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Article

Design Insights for Exploring Identity Bubbles with Alternate Reality Gameplay

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Abstract

To activate conscious reflection regarding personal identity and identity-building processes in our daily lives is an increasing social concern. With this aim, we designed an Alternate Reality Game that invites participants to collectively explore these themes. Participants played with a prototype, reflecting on identity through emergent dynamics from gameplay and interpersonal interactions. We analysed participants' appropriation of the prototype through logged activity, direct observation and interviews. The patterns identified enabled iterative redesign and further exploration of interaction dynamics. From this process, we synthesised four design insights as our main findings (alongside the designed prototype), that may guide further research in the field: 1) how to explore design-play-reflect as a co-design process supported on individual appropriation, 2) how ARG designs can become generative social theories, 3) how ARGs generate reflective social phenomena, such as varied social identity and power narratives, and 4) how ARG Design can open doors to balance power dynamics.

Keywords: alternate reality games; personal identity; social identity; play

1. Introduction

It is more important than ever within our society to activate conscious and active reflection on personal identity, processes of identity-building, third parties involved and subsequent dangers. Following this, we propose an Alternate Reality Game (ARG) experience that invites its participants to collectively reflect about and discuss these themes. ARGs have a history as spaces for reflection on real-world problems, such as the case with World Without Oil [1]. As a type of transmedia storytelling game played across multiple channels, ARGs are usually ubiquitous to the players' daily lives, blurring the lines between game and reality [2–4].

Our goal was to create an ARG experience as a “social laboratory” [5], leading participants to reflect upon the aforementioned themes through its narrative layer, core mechanics and emergent dynamics resulting from participant's interactions, and how they could become co-creators of the experience and feed the prototypes' iterations. To evaluate our design proposal, we developed a prototype through an iterative Research Through Design (RtD) approach [6] and content analysis rehearsals, from which we retrieved a series of observation logs of participants' interaction and appropriation of the prototype, through direct observation, automated logging, and participant interviews (individually and in group). These allowed us to analyze how participants appropriated the experience and the emergent interaction dynamics, from which we synthesized four design insights: 1) how to explore design-play-reflect as a co-design process supported on individual appropriation, 2) how ARG designs can become generative social theories, 3) how ARGs generate reflective social phenomena, such as varied social identity and power narratives, and 4) how ARG design can open doors to balance power dynamics. We find this study a solid, yet first experience into gathering design knowledge regarding the ARGs potential to be used as a transformational tool regarding social identity, balanced dynamics, and the player as a co-creator of social transformation.

The article is structured as follows: Section 1 introduces the main theme and origins of ARGs, reflecting on its history and prior examples; Section 2 introduces the developed prototype as our main material of research, used as an iterative process of RtD in five rehearsals, whose protocol is also explained; Section 3 focuses on the content analysis process and the obtained results from the rehearsal observation and recording, as well as the individual and group interviews and final open feedback; Section 4 presents the discussion and retrieved design insights, concluding with limitations and future work that this study opens for further research.

1.1. *The Alternate Reality Games*

Although it may be impossible to pinpoint the exact origin of the ARG genre, several projects commonly described as ARGs - as well as some boundary projects - can be seen as milestones in the genre's development, such as Ong's Hat in the 80s [7] as a piece of collaborative fiction, considered "new media" at the time; I Love Bees [8], whose widespread attention reached both mainstream audiences and academic researchers; World Without Oil [1], aiming to enact social change and question real world problems regarding sustainability; or Conspiracy for Good [9], aiming to fight social and environmental injustice.

1.2. *Origins of the ARG Genre*

Adam Martin [10] stated that ARGs can be many things, "from the latest innovation in interactive storytelling to a new form of ultra-realistic video game". An ARG is commonly described as a form of transmedia storytelling game, where players collaboratively solve puzzles and piece together a narrative distributed across multiple channels by the game's creators, often using the world around them for the experience, thus blurring the lines between reality and fiction. These channels can be physical (phone calls, mail, books, billboards) as well as digital (web pages, forums, videos, emails) [2-4]. The narrative can be pre-defined, or a collaborative effort, with puppetmasters adjusting their initial plans based on player action and feedback [3]. A principle common to many ARGs is their attempt at disguising that they are a game; instead presenting itself as part of the real world (the so-called "This Is Not A Game" philosophy [11]). To make progress, players communicate and collaborate amongst themselves, sharing information, interpretations and conjectures to make sense of the narrative [2,4]. Players often construct their own means of communication, mainly through web-based forums [3]. The potential of ARGs stems from the opportunities that arise with a large number of players: from the emergent social dynamics, to inter-player relationships, to their self-organization and management as an emergent community.

Projects such as World Without Oil [1] and Brooke Thompson's SMB: Missed Steaks (around 2005) [10] have proven potential for social awareness and change, leading players to ask questions about the real world by superimposing a layer of fiction over it, while showing players the value of collaborative effort and open discourse in finding solutions to a problem. ARGs can thus be important tools to make players realize their real-world agency through their own agency within the fictional game world. The boundaries of the "magic circle" [12] protect players from real-world consequences, but also create a significant gap between reality and fiction. That's where ARGs excel: their proximity to reality makes the actions taken by the players feel more tangible and transferable to real-life situations, using "their own experience and knowledge rather than playing the role of a fictional character" [13].

1.3. *ARGs and Social Transformation*

ARGs are also very adaptable (themes-wise). Despite tending towards conspiratorial plots and mysteries [14], there is space for thematic variety, such as proven by World without Oil [1]. ARGs often require figuring out identities and relationships, understanding how events are related and how they shape those involved. The frequent impossibility of meeting characters face-to-face sparks in players a desire to characterize them and understand their place in the fictional world, questioning

their motivations and values, but also rethinking assumptions discovered during this process. We believe this makes an ARG very suitable to make players question those processes of sensemaking and identity building, how they present themselves to others, and how their interpersonal interactions shape the world around them.

2. Materials and Methods

2.1. The “Bubbles” Design Case

The main research question that guided this project was: **how could we iteratively design an ARG experience that raises questions of individual and collective identity?** We intended for the gameplay experience to lead the participants to question and discuss these themes, co-designing the prototype in return and eventually becoming more aware of their potential to enact change in the real world and transcend social paradigms.

2.2. Research Methodology

We followed a Research through Design (RtD) approach [6], by which design researchers iteratively create a series of artifacts. We conceive these artifacts “through an active process of ideating, iterating, and critiquing potential solutions” [6] towards a resolution. Through this approach, design researchers discover opportunities for new technological developments and improvements, and the problem framing done during the artifacts’ conception can “identify important gaps in behavioral theory and models” [6].

2.3. Design Proposal and Process

We focused on designing a web-based prototype that could work as a standalone ARG experience, but also expanded into a larger scope, centered on the themes of identity. We designed the mechanics and narrative to be very open-ended, to potentiate the emergence of narratives and dynamics based on participant interaction and feed subsequent iterations. We aimed for dynamics that could lead to collective reflection and instigate participation, simultaneously developing the narrative layer that would tie the mechanics and justify them in-universe, and present instigating in-narrative examples.

The final experience consists of an online, fictional social media platform - “Bubbles!” (Figure 1), whose interactions represent abstract versions of social actions: agreement/disagreement, sharing of opinions, judgement, reconciliation (that includes the acceptance of different perspectives and mutual learning), categorization, etc. Once registered, each participant is assigned two labels (out of three), and heads to a feed of posts (Figure 2) from other users with at least one label in common; from the onset, there are already a series of posts from fictional users, which constitutes the initial narrative layer.

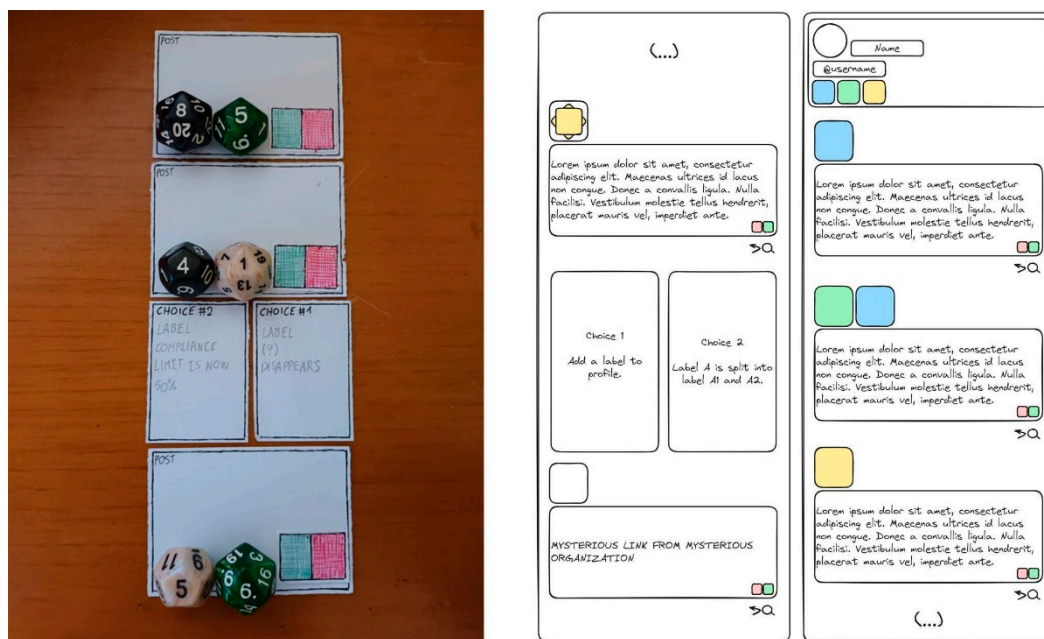


Figure 1. Left: First paper prototype; Right: Early interface sketches for the platform.

For each post in the feed, participants can upvote or downvote each of its labels: if they become the top scorer of one, that label is highlighted and they are allowed to change its name and color (paralleling celebrities/influencers); if their score lowers too much, they receive a “Wellness Check” (WC) - a questionnaire that aims to evaluate a participant’s conformity with and knowledge of a given label (paralleling judgement or pressure to conform). The participant is prompted with 5 pairs of posts, to identify which belong to the label being evaluated. There are four possible consequences (ordered from higher to lower scores): only downvotes resetting, upvotes and downvotes resetting, swapping one label for another, or losing the label completely. If a participant loses all labels, effectively cutting them off from everyone, they instead see one of four encoded messages from a “[DELETED]” user. When decoded and ordered, these messages present a reflection on what it could mean to have no labels, from the perspective of a mysterious character who also reached this “limbo”. Participants can then choose to play again, resetting their account and receiving two random labels.

After each rehearsal, we iterated upon the prototype and our interventions during the experience. After **Rehearsal 0**, we focused on fixing experience-breaking technical issues and improving response times of the platform; we also added a Non-Playable Character (NPC) roleplayed by the puppetmaster, that would allow us to interact with participants during the experience, to instigate polarization, incite reflection and questioning, while also helping them explore and understand the mechanics. We wrote a brief script with a series of predicted player actions and matching responses, but this device was quickly turned obsolete and abandoned by how open-ended the mechanics are. After **Rehearsal 1**, we focused on resolving lingering technical issues that caused inconsistencies; we also added a second NPC - the two would now try to polarize the participants into groups and lead into discussions and reflections on polarizing, identity centric subjects (such as race, gender or politics). There were no significant changes beyond **Rehearsal 2**, safe for the improvisation of another NPC in R5, emerging from participants’ idea to try to talk to a character from the game’s narrative setup.

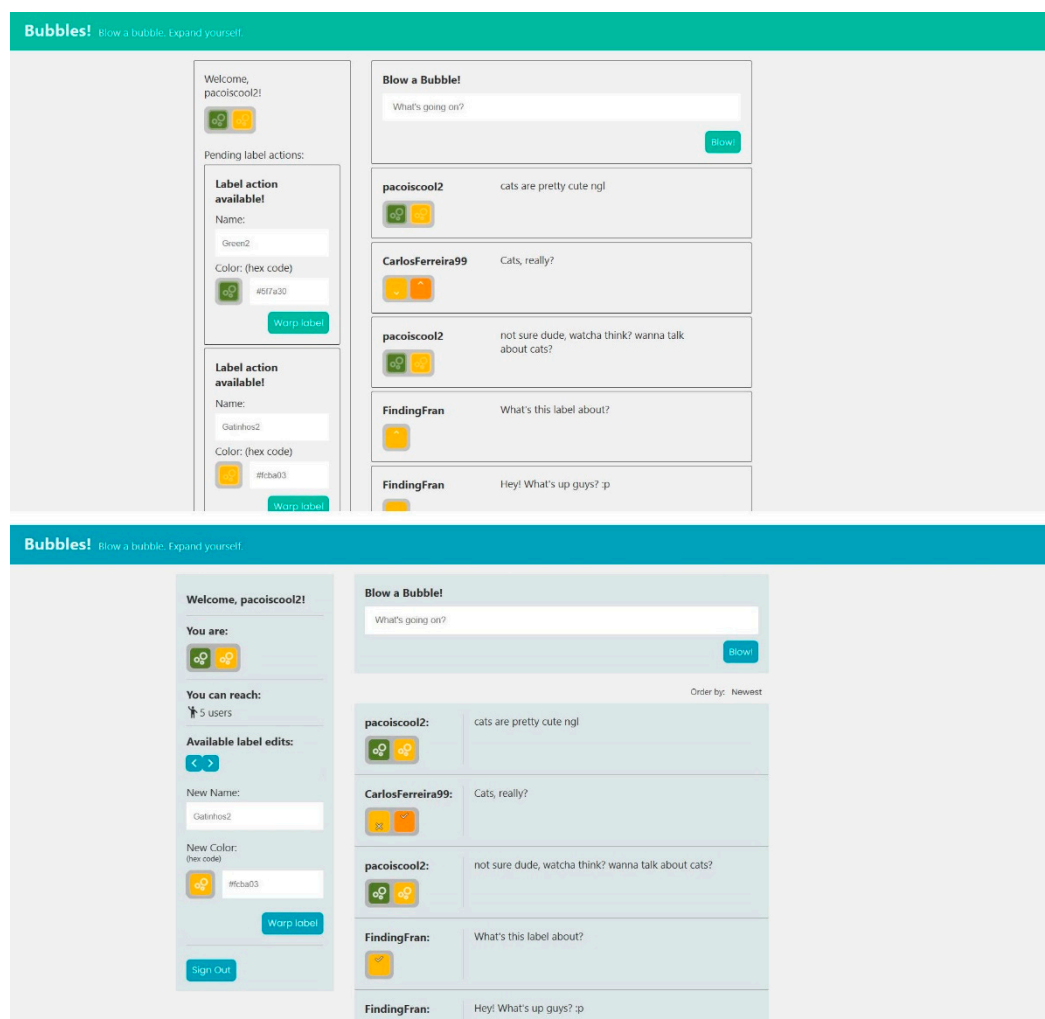


Figure 2. Top: The main feed page and its features, as of Rehearsal 0; Bottom: The same elements as of Rehearsal 5.

2.4. Protocol for the ARG Rehearsals

To develop and evaluate our design proposal, we conducted six in-person gameplay rehearsals, encompassing a total of 29 participants. To discover the “social generativity” [15] of a multiplayer game design model, we needed to rehearse its social interaction potential, as the ARG’s dynamics must be seen as emergent (and not fully anticipated) socio-technical phenomena, dependent on the technical media and the human multiplayer performance: Participants must be treated as co-designers, or “designers in play-time”, as put forward by Roque [16], and these rehearsals honed in on an exploratory, co-creative and iterative process to explore the potential of this experience and its forms of interaction.

The rehearsals consisted of a free-form exploration of the prototype that lasted about an hour. We initiated them by giving very limited information to the participants, to avoid contamination and invite a free playtesting. The puppetmaster team served as facilitators of an experience, as “bonsai artists”: watching, maintaining and moderating the participants’ exploration and sensemaking processes, providing support, facilitating and stimulating interesting patterns and dynamics that emerged, and “pruning” harmful and experience-breaking elements. We gathered information through automated logging, direct observation (interpreting participant’s actions and responding accordingly) and interviews. After each rehearsal, we compiled the logs and interviews to iterate upon the prototype.

After the experience, each participant was interviewed individually through a questionnaire, which began with a demographic profile section, including gender, age and gaming habits. The

second section contained a shortened variant of the Player Experience Inventory (PXI) [17], focused on extracting feedback on what we considered the three most relevant constructs of Psychosocial Consequences: Meaning, Curiosity and Mastery. Lastly, we concluded the individual interviews with a series of questions (Appendix A.1), which provided us a clearer image of the participant's individual perception, its meaning, how they played, key emotional moments, and any unfulfilled expectations.

We also conducted group interviews (Appendix A.2) to extract the group's perception, interpretation, and elicit unrealized plans of action or emergent ones during discussion. This interview was done last to separate individual and group perceptions, and evaluate how the group discussion facilitated interpretation and reflection. We sought to gather if a focused, out-of-character, sensemaking environment would lead to a complementary understanding of the experience and reflection, mimicking what occurs in ARG forums. From R2 onward, we added an open question, to seek further curiosities, misconceptions and suggestions for future iterations.

Table 1. Rehearsal Demographics.

Rehearsal	Duration	Participants	Age	Gender	Gaming Habits
R0	60 minutes	3 participants	21 (3)	Male (2) Female (1)	Daily (1) 4-6 times a week (1) 1-3 times a week (1)
R1	58 minutes	3 participants 1 NPC	22 (2) 37 (1)	Male (1) Female (2)	1-3 times a week (1) ^{[L]_{ISEP}} 1-3 times a month (1) ^{[L]_{ISEP}} Less than once a month (1)
R2	61 minutes	5 participants ^{[L]_{ISEP}} 2 NPCs	21 (1) ^{[L]_{ISEP}} 22 (1) ^{[L]_{ISEP}} 24 (1) ^{[L]_{ISEP}} 25 (1) ^{[L]_{ISEP}} 26 (1)	Male (2) ^{[L]_{ISEP}} Female (3)	4-6 times a week (2) ^{[L]_{ISEP}} 4-6 times a month (2) ^{[L]_{ISEP}} Less than once a month (1)
R3	69 minutes	5 participants ^{[L]_{ISEP}} 2 NPCs	20 (1) ^{[L]_{ISEP}} 23 (2) ^{[L]_{ISEP}} 24 (1) ^{[L]_{ISEP}} 25 (1)	Male (1) ^{[L]_{ISEP}} Female (4)	Daily (2) ^{[L]_{ISEP}} 1-3 times a week (1) ^{[L]_{ISEP}} 4-6 times a month (1) ^{[L]_{ISEP}} 1-3 times a month (1)
R4	64 minutes	5 participants ^{[L]_{ISEP}} 2 NPCs	18 (1) ^{[L]_{ISEP}} 21 (1) ^{[L]_{ISEP}} 23 (2) ^{[L]_{ISEP}} 24 (1)	Male (3) ^{[L]_{ISEP}} Female (2)	Daily (2) ^{[L]_{ISEP}} 1-3 times a week (1) ^{[L]_{ISEP}} 4-6 times a month (1) ^{[L]_{ISEP}} Less than once a month (1)
R5	83 minutes	8 participants ^{[L]_{ISEP}} 3 NPCs	16 (5) ^{[L]_{ISEP}} 17 (1) ^{[L]_{ISEP}} 18 (1) ^{[L]_{ISEP}} 22 (1)	Male (4) ^{[L]_{ISEP}} Female (2) ^{[L]_{ISEP}} Non-binary (2)	Daily (5) ^{[L]_{ISEP}} 4-6 times a week (1) ^{[L]_{ISEP}} 1-3 times a week (1) ^{[L]_{ISEP}} 4-6 times a month (1)

3. Results, Content Analysis and Findings

The collected data (observation notes, player generated messages and activity logs) were compiled and coded into thematic groups. This process allowed us to identify sequences of connected actions and identify patterns of interaction dynamics during gameplay, and relate them to the design materials based on the perceived in-game context. Below is a summarized profile of each gameplay rehearsal.

3.1. Rehearsal Narratives and Iterative Improvements

Rehearsal 0: in the first rehearsal, participants were mainly focused on understanding the game's mechanics, with very few moments of collaboration and discussion between them. All reported technical issues, which influenced our interventions as puppetmasters that might have led to incorrect conclusions.

Improvements: In the next rehearsals, we progressively tried to avoid sense-breaking interventions and distributed database changes more evenly throughout each round. A first NPC was also added.

Rehearsal 1: technical issues still emerged, leading to inconsistent actions and behaviors that hindered the participants' guesses and sense-making, with them being even less active and cooperative than in **R0**. In this rehearsal, we were unable to instill polarisation and discussion through the NPC's actions.

Improvements: we introduced a second NPC, so that their exchanges could allow moments to divide the participants and incite discussions.

Rehearsal 2: right from the beginning, the participants started freely exploring the platform, cooperating to understand the game's mechanics and sharing lighthearted banter. One of the participants (P2.1) had previous knowledge of ARGs, which influenced and improved the flow of experience, leading sensemaking attempts across the group (encouraging others to do the same, even to a lesser extent) and sharing their findings. The NPCs enabled discussions on harmless, yet polarizing topics (e.g. cats vs. dogs / sports clubs), which did not evolve into deeper discussions. Discussions on the story, meaning and goals came mostly post-game, during the interviews and the open feedback session.

Rehearsal 3: signs of oral communication were observed, but were insufficient to lead to arguments and discussion. Overall, the participants collaborated with each other, but with less oral communication. This may have been to some early WCs (and consequent loss of labels), which might have hindered their communication. This rehearsal was very similar to **R2**, except for the "collective suicide" plan near the end, where the group collectively decided to downvote everyone so everyone would lose their labels, which was a very unexpected dynamic.

Rehearsal 4: in this rehearsal, participants seemed less interested in sense-making attempts, treating the game as a normal social media platform. Some participants asked about the mechanics, proposing brief interpretations that were not followed up on. The two most active participants (with 35,6% and 24,5% of posts, respectively), were on the contrary heavily focused on discussing varied topics in lighthearted banter, which may have shifted the focus of the others into imitating social media-like behavior. In the end, although they didn't show contact or interest in the experience's narrative and characters, they discussed important aspects of identity and culture wars (e.g. gendered vs. gender neutral language, mentions of terms such as "woke" and "grifters", and other important/polarizing topics), either within game and in the post-game interviews.

Rehearsal 5: this was a particular rehearsal compared to others, as participants began quickly and non-stop talking to each other verbally. It was a longer rehearsal, although not planned, which might have been influenced by the number of participants (8), age bracket, background, contact with the narrative's themes and overall familiarity with ARGs. The participants seemed more invested in exploring the narrative than in the previous rehearsals. There was even a purposeful and unexpected

initiative of contacting a character from the narrative, which we decided to pursue as puppetmasters, phasing out the other two NPCs to properly focus on roleplaying that character.

Improvements: we improvised a third NPC that emerged from the participants' experience.

3.2. Rehearsal Content Analysis

- In the first five rehearsals, participants only communicated in-platform, limiting oral interactions to side comments or interjections. **In R5**, participants quickly began talking orally, and much of that rehearsal's activity happened in this manner.
- Early efforts were mostly centered on understanding the basic mechanics and elements of the platform. Some isolated participants (e.g. **R0**, **R3**) began with the narrative instead; **in R5**, this behavior was seen in most participants (7/8), understanding how elements of the experience informed the story. During **R3**, a participant's repeated interest in the narrative was unmet by the others, causing noticeable frustration.
- In all rehearsals, the participants often asked others for help, posed questions, proposed and tested conjectures, and made requests (e.g. editing labels or voting on each other's posts in a certain way). They also often reported their findings back to the group and, in rarer instances, summarized the group's collective knowledge. **In R3**, when a participant theorized that everyone would have to lose their labels to progress, the group coordinated an effort to downvote all of each other's labels. **In R5**, these behaviors were present, but they were often directed at solving impediments to narrative understanding. **In R5**, the frequent oral communication allowed trivial resolution of WCs by collaboratively looking for the messages that it featured; when part of a character's message was "censored", participants discussed ways of overcoming this.
- There were participants (e.g. **R2**, **R5**) which took on noticeable leading roles, coordinating the aforementioned group efforts, and proposing most conjectures. **In R2**, this "leader" was knowledgeable about ARGs. **In R5**, participants brought up parallels to other ARG experiences during the rehearsal.
- Participants also showed capacity for self-moderation. **In R4**, one participant changed a label name to an expletive; when asked to change it, they obliged. There were moments in **R5** where participants spoke over each other, causing a participant to be ignored for an extended period. Once participants became aware of this, they corrected the injustice and reconciled, directly telling more "dominant" participants to be quieter and wait their turn (who later apologized).
- Whenever they could not reach any other participants (e.g. **R0**, **R3**), sent to the end-game screen, participants often displayed stress or anxiety through their messages, transformed into happiness or relief when resolved.
- Whenever labels were edited (color or name), small exchanges were common: from recognizing the change, short discussions about related topics (e.g. **R0**, **R3**), to rare occasions that sparked moments of lengthier, more polarized roleplay. **In R2**, this manifested as a divergence between a "BARBECUE" label, and the "BAKERY ROBBERY GROUP", created in response and roleplayed accordingly.
- Occasionally, participants "broke character" or discussed out-of-game events, using each other's real names (e.g. **R0**, **R4**, **R5**), directly calling out or addressing the puppetmasters (e.g. **R3**), or mentioning other people or events.
- Participants tried using unexpected forms of expression in-platform, such as using *kaomoji* or ASCII art (**R0**) or using Morse and binary to encode their messages (**R3**). **In R4**, although they could not do it, participants expressed a desire to be able to post GIFs and "tag" other users. Playful moments also emerged, as when they started completing song lyrics together (**R0**).
- Some participants (e.g. **R1**, **R4**, **R5**) directly engaged in discussions over the meaning of a label's name. **In R1**, there was an interesting exchange between an NPC and a participant about what it could mean to be a "blue person"; **In R4**, the exchange started with "why are you green?" and what that meant, with one participant proposing interpretations for it (lettuce and

- sustainability) and a brief discussion on its real meaning. **In R5**, some participants discussed the meaning of the “lobster” label in the narrative, theorizing a connection to *The Lobster* (2015).
- At one point **in R3**, an NPC expressed distaste for a label's color, prompting a participant to call them “kinda racist”. This prompted a discussion about what exactly about it was racist, momentarily attributing it to a label and drawing comparisons to real-world political figures.
 - Attempts at polarizing the group on any given topic were varied, but not too fruitful; **In R2** and **R3**, participants expressed preference over one side before de-escalation (a discussion on football clubs led to a more heated discussion, but eventually faded). **In R5**, polarization attempts generated visible excitement and discourse, but were mostly overrun by narrative-related topics.
 - The participants’ clear investment in the narrative layer **in R5** prompted us to change our roleplay approach, “introducing” one of the narrative’s characters as an NPC. This caused surprise and excitement among the participants, who were eager to consult her as if she were an “oracle”. This relationship evolved into parity and collaboration as players collectively brought themselves up to the NPC's level of knowledge.
 - Some participants questioned if all users were “real” (e.g. **R2**, **R5**), sometimes suspecting puppetmasters, “bots” or “artificial intelligence”.
 - Some participants deliberately used gender-neutral language (**R2**, **R4**), despite none of them identifying as non-binary. **In R5**, we subverted a participant's assumption of the “special” NPC’s gender, reinforcing the experience’s theme; the character corrected them, which prompted a brief discussion on misgendering.
 - Some identity-related terms emerged, especially in **R4**. After failing a WC, one participant ranted and called “Bubbles!” a “woke reddit”. “Woke” has become an online “catch-all” for content related to identity politics, left-wing ideology, and culture wars. This participant also called an NPC a “baiter” and a “grifter”, recognizing their status as a purposefully de-stabilizing or polarizing element.
 - One participant **in R3** expressed distaste for the separation caused by the labels, stating “it’s difficult to try to talk just to the ones that have our color, it shouldn’t be divided ;-;”.
 - **In R5**, participants were able to draw clearer conclusions about the themes and message, one directly theorizing that “they don’t want us to be ourselves, they want us to be in a group”, or later “I think they want to control us”.

3.1.1. Individual Interviews

- In several rehearsals (e.g. **R0**, **R1**, **R5**), participants described the experience as “an unique social experience” or “a collective mystery game”, where collaborative sensemaking communication was crucial, valuing both their exploration as well as others’. Participants often praised the experience’s chatting and opinion-sharing characteristics (e.g. **R2**, **R5**). Interacting with the group - and the emergent dynamics (both cooperative and competitive) - were often highlighted (e.g. **R2**, **R3**, **R4**, **R5**), and participants reported feeling happy in those moments (**R5**). Most participants in **R3** said they were actively trying to understand how the experience worked, while others mentioned following others’ requests. **In R4**, the two most active participants admitted to trying to engage the other participants in conversations, but that the topics rarely “stuck”, adding that the constant flow of messages may have caused this. **In R5**, participants focused heavily on the “mystery” present, comparing it to the open-endedness of RPGs.
- Two participants in **R4** admitted to voting on labels based on if they “fit” the message or their personal values. Two others mentioned adjusting their speech based on labels or topics introduced by other participants, influenced by the “tags” received.

- Several participants (e.g. **R3**, **R4**, **R5**) drew comparisons with other social media platforms (X, Reddit, Discord), saying that the labels were community-voted versions of hashtags (X) or tags (Reddit).
- Regarding themes that emerged:
 - **In R2**, “social interaction”; “cooperation”; “democracy”; behaving or not according to a group’s expectations; social media, “how they influence our way of thinking about things” and how “people also can’t exist outside those [social] media”; creating community and how “subgroups” are formed; “discussion” - sharing opinions and evaluating others’ opinions; or what the initial “void” of an empty forum creates.
 - **In R3**, one participant characterised it as a “communication game”. Many mentioned how changes in the labels reflected changes in users and their interests, and vice-versa. One participant called the experience a “social commentary” on labels and how easily people change opinions based on others. Another interpreted it as the challenges of communication and collaboration “as a community” toward a common, unknown goal.
 - **In R4**, a gamified social media platform; socialization; evaluating interactions between people; “categorizing people”; “cataloguing speech”; “understanding how people align themselves with others” and “meeting people”.
 - **In R5**, “communication”, “trying to think more about things because they aren’t so crystal clear”, representing that “in society we try to impose groups a lot, and that many times there are no «right» groups”, “groups in society”, “that not everyone fits into a preset group”, “there are no labels”, “a person needs to fit into what’s available and learn how to live with that”, behaviors in social media, censorship, “an environment of control”, “a chat app with different groups that critiques the labels that society imposes on people, sometimes without knowing them, solely based on appearances”, “why we need these so-called «labels»”, “it is common, mainly on the internet but also in real life, for us to always have these things that define us: our tastes, our distastes, and it’s always like that, we can’t simply be people, normal, that despite not having anything in common with each other, we can still talk” and “a union of different people working toward a common goal”.
- Participants (e.g. in **R1**) generally enjoyed the inclusion of NPCs, with two characterising it as a surprising addition (one considering it a mediator, another as “more disruptive”).
- Several participants (e.g. **R2**, **R3**, **R5**) thought the experience felt incomplete, or that they did not reach its final goal, with lingering questions about the narrative or the mechanics. One participant in **R3** stressed their frustration that the others did not accompany them in their investment in the narrative. **In R3** and **R5**, some still felt a lack of guidance or a sense of incompleteness, as if more events were supposed to have taken place, mentioning “a mystery to solve”.

3.1.3. Group Interviews

- In all rehearsals, participants were active in discussing their interpretations of the experience’s features, often trying to reach agreement or a better collective understanding by sharing their different perspectives. Participants discussed their divergences, either eventually coming to an agreement or “agreeing to disagree”. If a mechanic had not been experienced by all participants, those who did described it (e.g. **R4**). In earlier rehearsals (**R0**, **R1**), they generally had more trouble reaching any conclusions on features.

- Participants of **R5** thought that collaboration was “obviously” needed, (e.g when solving the WCs); one added “it was confusing, but you could easily manage it with everyone, we needed that team work for it to be done”.
- Some participants **in R4** admitted to occasionally downvoting someone “without even looking at the tag” when a certain person bothered them or made them angry.
- Some participants (e.g. **in R0, R1**) valued the level of abstraction and open-endedness. One participant in **R0** added that future improvements should embrace “the freedom and exploratory nature of the game”.
- Participants (e.g. **R0, R2, R5**) identified the narrative layer as a crucial factor of the experience, and even a learning tool (**in R0**). Regarding the end-game messages, **in R2**, they were identified as important in understanding the experience; **in R3**, one participant believed that they were meant to reflect on having no labels; **in R5**, participants discussed their meaning and significance to the narrative, drawing parallels to real-life scenarios.
- **In R0, R1, R3**, some participants thought that playing again would not be very helpful, since they could not understand the experience’s goal. In later rehearsals (e.g. **R2, R4, R5**), interest in a second run grew, and some participants specifically stated that the group discussion was crucial in understanding what they could have done more.
- **In R2**, participants compared the number of users and participants, theorizing about the puppetmasters’ involvement. **In R3**, participants tried to guess who the NPCs were, resulting in a playful moment where they “pointed fingers” at each other.
- One participant in **R5** described the experience’s goal as “breaking the system”.

3.1.3. Open Feedback

- Participants were curious about different topics, asking to read through the completed end-game message (e.g. **R2, R3, R5**), wanting to know about the experience’s end-goal and meaning (e.g. **R2, R3, R5**), or further clarification on certain mechanics (**R2, R5**). In both **R2** and **R5**, several participants were very enthused to know that the experience was meant to be an ARG. **In R3** and **R5**, when told that the experience was about identity and labels, some expressed happiness that their personal interpretations were close; **in R5**, one participant thought the genre was befitting of the topic, and others were curious about aspects of its inception, ideas, design, and hints of a possible narrative continuation.
- **In R3**, some participants were curious about some messages being changed during the experience. They eventually concluded that this was done by the puppetmasters to moderate their exploits of the platform., and they apologized.

4. Discussion and Design Insights

This study proposes a game design and prototype aimed at designing Alternate Reality Games for exploring social identity, representing a mixed-media exploration of technology for potential social intervention. The analysis revealed various process dynamics that players underwent while engaging in diverse social exchanges to grasp the game’s goals, themes and intentions. Based on these insights, we propose a list of design principles aimed as our **findings**, alongside the designed prototype, to guide further research in ARG design for social transformation:

4.1. Design-in-Play: Co-Design Process Built on Players’ Appropriations

We designed by rehearsing: multiple types of intervention came from unpredicted dynamics during gameplay, and the need to respond to them. In later rehearsals, accidents turned into intentions, attempting to purposefully recreate certain scenarios. Given the experience’s open-endedness, encompassing realized dynamics, thought-of but unrealized dynamics, and yet unthought-of dynamics, the design could not be all-encompassing. The metaphor of the “bonsai artist” comes to mind: the participants, as the bonsai, choose which branches (dynamics) to invest

their energy into, and the direction that leads them to (emergence); our task is - locally in each rehearsal and globally as we iterate - to be observant, to facilitate and moderate that emergence, feeding or pruning dynamics as they further our goal of boosting the “becoming-aware” process on identities. Oftentimes, it was fruitful to ignore established “rules” due to promising emergent dynamics or new appropriations (particularly in R5). Introducing and roleplaying as the new NPC yielded very positive results and revealed design possibilities to refine and more purposefully apply in future rehearsals.

This also speaks to the “design-in-play” aspect of the experience; participants are co-designers, and we (as puppetmasters) adapt what we interpret as their intentions into real-time interventions. These live responses generated significant interest from participants, which helps keep them focused and invested. When we bring participants into the design process, we surpass the limited vision of the individual designer by embracing others’ subjective experience, culture and worldview, increasing the design space that can be explored.

4.2. ARG Design Proposal as Generative Theory

The design proposal for an ARG can become a generative theory [15], creating a series of conditions for the emergence of social phenomena and an alternate reality co-designed by the participants that explore it. By designing the experience, we build a theory about how people organize themselves and their actions (social phenomena); this lets us create an infrastructure (the experience) designed to influence the social phenomena in a certain way, leading to the emergence of expected and unexpected phenomena.

4.3. ARGs Generate Emergent Social, Identity and Power Narratives

ARGs, as roleplay experiences (even when close-ended), allow for the interpretation of a role, where the immersion into an alternate reality and the participants’ roleplay (even as “themselves”) generates an emergent narrative - like an actor following a script (whose interpretation scope is limited, but nonetheless possibly emergent). Here, we not only have each participant's interpretation, but the collective interpretations that emerge from group discussion and the plenty narratives that emerge from action: discussions on social media, culture wars, internet culture, other games and ARGs, tensions between participants and possible emergent themes are all materials brought by participants’ subjective experience and superimposed, thus constructing their own narratives of exploration and social reflection.

4.4. ARG Design Can Open Doors to Balance Power Dynamics

This open-ended experience playing with participants’ agency and collective choices, especially dealing with the concept of identity, opens new opportunities for research regarding different power dynamics, and how those can be played and balanced during the experience. Different power places, tendencies, stereotypes and injustices could easily emerge in such a gameplay environment, where they could be deconstructed and led to a collective social reflection.

4.5. Limitations and Future Work

This case study is not without its limitations. In hindsight:

- The 1-hour time limit is likely too short to exhaust the experience’s potential; oftentimes participants were still familiarizing themselves with mechanics or had unrealized plans by the time the rehearsal was finished. Besides, a longer experience could also lead the participants closer to the identity theme.
- A larger number of puppetmasters could more timely explore improvisations, ensuring in-sync and efficient communication between them.
- The puppetmaster’s improvisation, despite its inherent subjectivity, is crucial during play to instigate new interventions, but should be balanced to not remove the participant’s agency.

Future work involves different formats of rehearsals, such as doing them online and for longer periods of time, or introducing guidance to accelerate the initial sensemaking and progress faster into complex dynamics. Given our goal toward identity reflection and emancipation, a second goal includes rehearsals with younger participants (mid-adolescence), given the intense identity development at that stage [18].

Coming back to our initial research question, this study was able to develop an iterative RtD experience with ARG participants. The resulting gameplay was successful in evoking the theme of identity, although not yet thoroughly debated. As such, there is the potential opened by this early-stage prototype, alongside the proposed four design insights that serve as the main findings of this research. From them, we can continue to address the limitations and further iterate on them, ultimately aiming for how an ARG design can be explored in social interventions that may lead to socio-technical transitions towards a transcendence of the *status quo*.

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Abbreviations

The following abbreviations are used in this manuscript:

ARG	Alternate Reality Game
NPC	Non-Playable Character
RtD	Research Through Design
WC	“Wellness Check”

Appendix A

Appendix A.1. Questions for Individual Interviews

- “How would you tell a friend what happened here?”
- “What did you try to do?”
- “Describe a moment that surprised you.”
- “Describe a moment in which you felt anxious.”
- “Describe a moment in which you felt happy.”
- “What did the experience mean to you?”

(Starting with Rehearsal 2, we added a follow-up to this question)

- “If you had to guess what the main topic or theme of the experience is, what would you say?”
- “What else did you expect, and when?”

Appendix A.2. Questions for Group Interviews:

- “How did the labels work?”
- “How did the ‘check’ and ‘cross’ buttons work?”
- “How did the questionnaires work?”
- “What did it mean for someone to have the “bubbles” icon?”
- “How do you interpret the long binary code message?”
- “Did any of you try to do something with that code when it appeared?”
- “Do you feel like a second playthrough would help improve your performance or understanding of the experience?”
- “Do you have anything to add that does not fit any of these questions?”
(Starting with Rehearsal 2, we introduced two more questions.)
- “What collective efforts emerged?”
- “What is your opinion on the participants that were not present?”

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