# Underdogs & Superheroes: Designing for New Players in Public Space

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## 1. Abstract

We are exploring methods for participatory and public involvement of new 'players' in the design space. Underdogs & Superheroes involves a game-based methodology – a series of creative activities or games – in order to engage people experientially, creatively, and personally throughout the design process. We have found that games help engage users' imaginations by representing reality without limiting expectations to what's possible here and now; engaging experiential and personal perspectives (the 'whole' person); and opening the creative process to hands-on user participation through low/no-tech materials and a widely-understood approach.

The methods are currently being applied in the project Underdogs & Superheroes, which aims to evolve technological interventions for personal and community presence in local public spaces. The outcome will be a both a series of installed prototypes and an applied methodology evaluated from a variety of perspectives, including interface and interaction design, creative practice and technology development, and impact on society and public space. Our intention is to create design examples relevant for a wide variety of domains and disciplines and to develop methodological examples that contribute to an open, public and private sector discourse about inclusive processes for developing technologies in the future.

## 2. Introduction

Technology increasingly pervades our everyday lives and environments, offering the potential of seamless connectivity and unprecedented access to information and communication. Visions of a future of ubiquitous computing enable us to imagine technology as simply another material, as available to us as plastecine or electricity [19]. However, the current reality in our everyday public spaces is that technology development appears to be heading down two divergent paths. On one hand, large-scale technology infrastructures, driven for the most part by the media or private commercial concerns, are applied generically and universally. On the other hand, specialized consumer products are proliferating to the extent that our pockets are overflowing with 'personal' devices. Between these extremes there appears to be a wide space of possibilities for technology and design.

We would like to believe in the potential of computational technology as a material interwoven seamlessly to support into everyday life. We would like to believe in such well-designed visions of the future as those proposed by Philips [22], where devices are not personal because they take up personal space but because they support flexible and open styles of to support the flows of our evolving lifestyles. We would like to imagine a future with Intel's wireless, walkman-sized server devices [18], which could effectively transform each of us into nomadic public broadcasters. While these are inspiring (and perhaps even

eminent) possibilities, realizing the design of technology systems that take into account social as well as human factors and shared as well as private space is a tremendous challenge. This requires that we actively work to create methods of collaboration, innovation, and action to engage multiple voices in the design of technology for our public lives and local spaces.

The design research project Underdogs & Superheroes begins with speculation: How might the development of local technology systems empower individuals and communities? Could the design of interactions with such systems become a meaningful and tangible part of everyday life? Might public spaces be the ideal site for increasing and making visible means for sharing, awareness, and communication? At a time when public spaces seem to increasingly politicized, privatized, and policed, we are exploring alternative scenarios for design of public technology systems for expression in local and everyday spaces. The project is, however, not only about designing examples of a social and inclusive future, but about finding methods for inviting collaboration and participation in the evolution of such visions.

*"If there is an ambition to make public space that raises the stakes for the unknown, for the unexpected, for the moments of status-free intimacy, then the strategies and methods of working in that space have continually to exceed the normal, the expected, the conventional"* [1].

## 3. Underdogs & Superheroes

Underdogs & Superheroes investigates new means for people to express themselves in public space. Our intention is to design a public system for individuals to intervene in their physical environment. We are evolving concepts for overlaying digital expressions in the built urban environment, considering various multimodal media, a systemic design that enables interactivity at multiple locations, and possibilities for leveraging off of existing devices and technology infrastructure. While concentrating on developing and inserting prototypes in the city as examples, we are also developing a vision of how widespread installation could transform the presence for local expressions in the city.

Rather than starting with a concept, a technology, or a business plan, Underdogs & Superheroes begins with a methodology for user involvement from the start. While investigating the range of design and technical possibilities, our intention is to open up the concept as much as possible to public input – thus questions of content, scale, and form become sites of investigation rather than constraints imposed by existing media, infrastructures, and information systems. Our design challenge has thus been as much about finding appropriate means and methods for examining these questions as it has been about 'solving' them. It is our methodological approach to the project that we will focus on describing in this paper.

In Underdogs & Superheroes, we have applied a game-based methodology – a series of creative activities or games – as a means of engaging people experientially, creatively, and personally in the design process. In this paper, we will discuss the theoretical background and related methodological approaches, present in detail the games played to date, and discuss the applied methodology.

Since November 2002, we have developed and held 5 design 'games' involving in total approximately 45 people  – or 'players' – in the project:

{ Game 1 } Superhero survey: a correspondence format online since November – people are invited to share their aspirations for personal, societal and urban transformations

{ Game 2 } Automatic mapping: a psycho-geographic event for locating emotions and transitions in the city

{ Game 3 } Public mapping: an ongoing participatory map locating sites for action, respite, and engagement in Göteborg

{ Game 4 } Story of the object: a workshop held at Trinity College Dublin examining personal objects as tools for transforming places and situations

{ Game 5 } Superpower prototypes: a set of interaction props for behaving and misbehaving in the streets of Göteborg

**4. Game Play**

Principles of game and play theory guide have guided our development of game-based methods for user involvement in design. Understanding game play requires, to some extent, understanding the broad distinctions between play and games. While distinctions between the two are admittedly controversial, we have chosen a general understanding that effectively supports application of the theories to our methodological domain.

Play can be understood as a voluntary **action** extending imagination in time and space whereas a game creates a **format** for play to take place separated from ordinary life both materially and ideologically. Play can exist alone as a **pure activity** free of worldly constraints without past or future. A game offers a controlled framework including immersive narratives, rules, and social factors for play to transpire.

Game play is an occasion defined by the dimensions of the stage and duration of the spectacle [12]. Game play absorbs the player intensely and utterly allowing them to stand outside of 'ordinary' life and to proceed within its own boundaries. The player assumes a role, entering into the fantasy and illusion created by the combination and interplay of game rules and narrative thereby losing his or her real identity for the duration of the game. Games stir the imagination, engaging players emotionally, intellectually, physically and socially. Through enactment, players are not only immersed in the space of the game, they are engaged in actively creating – together as social beings and through the act of playing – the personal and social functions of the game.

In practice, it is the set of principles outlined below that constitute a general framework for game play as a means and methodological framework for design.

**4.1 Immersion and Suspension of Disbelief**

"*A game is a way to create another reality and allow people to enter into it* [2]." The most fundamental aspect of game-play is the willing suspension of disbelief, a term coined by Coleridge in 1817, and widely applied in game, literary, and performance genres. Players must be able to loose themselves within the narrative created during game-play through the act of making believe. This act of stepping inside the fictional game space should not be obligatory but have a sense of free will attached to it. Instilling a suspension of disbelief

creates a safe haven, a world separate from reality, for people to access and express themselves within. Once people are immersed in a game experience, they are able to articulate their internal thought processes and emotions more easily.

## 4.2 Enactment

A step beyond instilling a suspension of disbelief is allowing players to 'actively create belief' [17], empowering the player as an actor inside the game narrative. One way to engage players in this enactment is to increase the agency of the player in manipulating objects, tools, or accessories. With a greater sense of control and investment, actions performed with these interaction mechanisms, such as choices or decision-making in game play, is matched by an increased feeling of enthusiasm and tension, drawing the player further and more deeply into the experience. Players who are personally and emotionally engaged tend to reflect and learn from their experience in a more a more spontaneous and intuitive way.

## 4.3 Rules and Boundaries

Game-play is governed by rules. Boundaries or rules of time, space and rituals of completion must be observed for a game to occur. These rules help create and reinforce the game fiction. For example, a chess player following the rules of the game is in fact creating their own bounded space outside the 'laws' of the real world because there is no actual activity in the real world that corresponds with the act of playing chess. Another example is in playacting games, where the boundary of the stage and the applause of the audience define the space and time of a game through physical limits and social rituals. Rules exist as support for imagination and play. Like the applause, breaking the rules is like breaking a spell, shattering the illusion of immersion and the temporary identity with an enacted detective, pirate or superhero.

## 4.4 Social Function

"*Games attain their goal only when they stimulate an echo of complicity* [7]." Social aspects of game-play mimic real life social order. Although it is possible to play alone (painful lonely spectacles), most games depend on social competition and rivalry, reflecting stimulus and response, provocation and contagion as well as enthusiasm and shared tension. Socialized aspects such as competition and cooperation provide a heightened level of emotional engagement in group play. There is a certain pleasure, thrill, or excitement of working for and against other players. Social outcomes can't be foreseen or envisioned – they occur spontaneously in the situation of play. Once a group chooses to engage in a game, the outcome is not only the end result of the game but also an unpredictable evolution of a group identity through the act of playing.

## 5. Related work and methods

Our game-based methodology involves rethinking the design process in terms of the means and techniques available for exploring the design space and involving new participants. While guided by certain principles from game and play theory, we have been greatly inspired by performance techniques, which tend to have a great many of the concerns and even mechanisms of games in common. Sharing, for instance, a discourse about the suspension of disbelief, performance offers techniques such as Stanislavskij's 'magic if' and Boal's Forum Theatre that have been well explored in the design domain [3, 4]. We have found

performance to be particularly well-developed in regards to design practice and methodologies – for example in participatory and experience design – and thus highly relevant as inspiration and examples of applied theoretical principals.

Game and performance genres provide techniques for imagining and evolving concepts as well as the means for coordinating a complex activity involving reflection both in action and in context. They provide sets of rules and expectations that structure participation in an activity while supporting imagination and play. Techniques such as enactment, narrative, and improvisation support immersion in characterizations and situations, structured evolution of concepts, and frameworks for inventing new possibilities. Through the application of temporal and physical formats, such as procedures and props, they structure participation and interaction, effectively creating a separate safe space and time for participants to engage in imagination, play, and creative activity.

## 5.1 Enactment and participant engagement

Game and performance methods are used by designers to immerse themselves in and expand design possibilities. In Burns et al., informance and bodystorming techniques were applied by designers in the studio, and functioned as a bridge between user observations, idea generation, and as a means of communicating concepts to outsiders [6]. In the experience prototyping practice at IDEO, they have built full-scale 'sets' of use contexts (for instance, airplane interiors) and designers have personally adopted user ailments (such as simulated heart defibrillation) [5]. The focus troupe, discussed by Sato and Salvador, is a method for involving designers, actors, and potential customers in playacting, debate formats, and problem-solving design concepts [20, 21]. In all of these approaches, techniques involving participation through enactment enabled empathy among designers, increased immersion in the design space, creation of a common conceptual ground, and emotional investment.

Other approaches, frequently inspired by participatory design, take such techniques out of the design or research studio in order to involve users and usage contexts more directly in the evolution of design concepts. Iacucci and Kuutti discuss their method for situated and participative enactment of scenarios, which involves shadowing users while they act out scenarios in contexts of use in daily life [13, 14]. Howard et al. take theatrical performance and workshops in the streets, where scenarios are acted out with collections of props [10]. These approaches apply new techniques to involve more factors and a new spectrum of participation – including users as participants, incidental users in their natural environment, and accidental spectators.

## 5.2 Rules, roles, and activity formats

Inevitably, these approaches require the coordination of more factors – not only are there scenarios and props, new participants and roles, and the unpredictable experiential factors of everyday lives and real life contexts. Games, performance techniques, and participatory processes offer techniques for coordinating and sequencing such factors during such a design session.

For instance, the focus troupe borrows the 'six hat' method to create distinct roles for people involved in the process and the participatory board game method structures turn-taking and a clear start and finish to the activity. In participatory design, design games are an established technique for structuring interaction between designers, users of a system, and concepts. Ehn

and Sjögren apply what they call 'design-by-playing' as a physical format (in the form of a board and card game) and temporal format (clearly structured by a beginning, middle, and end) for guiding participatory sessions [9]. Murray's work in interactive narrative suggests mechanisms such as masquerade, dialog or language, and the use of objects. She defines three techniques for inducing immersion: structuring participation as a visit, the use of masks or avatars, and seamless interaction with objects and others [17]. All of these approaches apply carefully crafted formats in order to continually focus attention, guide participation, and evolve the discussion through the duration of the activity.

## 5.3 Props and Imagination

Embedded in these new and hybrid formats, artifacts and props take on new definitions and roles. Typically, design process incorporate prototypes to explore aspects of the final system though they can take extremely different forms, including paper prototypes, materials and texture samples, and throw-away models. Such low or no-tech objects can be a valuable means of creating common ground among stakeholders, providing a shared language and conceptual references, and a starting point for hands-on form exploration during participatory sessions [11,16]. Besides objects intended to represent a possible outcome, props are applied in the design process to spark imagination, guide discussion, and support an activity structure, as exemplified in Ehn and Sjögren's use of cards and physical game boards in their participatory sessions.

In much of the work described here, props are tightly embedded within scenario and enactment activities. In such approaches, aesthetic and formal choices are not necessarily (or not at all) representative of a possible outcome but function as a support to the design activity itself – for instance, to guide the enactment of a scenario. Howard et al. describe the evolution of the physical props during a single design session, where functional capabilities and physical properties of multiple props are chosen and added at specifically programmed points during enactment by users [10].

Brandt and Grunnet describe the use of three distinct types of physical props applied on particular occasions during a design process. These included not only the typical mockups of product models, but found objects representing symbolic functionality and generic cardboard shapes as narrative props around which a drama could be performed. So-called 'fairy tale' props facilitated the design process through metaphor, clearly setting a fictional space for users to interact with objects [4]. Similarly, 'magic things' in the work of Iaccuci and Kuutii are props for envisioning future scenarios [14]. Such objects evoke the use of form in conceptual design, as discussed by Dunne, where formal abstraction allows objects to be significant in the world of imagination rather than the world of production [8].

## 6 Examples from our previous work

We have been involved in several projects prior to this that apply certain principles and methods from games and performance genres. This work has been the impetus for developing and refining the specific methodology based on game play that we describe in this paper. We pose two of our previous projects, Faraway and Mixers, as examples in the evolution and application of the methodology we are currently applying in Underdogs & Superheroes.

## 6.1 Faraway

Faraway investigates game-based user methods for designing alternative means of emotive long-distance communication, that incorporate sensory and symbolic aspects of emotions and convey a sense of presence between people, who are physically distant but emotionally close. In order to gain access to individual practices and personal desires about emotive long-distance communication, Faraway employs elements of game play throughout the design process. This is accomplished integrating elements of surprise, suspension of disbelief, boundaries and formats for play as well as props and objects as carriers of media.

The Faraway project was carried out by Kristina Andersen, Margot Jacobs, and Laura Polazzi while research fellows at the Interaction Design Institute Ivrea, which is full of people from different countries who are away from home and participate in long-distance communication with loved ones on a daily basis. Institute students, researchers, staff and faculty were chosen as players for the If Only Games, which are the Faraway method for inviting people to play, use and express their own special emotional condition through game play.

The start of the games occur when If Only game cards 'appear' on the desk of the participants with instructions for tasks, experiments or games to perform or play. These introduce an imaginary character called Distant One and build up a suspension of disbelief through a particular style, language, and graphics. After each game, results are returned to the players' desks at night where they magically 'disappear.' This setting of the stage and established rules is key in creating another universe of meaning and successfully suspending disbelief of the involved participants – the simple act of response to the cards by players denotes a willingness to surrender and lose oneself within the game space. Over the course of the project, three sets of If Only Games engaged players in a gradual evolution from documenting their real communication modalities to envisioning new ones.

The If Only game cards, as an example of the props and objects used in Faraway, exemplify how design materials become instruments for triggering emotional response and carriers of media both real and imaginary. *"Is there a better way for making people believe, sense, and feel that something is real, when it is not, than playing a game?* [2]"

**6.2 Mixers**

Mixers is a project for enhancing communications within a community of older people at the University of the Third Age, and was carried out by Ramia Mazé and Monica Bueno while postgraduate students at the Royal College of Art in London [15]. The final outcome was a series of tangible interfaces located in coffee tables for retrieving and sharing messages while socializing. During the design process, we engaged the users as experts on their needs and values as older people, as the volunteers who would be interacting with the system, and on what would work within their organization. Considering our users as design partners, the process of working with the community and building relationships among stakeholders was a creative activity in itself.

The design solution evolved through a series of site visits and participatory workshops organized around prepared props and other design materials. Our initial conversation revolved around specially-designed conversation cards with statistics on ageing and fictional technologies – through the device of provocation and myth, a meaningful debate ensued about their values, lifestyles and abilities. Later in the process, we applied props, role-playing and video scenarios to work 'in the field', to engage users comfortably and creatively in idea generation, and to facilitate direct experience and reflection in action.

Embedded in improvisational sketches in the users' home and university environments, props involved users in 'trying on' and engaging openly with rituals of interaction. Modular props made of craft materials were easily understood as sketches and users engaged freely in reconfiguring their own alternatives during enactment. Improvisation itself revealed unexpected roles for the system, such as communal messages as an excuse for starting a conversation with a stranger. Through narrative, performance, and hands-on activity, users were involved on a personal and emotional level, as stakeholders representing the community, and as creative partners in evolving the design.

## 7. Our approach

From our previous work, we have experienced that game and performance genres offer a conceptual framework and palette of techniques for engaging active and imaginative user participation. As guiding principles, we are developing methods to support suspension of disbelief during design sessions so that participants can immerse themselves fully in the possibilities in the design space. These methods are applied in participatory sessions where individual and group work is structured around game activities. Incorporating performance techniques and game mechanisms such as enactment, improvisation, rule sets, and temporal and spatial boundaries.

In our game methodology, we carefully design and stage participatory activities to create a space for participants enter into the design space and participate emotionally, experientially, and creatively. We accomplish this shift in focus and attention through the use of formatted worksheets and props that outline the rules, temporal parameters, and procedures to guide and document the activity session. Taking a fiction or narrative idea helps in transitioning into a separate imagination space – in this project we use the idea of Underdogs & Superheroes, which is elaborated in worksheets and props as a characteristic visual identity, written language, and style.

We have found that game methods can be effective throughout the entire design process. Various formats can be designed to support everything from discovery, brainstorming, processing findings, evaluating alternatives, to user testing. In the Faraway project, for instance, it was the game activity itself that launched the project, and to some extent, the direction of the project and the process was affected at each step along the way by the findings. Through supporting both reflection and action, game methods enable ongoing, reciprocal, and synergetic participation in the design process.

## 8. Underdogs & Superheroes Games

### 8.1 {Game 1} Superhero survey: aspirations, identity and potential transformations

Game 1 is an activity format for involving players emotionally and imaginatively through creating a superhero version of themselves. Setting the stage for subsequent games, players create their superhero identity and evolve a scenario of their hidden abilities and aspirations for personal, societal and urban transformation. As a paper format accompanying players through a day in their life, the survey was distributed and completed by correspondence by 11 players internationally in November 2002.

The format of the paper worksheet or prop is designed to engage suspension of disbelief through a complete fictional framework, the design of which encompasses a worksheet using comic book style graphics (Fig 1), and language and storytelling techniques to sequence blank storyboard frames to be completed by participants. After creating a superhero identity, participants tell the story of their transformation into a superhero, how they save the day, and they are asked to provide physical proof of their superhero personality – a mechanism that enforces that participants actively take the format out in the world to create their identity.
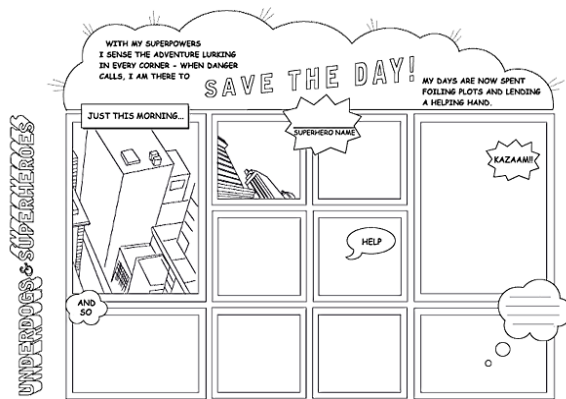


Fig1. Worksheet format for Game 1.                         Fig2. Chubacabre superhero

Collected results revealed personal aspirations, transforming situations, and potential means of empowerment in public space. For example, the superpower of a participant with the superhero identity Chubacabre (Fig 2) is actually their superhero disguise, which aided personal relaxation and comfort. Other participant responses included, Real Life Finder, who has the power to see latent healing power in natural objects, and Superbowl, a football with the power to free fellow balls from evil and emancipate the wrongly accused. Participants freely appropriated the worksheet format, imaginatively manipulating the boxes and storyline, carefully crafting and, in one case, coloring their responses.

An excerpt from the designed storyline in from Game 1:"*Our expert equipment has indicated that you are a being with extraordinary powers. We would like to ask you some questions to advance scientific thinking in the field.*" The process of identity-creation effectively set the context and mood for subsequent games and initializing the Underdogs and Superheroes narrative, and became a preparatory mechanism for entering the fictional space subsequent games.

## 8.2 {Game 2} Automatic Mapping

Game 2 is an internal design exercise locating emotions and transition in the city and was a solo event performed in November 2002. The impetus for this game is that of a newcomer orienting themselves to a city and its unfamiliar transitions and associations. Inspired by the Surrealist automatic writing technique and the Situationist practice of the dérive, a performer posed and reacted to sites while walking through the city, a location transitional spaces through free association and siting transformative potentials for personal (and implicitly superhero) states, emotions, and identities (Fig 3).
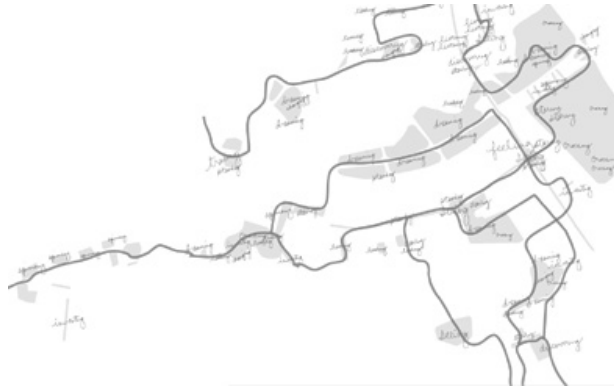
Fig.3. Documentation of Automatic Mapping

Drawing inspiration from aspirations revealed in Game 1, Game 2 was a means for the designers to immerse themselves in a fictional space while operating in the real world. Game 2 is a poetic mechanism for brainstorming personal emotional connections. Excerpts from the game include "*playgrounds: spinning, stairwells: leading, passages: inventing, squares: tracing, bridges: winding, revolving doors: singing, benches: dreaming…*"

## 8.3 {Game 3} Public mapping

Game 3 is a participatory mapping of sites for transformation, action, respite and social engagement in Göteborg. The format is publicly installed and ongoing participation is welcome – 30 locals and new-arrivals to the city have contributed since November 2002.

Participation in Game 3 is unguided and anonymous, structured by ad-hoc responses to printed questions. Each of the 5 questions has a color, such that subsequent responses placed on the map might start to visually indicate patterns or opportunities. Questions posed to the participants include: "*Superman uses a phone both the swap identities. Where do you go when you want to be someone else?*" and "*Where is your secret hide-out? Tell us about your secret place in Göteborg.*" Combining methods from both Game 1 and Game 2, Game 3 concentrates on immersing participants in a fictional story using a playful setup and resulting in real world information and participation. Game 3 provides a public forum for sharing personal stories.
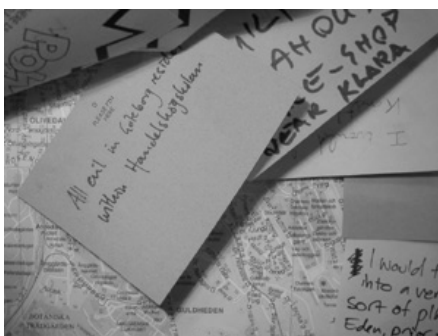

Fig 5. A sample response from Game 3      Fig 6. Game 3 publicly situated

Results from Game 3 were gathered on two levels, on the one hand, visual impression through color patterns that indicated common behavioral practices and opinions, on the other hand, individual and imaginative stories about real-life places (Fig 5, 6). We learned from the yellow cards – which asked participants what they would change about a place – that there could be a general need for increasing the standard of living, opportunities for social

response, and interaction inside the community. Responses on the pink cards pointed out a common border between good and evil inside a local high school and along a downtown street that represents a transition between culture and capital. The green cards, however, indicated that some of our language can be misinterpreted and may not be totally successful – responses from these cards are much less personal than the other cards and had the least amount of participation.

### 8.3 {Game 4} Story of the object

"*They might have seemed like ordinary objects kept in normal pockets. But in a secret life battling the forces of evil, everything has a special meaning.*" Game 4 examines the underlying meanings and emotional power invested in objects and their potential as tools for transforming real places and situations. Starting with an anthropologic 'excavation' of personal items in pockets and purses (Fig 7), the capabilities of everyday objects were detailed, amplified and applied through stories, scenarios and role-playing. The workshop involved 11 players at Trinity College, Dublin in December 2002.



Fig 7. Personal object from Game 4          Fig 8. Group work and hybrid object

For this workshop, the format from Game 1 is a basis for expanded enactment of the scenarios and use of real objects. The workshop moves from personal identity creation to the exchange of personal items and stories with a partner, to group teamwork (Fig 8). By the end, groups were enacting complete scenarios with multiple characters with complex motivations, and emergent super-objects embedded in dramatic scenarios. The design of this format involved the careful choreography of personal imagination, intimate reflection, energetic group interaction, and (across multiple groups) competitive and cooperative synergies for driving the process.

Building on social structures within the workshop situation, scenarios, characters, and objects (props) emerged as powerful collective stories. For example, a pencil case (an object from the initial activity of pocket excavation) is attributed with personal meaning of best friendship while someone else's hat is attributed with self-confidence. By the end of the workshop, the two have evolved into a single, re-combinant object with the power to "*shred time dimensions!*", to allow people to be in two places at the same time, and make people turn their heads. This object recombinant Together the hybrid object is embedded in an enacted group scenario about a girl who saves the day by stopping time and being in two places at the same time.

### 8.4 {Game 5} Superpower prototypes

Game 5 proposes a set of interaction props for behaving and misbehaving in public space. As prototype superpowers, the objects (accompanied by an 'inspection kit' – fig) engage players

in a product fiction about how mechanical, aesthetic and electronic properties could support new social engagement, self and community expression in the city. The game was enacted with 7 people ('prototype inspectors') in February 2003 in the streets of Göteborg.
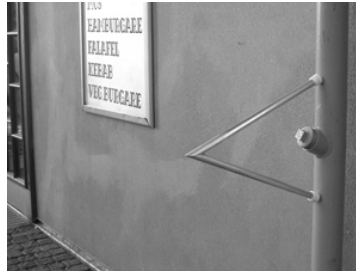


Fig 9. Inspection in Game 5    Fig 10. Locating the prop    Fig 11. Enacting the superpower

The seven interaction props vary in size and shape and suggest powers and modes of use. Endowing participants with the fictional role of 'prototype inspectors' set the stage for suspension of disbelief by combining an immersive narrative with game play and giving each player a different set of concerns and expertise. The props were first explored in a workshop context, where each participant performs tasks and 'inspection tests' on their objects (Fig 9), each of which has a particular formal affordance (such as sound projection through a physical form), mechanical or natural property (such as magnetism or sound absorption), or low-fidelity electronic behavior (such as modes of light projection). "*Second Sense: prototype model no. Y19 size L : Durable & practical for Invisible forces and yes or no answers…*"

Once participants are sufficiently invested and experts on their superpower prototype, the second half of the workshop involves participants in roving around the city in a team 'treasure hunt' for solving problems collaboratively (Fig 10) using the combined properties of the props to solve problems. Coordinating individual invention, imagination props, and a group treasure hunt format, Game 5 applied enactment to structure free improvisational  'prob solving.' This resulted in new and unimagined behaviors (Fig 11), total group identity, personal investment in the story, and advocacy of individual 'functions'.

## 9. Conclusions

We have applied a game-based methodology in Underdogs & Superheroes to engage participants emotionally, experientially, and creatively from the start of the design process. Inspired by game and performance genres and our experience in previous design projects, we have evolved a vocabulary of formats, techniques, and props to explore and invent within the space of design possibilities. In our work, games have provided an essential means of framing an effective design space, enabling inventive and embodied ideation, and structuring participation and interaction among participants and ideas. Game play provides principles and strategies for envisioning future or alternate realities, enabling collaborative and situated concept development, and increasing possibilities for engagement with a broad spectrum of participants and stakeholders.

In Underdogs & Superheroes, games have been applied for discovery of social and local aspirations, testing out concept directions in relation to these needs, and the development of prototypical functions, mediums, and systems. Props and worksheets have had a significant role in empowering players to engage personally and emotionally by negotiating a shift in focus from personal to public and from the designer to the user.  Careful application of design

in these artifacts has been an essential element in engaging imaginations and setting standards for participants to invest themselves.

Clearly, the role of design in such an approach becomes much more than creating scenarios and props; it becomes the staging and production of a public activity. Within this public activity, however, the method needs to incorporate an appropriate level immersion in the design space, a fictional space where users can comfortably engage in suspension of disbelief and free imagination.

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