools: the *Character Wheel* (for the general description) and the use of Vogler's archetypes. We asked students to use the Character Wheel in defining the inner and external worlds of the characters, where the first refers to age, gender, ethnicity, nationality, physical and mental skills, and personality, while the second to environment (where she/he lives), social class, civil status, religion/beliefs, education, work experience, habits, physical appearance, and favorite activities. Then, we suggested make explicit the archetypal roles of the characters, according to the seven archetypes defined by Vogler (1992): Hero, Mentor, Threshold Guardian, Herald, Shapeshifter, Trickster and Shadow.

3. Students created an interactive narrative concept starting from connecting the various characters developed. In sustaining the writing of the overall story, we provided students with the **Story Map** tool (Piredda et al. 2015; Venditti 2017). The tool aims to sustain the creation of a narrative structure, according to the theory of equilibrium by Todorov (1969): after an initial situation of equilibrium (1) the characters(s) will face the emerging of conflict (disruption, 2); followed by the resolution of the conflicts (3) and the establishment of a new equilibrium (4).

The course produced eight projects: distributed stories with a certain degree of audience engagement shaped as social media experiences, ARG, RPG on Facebook, mobile games and exhibition.
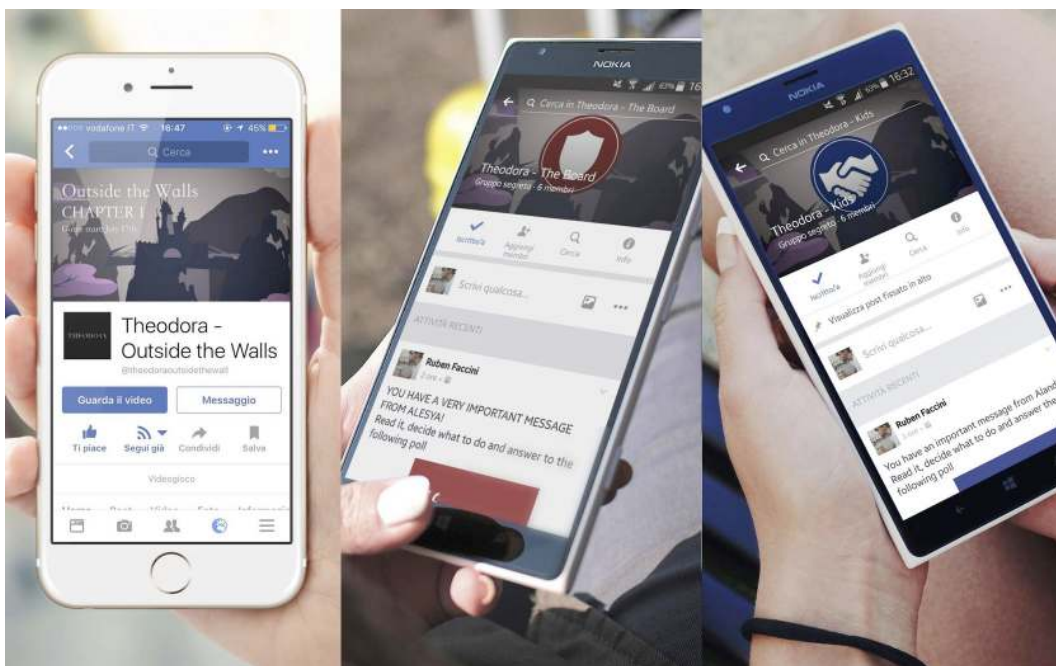
Figure 4: The Facebook fan page of *Théodora – Outside the Wall*, and some of the interactions with the players in the two in-game factions' groups.

Set in the city (and storyworld) of Théodora, *Outside the Walls*[2] is the first chapter of an online role play game (RPG), where players interact with the storyline by making

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[2] Project developed by Federica Carrozzo, Ruben Faccini, Ties Luiten, Beatrice Redaelli, Alena Riaboshenko and Yidan Sun.

choices and solving puzzles, under the guidance of a game master (Figure 4). Leveraging on the multiple affordances of Facebook (likes and reactions, comments, messages and inbox and open, closed or secret groups), players have to cooperate and investigate together in order to solve a mystery. The genre chosen is science fiction and investigation, and the aim is to make players reflect on the importance of living "with" rather than "against" other species or, broadly speaking, others.

The entire game runs on a Facebook fan page called *Théodora - Outside the Walls* that contains an introductory video to the city of Theodora and its story, and a pre-game survey for the wanna-be players. The survey has a twofold function: on the one hand, it serves as a registration tool; on the other, it contains questions useful for balancing the gameplay. It collects information about the player's personality and interests, that will serve to the game masters for building factions and assign characters. Each character has its own personality and abilities and, by virtue of these, the player is provided with a specific role and task, information and connections, decisive to progress in the narrative. The game is indeed structured around two secret groups that oppose each other, each has a corresponding secret group on Facebook, where players are gathered. Once the game starts, players are notified to join the page and read the missions published by the game masters in the shape of posts. The online RPG consists of six events spread out on six days, with short stories followed by a main event. Players interact with the story and its events by means of making choices and solving puzzles, taking advantage of being in an online community. According to the choice made by each group, the story follows a path rather than another.

In designing the online RPG *Théodora - Outside the Walls* students initiated to unpack the given storyworld of Théodora, as drafted by Calvino (1972), and then diverged, structuring a new, broader storyworld, able to potentially welcome an infinite number of other stories. Starting the design activity from a storyworld that comes from such a given world provides evident benefits in terms of cultural capital and meaningfulness. Indeed, students teamed in groups analysed the given "city" unfolding its elements and values. Then, they individually built a set of characters with their own storylines, aiming at following a structural approach made up of a set of shared values, common to the team and respectful of the overall storyworld combinatory elements. We suggested considering that recurrent sets of meanings should be looked at as narrative drivers, rather than restraints.

In developing *Théodora - Outside the Walls*, although the issue is common to all the projects from the design studio, the main challenge was designing the interaction between players and the story itself, namely the level of agency allowed on the storylines, and then their relation towards and across media. The desire was going further a foldback story (Adams 2010, 173-174) that embeds a meaningful and in the meanwhile manageable amount of choices. The idea was to challenge the usual interactions and consumptions' expectations. The game experience takes place online, moving on the social networks a typology of games that do not traditionally belong to them. Here the game is led by a game master who considers the choices taken by the players and the interaction between the two factions, and makes the story go ahead. However, the amount of possible storylines, as well as the possible endings, are pre-defined. To design and structure the stories, students made use of the *Story Map* tool. However, it proved not to be the most suitable to handle the rising complexity, leading to the need of a new, more structured tool, able to welcome the stories and storylines, with their trees of decisions. The *Interactive Narrative Architecture* tool has been specifically designed in order to be introduced from the next experimentation, answering the factual need we detected during the fieldwork with students.

Something that also emerged from this second iteration, also nurtured by the contemporary possibilities in terms of interaction and participation, is the evident desire – of both students' and ours' – of experimenting new forms of both interaction and hybridization, taking advantage of different media and their features and affordances (possibilities as well as limitations). In particular, it became manifest the interest of students to undergo design practices of building stories embracing a transmedia rather than crossmedia approach. A tendency that feeds the complexity of the storyline and that was not supported by any previous tool. Recognizing this issue, we built the *Interactive Narrative Architecture* as a way to stimulate students to outline how the story is spread across time and media (distribution), the touch-points with the audience and how it can take actions.

Experimentation #3. From storytelling to worldbuilding

The last experimentation paid specific attention to the way in which storyworlds can be designed from existent stories, hence how different storylines set in the obtained fictional world/universe can be conveyed across media. Moreover, we also deemed necessary to further explore the inclusion of social values and messages. In consequence, for the entire length of the design studio, we collaborated with a local association that runs an experience-based school of Italian for migrants. We asked students to work for spreading and valorising memories and stories that the migrants of the school of Asnada crafted during a workshop. The personal stories of the migrants become creative raw materials for conveying dreams, hopes, and fears of those who left their country of origin to move to another one. We started with hand-crafted miniatures accompanied by short stories made by migrants to share a testimony and a representation of their past, their journey to a new country, and their present. The final aim was translating such dramatic artefacts, imbued of stunning emotional significance, into interactive narratives rooted in the territory but also designed to spread across media. In fact, one of the topics that we asked the class to investigate and keep in mind when designing, is to reason about the implications and possibilities in terms of interaction and participation that come from a narrative and a storyworlds spread across different medium; and in particular, to ask themselves what a medium can allow and another cannot, ruminating on affordances (Jensen and Dyrby 2013; Cardona-Rivera and Young 2014).

The design process consisted of three steps.

1. Each group picked up a story from a selection of 12 migrants' testimonies, categorised as 6 places (miniatures) and 6 journeys (drawings) with their stories. Students were asked to carefully analyse the values embedded in such stories, and re-frame them into a social message, making them pivotal pillars around which build an entire storyworld. The activity is supported by the *Storyworld Canvas* (Piredda et al. 2015; Venditti 2017).

2. Following a logic of consistency and coherence with the story of reference and the storyworld designed (Wolf, 2012), each student individually outlined and represented a fictional character in terms of visual representation (mood board), its main characteristics, its background story as a storyline. For this tasks students respectively employed Vogler's *Archetypes* (1992) and the *Character Wheel* to define characters roles and their backgrounds, and the *Story Map* (Piredda et al. 2015; Venditti 2017) to develop their storylines.

3. Starting from the various characters developed, designers created an interactive narrative concept, specifically meant to go across media (applying a transmedia rather than crossmedia approach), where different storylines intertwined. To support the development of the interactive narrative concept

students were required to provide the structure of their narrative shaped as a tree diagram that we named **Interactive Narrative Architecture**. The tool is a formal structure that requires to explain and unpack the different elements that make up a complex narrative, placing them in mutual relation. It is shaped as a branching story structure that shows every possible pathway through the narrative, its critical events and media involved, with the plot points and its storylines, their scripts and a short description of what happens in every moment of the narrative, identifying the moments when VUP (viewers/users/players) can make choices. The structure of the tree is made of the nodes, namely the number of branch points that constitute the story (Adams 2010), and it shows how and with what consequences some nodes brings to parallel plots. Even though we did not provide the tool with a visual format/configuration, in-training students have proved to use it in a conscious way, reflecting on the story structure (contents), media (distribution), and touch-points (engagement) for the audience interaction.

The design studio produced nine interactive narratives for nine audiences, structured to be enjoyed on specific media (most of the time, the narrative was spread on more than a medium, in a transmedia logic), identified as significant in relation to their audience. The original testimonies become narratives distributed on the territory and online, in the form of Alternative Reality Game, Location-Based Mobile Game narratives, immersive installations, visual novels, online series, choose your own adventure games on Instagram and transmedia experiences.

One of the projects developed during the course was *404 Found*[3]. It is a transmedia experience that requires users to interact with different means of communication in order to get immersed in a spread narrative. Starting from the given short story coming from migrants, the students developed an original storyworld and a precise storyline involving trust, hope, change and discover as main values. The aim was leading the VUP to wear the immigrants' shoes, experiencing a future on which a very limited amount of control can be used, and where "different worlds" coexist.

The transmedia experience designed, surfing among real, virtual and in-betweens, spans the entire storyline (in the form of the Hero's Journey) in four Chapters, each deployed across specific media (Figure 5): (1) text-based video game, (2) online video, (3) Point and Clip video game, (4) Runner game; then, following the audience need to "keep in touch" with storyworlds they enjoyed, the story is also conveyed through two further chapters shaped as in-person events: (5) an escape room, and (6) a meta-theatre performance. Then, a Facebook page acts as a collector for the story that evolves, timely making call for action about the diverse chapters and events of the transmedia experience.

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[3] Project developed by Cansu Hizli, Caterina Beleffi, Giulio Interlandi, Huang Yuping, Qian Yujie Walter Piccolo and Yagmur Serin.
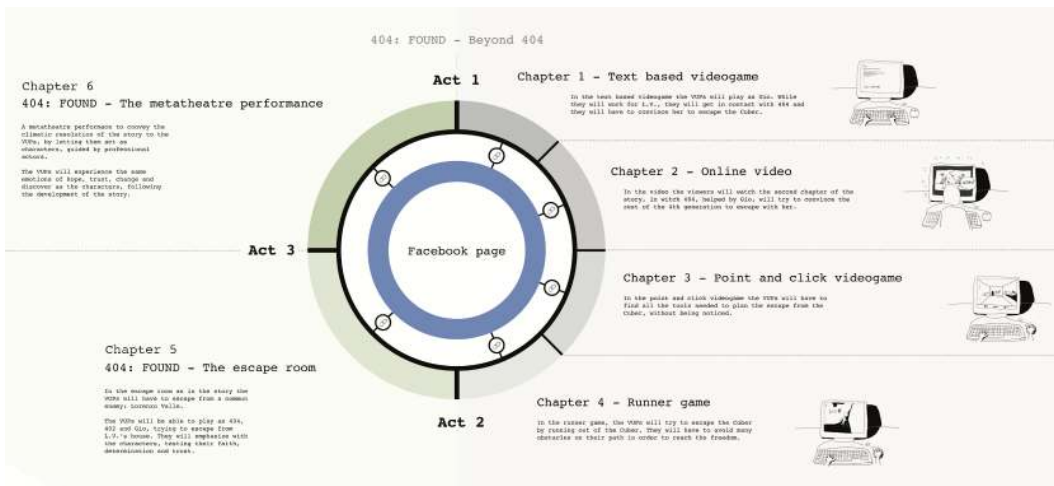
Figure 5*: 404 Found* transmedia structure, shaped as a three-act story. On the right side of the image, the interaction goes digital; on the left side, it becomes in presence.

To spur engagement and convey meanings, the designers of *404 Found* wisely took advantage of the mix of analogue and digital settings characterizing their story. When dealing with the *Cube*, that is a place in the space, the story is associated with digital interactions; when the story moves to the Earth, it starts to imply real interactions, situated in a specific territory. The two types of interaction and their sequence were designed sharply. The first consists of more individual moments of play, where the text-based video game is used to tell a part of the story from the point of view of one of the protagonists (Chapter 1), or moments in which the player cannot interact at all, but just look at the story going ahead while watching an online video (Chapter 2), and then again the player gains back agency through a point and click video game that defines if some or all the protagonists on the Cuber can successfully escape from it (Chapters 3 and 4). When the story is set on the Earth, the interaction becomes more direct, allowing the interrelation between fictional (narrative) and real (social activities) (Ryan & Thon, 2014). Assuming the shape of games in presence (escape room, Chapter 6) and performances (metatheatre, Chapter 6), such interaction nurtures the feeling of belonging to a community which shares common interests.

DISCUSSION

In this paper, we propose a design framework that supports the character-driven design of interactive storytelling projects. Recalling and advancing Davenport (2005), storytelling implies a combination of processes and methods aiming at creating meaning and value, respectively related to events of both our's and others' lives. Whether the narratives are about representations of reality or fictional worlds, they draw on and represent, spread and enrich our cultural and social heritage. Through narratives, we can indeed relate to such events and values, and sometimes even actively interact with them. Especially when it comes to narratives that are interactive, different media come with different affordances, opportunities for action, and provide the audience with different levels of agency. This observation actually comes along with significant implications, especially looking at the matter from the designer standpoint.

Whether on the one hand, from an existentialist perspective, giving the audience the freedom to actively decide and make choices within the story makes necessary to dig into the storytelling aesthetics and ethics as a central part of the design process, on the

other, the design one, it implies that designers consider the audience as individuals with their own subjectivity and include this into the narratives, providing them with appropriate enactments. The "Complex Artefact and System Design Studio" course was formulated and developed as a through-design, practice-based research on how character-driven narrative can act as activators of meaningful experiences in designing interactive narratives. The characters can be seen as narrative entities through which the audience is able to enter vicariously the storyworlds. In doing so, the interactive narrative field has become a space of experimentation also for the social good domain, tackling moral and ethical issues. We started the first experimentation with the objective of raising awareness on characters, on the crucial role they play in establishing an empathic relationship with the audience, and on the complexity that lies on their construction. Considering the importance of developing them as holistic elements, they encompassed an entire range of shades that build their personality, including their ethical and moral values, and the 'negative sphere' of emotions (Mariani 2016a). Including these elements allows to experiment and challenge players, asking them to take positions that differ from the usual, with respect to certain issues, values, and moral choices. From assuming the role of the antagonist to playing by performing actions and adopting behaviours that would be considered offensive or immoral if occurring outside the sphere of play. This perspective of openness and inclusion, experimentation and challenge, becomes extremely interesting especially in the field of contemporary gaming and interactive narratives, where a growing number of titles deals with problematic issues and taboos. Providing students with tools for the storyworld and stories developing, and asking them to consider the hero's evolution as a journey with a clear aim and timeline resulted functional and efficacious. Students used these tools and aids to model stable features throughout the story, assembling and intertwining together the stories and events of their characters.

Tarot can certainly serve as storytelling system for the character development that allows tapping into the entire set of possibilities presented by the deck and its protagonists, obtaining in consequence more diversified narratives and storylines based on conflicts. Although the statues of Milano's Dome are full of meanings and come with their own, rich story, the first experimentation demonstrated that starting the design activity from characters, without opening a discourse about their storyworld of reference unfavourably impacted on the invention, completeness, and consistency (Wolf 2012) of the worlds built. As a consequence, since the second iteration, we triggered the design process from existing narratives, rather than archetypal characters. The world itself is able to produce stories populated by characters that drive the narrative braids and make the audience understand their world. Both Calvino's *Invisible Cities* (1972) and the migrants' stories become world-making triggers, since they provide concise but thick perspectives, shaped as narratives, that can be read from different perspectives, grasping sets of values, ethical principles, moral beliefs, cultural attitudes, social behaviours, and so on. In terms of world-making, such richness is a powerful design boost, able to encourage a potentially infinite amount of characters and storylines.

Still, it remained unsolved the way in which the audience was allowed to interact with such stories; a prominent issue when dealing with narratives that are meant to be interactive. In particular, this matter of concern related to the limited amount and quality of interactions with the storylines characterised the first and second iterations of the course. Over the last year, we detected a significant improvement due to the introduction of the mid-term request of articulating and deepening the storylines by outlining the *Interactive Narrative Architecture* of their projects, in which it emerges how they spread their narrative across media and the touch points in which the audience could take action, sometimes even interfering with the story.

Since one of the aims of the course was the in-field testing of the design methodology proposed, further development of this work consisted in the integration of tools supporting the 'ludo mix' for the diversified distribution of interactive narrative experiences, according to the consumption models of the contemporary mediascape. If we focus on the way the audience is expected to be engaged with the interactive narratives, despite intersections and overlapping, we can split student's projects developed over the three editions of the course, into the following categories:

- Social media and situated storytelling (e.g. Location-Based Games, Social Media Fiction projects)

- Interactive ludic storyworlds, in which ludic elements prompting the interaction (e.g. Card Games, Mobile Puzzle Games, Augmented Reality Books, iDocs);

- Interactive narrative in the real world (e.g. ARGs, LARPs, Interactive Exhibitions).

In conclusion, combining the information obtained from the evaluation reports provided by the university and the data gathered throughout the ethnographic analysis, these three years of experimentation sparks some reflections about methods for helping the communication designer in building interactive narratives, aiming at achieving a ludo media mix vision through some tools:

- **Vogler's archetypes** and **Character Wheel** for the character development, starting the design process from the values and inner meanings (Vogler, 1992);

- **Storyworld Canvas and Story Map** (Venditti, 2017) for the storyworld creation and the storytelling practice;

- **Interactive Narrative Architecture**, consisting of a decision tree augmented with scripts, media, and interactions, to manage the content spreadability and the agency of the audience.

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