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ToDiGRA

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Christy Dena & Brendan Keogh (Editors)

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# Introduction

**Christy Dena & Brendan Keogh**

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On 2 April 2016, the DiGRA Australia chapter held its inaugural regional symposium in Brisbane, Queensland. The goal of this symposium, in part, was to highlight and identify the broader scholarship happening on games beyond the usual geographic scope of Australia's other east-coast capital cities, and beyond the usual conceptual frames of game studies. The theme of 'wayfinding' was chosen to both guide paper submissions and the exploratory philosophy of the symposium itself. This journal issue presents a selection of extended and reworked papers initially presented at the symposium, representing authors from a range of disciplinary backgrounds, from across Australia and overseas.

'Wayfinding' is a concept popularised by Kevin Lynch in *The Image of the City* (1960). It refers to how we find our way, how we navigate

spaces like streets and parks and roads. The methods we use are also employed in videogames and websites and any ‘place’ where there are choices and chosen destinations. When we are finding our way, we usually are in at least one of the following states: orienting ourselves to figure out where we are, making route decisions about where to go next, monitoring our route to make sure we are going where we intend to; and recognising our destination to ensure we know when we’ve reached it. (Lidwell et al. 2010, 260). Being a regionally located symposium, the theme of ‘wayfinding’ was offered to frame the experience of those residing, working, and creating in the fringes. These are not mutually bound. Some may reside in the fringes but create observably mainstream games. Some may reside in regional cities, but work with those in the adorned hubs of the world. Wayfinding then refers more to the desire to keep moving and reach a destination, whether that destination can be reached by flight or insight. It offers an opportunity to ask not just ‘where are we going?’ but ‘how are we getting there?’.

These are questions that have never ceased being relevant to the academic study of games, which has always been less of a discipline and more of a disciplinary convergence of interests in a similar topic. Tensions have always existed in our discourse as we come to terms with the fact that not all of us who study games are travelling by the same means, nor are we trying to get to the same place. We see this broader issue of wayfinding arise throughout this issue, especially in regard to the tangible tensions inherent in videogame design: between player and game, between game and story, between player and developer, between developer and scholar. The papers presented at this symposium provided a varied constellation of perspectives on what it is to study games, but also shared a consistent concern for the phenomenological, of the feeling of being located and coming alive through interacts and movements with those around you—which itself feels relevant for the very experience of studying games scholarly.

The Queensland Symposium was a small, informal event to which potential presenters submitted abstracts. After the event, all the

presenters were invited to submit full papers that elaborated on their presentations for consideration in this journal issue, and the submissions then underwent a blind peer-review process. As one of the co-editors of the issue, Christy Dena, has an article in this issue, the review process was managed by Brendan Keogh to ensure anonymity was consistent across submissions. In total, four of the initial presentations are published here as full papers.

**Steven Conway** and **Troy Innocent** analyse their own approach to pervasive game design in *Urban Codemakers* through Heideggerian phenomenology, emphasising the importance of the player's "thereness" in design. Conway and Innocent speak of the weight of the city, and how its history, markings, and functions resist the designer's attempts to rework and reframe the space for the player. **Christy Dena** details a similar rub of concrete glimpsed in Conway and Innocent's article. Rather than a physical space as the starting point, however, the surface is that of the narrative designer's page. Dena argues that lingering tensions between narrative and game design are not due to any inherent traits of these modes but are instead the result of siloed design schemas. **Julian Novitz** approaches wayfinding in his article from a more traditional perspective of game criticism, with an analysis of the economy of survival horror title *Pathologic*. Whereas in-game economies of multiplayer games have received much attention in the past, Novitz looks at the economy of a single player game, and how it is used for affective means. Finally, **Pilar Lacasa**, **Sara Cortés**, and **María Ruth García-Pernia** provide an ethnographic report of their study into game design in the classroom, and the pedagogical potentials of game literacy.

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# Ways of Being

## Pervasive Game Design Ethos in Urban Codemakers

**Steven Conway & Troy Innocent**

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## ABSTRACT

In this article we describe our approach to pervasive game design and provide examples of how this ethos is embedded in practice vis-à-vis the *Urban Codemakers* game universe. The theoretical foundations for this approach are outlined and unpacked: moving from Heideggerian phenomenology to a Situationist aesthetic for intervention in urban spaces. We illustrate the necessity of emphasising an understanding of the player's *thereness* for design; best surmised in Heidegger's term *Dasein* (there-being). In so doing, we collapse any Cartesian distinction between virtual/real, material/ideal, and subject/object for game design, to instead, a comprehension of different phenomenological worlds within which the player is necessarily embedded and embodied.

## Keywords

Ontology, Phenomenology, Pervasive Game, Game Design, Psychogeography


## INTRODUCTION

> *"The total lack of ludic solutions in the organization of social life prevents urbanism from rising to the level of creation" — (Nieuwenhuys 1959, 315)*

The city is not an architectural space that often affords recreational, creative or otherwise playful public activity. Whether we think of cities as spatial organisations emphasising management and control, or of influential designers, architects and urban planners, such as Buckminster Fuller or the early Le Corbusier, advocating efficiency and homogeneity (epiphenomena of control), one does not often associate play with such spaces. The ideational and material content of the cityscape is consistently rigid and unyielding; play requires plasticity. Designing for play in cities is therefore a disruptive act, a phenomenological *melting*, as the embodied meaning of one's world liquefies, blends together with something alternate, alien to *Das Man* (Heidegger's term for the public sense of Being, 'they-self'): the purpose of pervasive game design is to provoke new ways of being-in-the-world.

In this article we provide an overview of the pervasive game *Urban Codemakers*, and discussion of its theoretical foundations, interwoven with analysis of particular sessions of play. Over the past six years, games of *Urban Codemakers* have been played in Melbourne, Ogaki, Istanbul, Sydney, and Adelaide. In each case, the character of the game has been shaped equally by the rules of engagement and the urban planning of the host city, specifically the neighbourhoods that provide the 'game level'. The game sessions invite engagement with, deviation of, and reflection upon the various layers of each city (e.g. technological, material, geographical, organisational, socio-cultural and economic); how it came to be, and what it is becoming. Ultimately, the goal of this

experience is to open up the urban space as a site of potential, with play as the medium for experiencing other ways of being-in-the-city. Wayfinding in such design is not primarily a process of navigating from one place to the next, but catalysing new modes of experiencing urbanity.

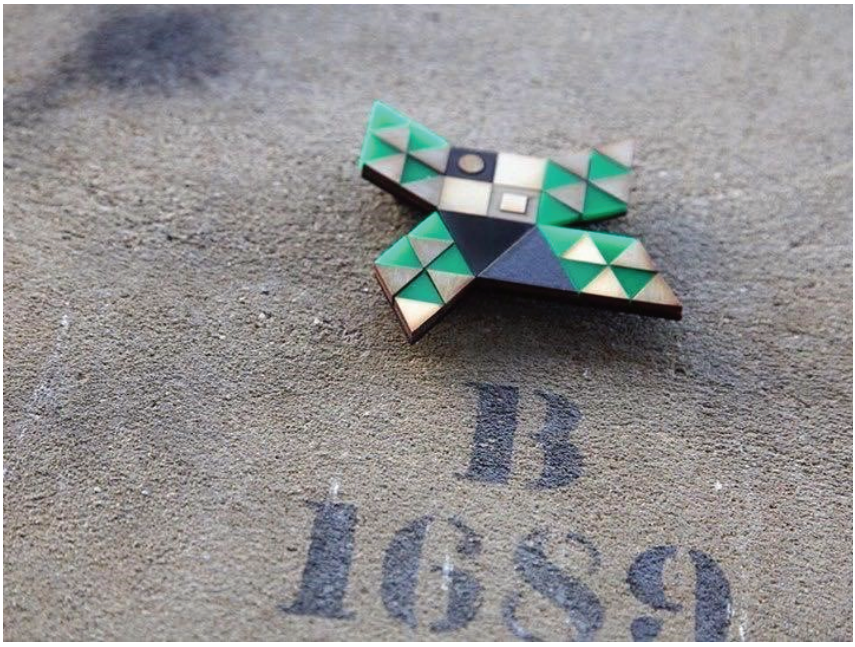


*Figure 1. An urban code in play during 2016 in Melbourne, Australia.*

## Urban Codemakers

The first *Urban Codemakers* game took place in Melbourne in 2010; although, it drew upon mappings and reinterpretations originating in the world of *Ludea*, established in 2005. This world of *Ludea* is defined not in terms of place but as a way of being. It was originally defined on the Ludea website as such: 'If you have played a game then you have been to Ludea. It is that space you go to when you are 'in-game', in the zone, or otherwise immersed in play.' Each of the nine games of *Urban Codemakers* played to date aim to bring this way of being to the city through play.

Although there are multiple versions of *Urban Codemakers* (and the game continues to develop), they share the same mechanics and play experience. Players choose one of three factions representing different approaches to urban space: *revert* to the past, *renew* the present, or *remake* the future. They then play out an urban adventure / treasure hunt style game over a period of days, or in some cases weeks, on the streets of the host city with the action narrated via an ecology of connected media in response to players as they explore the game. For example, in the 2010 game, eight different guilds (each aligned to one of the three factions) provided urban planning characters for players to roleplay in-game. Signage in Guildford Lane indicated that these were actual guilds recently opened in Melbourne, with further evidence provided via photographs of guild workers (see Fig. 3) operating within the city facilitating the game. Images of the guild signs accompanied by short descriptions appear throughout this text indicating the typical narrative flavour of the games, and various approaches to urban planning in the *Urban Codemakers* game universe.

Urban codes (defined in detail in section 1.2) are the main resource in the game. These are placed by the 'game masters' to delineate the game space and lead players to locations in the game – images and clues appear on related websites and social media feeds. Marking a location with an urban code appropriates that place into the game world and enables its mechanics: find, collect, claim. Each code claim earns points (in some variants codes have different point values or enable strategies for bonus points) for the player and their faction, and the faction with the highest score renames the city.

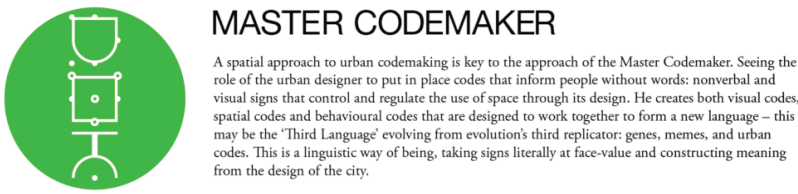


*Figure 2. The in-game description of the Master Codemaker guild.*

## En-coding

Within *Urban Codemakers* the experience pivots around the discovery and collection of the ‘urban codes’: material markers of laser-cut plywood and acrylic (see Fig.1). The design of these markers draws upon the pictographic language used by transients during the Great Depression, the psychogeography of the situationists (described in section 2.2), the play community of the new games movement, the world-building politics of micronations, and the technology of mixed and augmented realities. Equipped with appropriate software and a mobile device, the player may activate the urban code artefact (see Fig.1) as a machine-readable code and reveal further information via a digital layer. Through repeated scanning of multiple codes the player may find patterns, such as sounds attached to codes of different shapes and colours, becoming aware of synaesthetic relationships encoded by the designer.

The urban codes are oriented to shift players into modes of being where the narrative of the game has an existential significance. Whilst Gadamer, following Heidegger, spoke of the process of understanding as a hermeneutic circle, wherein understanding is a constant process of negotiation between the text and one’s broader being-in-the-world (1976), we alter this slightly by adding the third dimension of height to the metaphor: whilst one’s understanding is certainly cyclical, it is also vortextual, moving up and down between various modes of experience. Borrowing from Erving Goffman, we term this experiential movement *keying* (either upkeying or downkeying; see Conway & Trevillian (2015)). Further, as is emphasised by the vortex (rather than circle) metaphor, design as a practice intends to suck you in, or throw you out of its world.


*Figure 3. Urban codemakers in action during 2010 in Melbourne, Australia.*

Generally speaking, in games it is possible for participants to key between three levels of being-in-the-world: Social, Operative or Character (SOC, see Conway & Trevillian (2015) for an in-depth overview), each providing a distinct ontological accent. In the Social, horizontal movement may occur between various social roles: worker, consumer, friend, mother et cetera, but play does not exist until one moves vertically, upkeying to the Operative World. In this mode of experience things take on a ludic accent; the material value of entities become secondary to their ludic value, their potential for play. In the Character World one assumes a persona assonant with the fictive realm of the game; the person speaks and acts entirely consonant with being-in-the-gameworld, not just as a player but as a *role*-player.

In *Urban Codemakers*, without the additional layers of knowledge provided by digital mobile technology, the participant often fails to upkey to the Operative or Character World, staying resolutely in the Social, experiencing the code simply as a material object made of laser-cut plywood and acrylic. Recognising the *Urban Codemakers* aesthetic

as the formalism of geometric abstraction, they may also acknowledge it as a piece of abstract art, although outside a formal gallery context. In practice this manifests as both danger and opportunity for the boundaries of a play session; as these Social-Actors take, and sometimes re-lay (or relay), urban codes without comprehending their Operative or Character World significance for the *Urban Codemakers* game, so the borders of the game contract or stretch and take on new, unintended organisational structures and possibilities for phenomenological transformation.

To provide context for participants to upkey to the Character World, a narrative framework is established within each *Urban Codemakers* iteration to frame experience for that particular urban space, embodied in artwork, a website, and text hinting at the various factions and characters. As introduced earlier, in the first iteration of the game, character images depicted them as council workers, architects, or masked operatives shaping the city behind the scenes. Expanding on this narrative was the public installation of a series of signs in the Guildford Lane complex in Melbourne, identifying eight guilds originating in the Micronation of Ludea. Guildford Lane has historically been a hub of commerce and trade and at the time of the game was home to many galleries – it has now become largely residential with the development of new apartments overlapping the conclusion of the game in 2011.

In the storyworld the guilds represent different epistemologies; competing strategies for urban renewal and development; and speculative fictions on the possibilities of urban codemaking to reshape ways of being-in-the-city. Within the context of this article, these positions play out speculative ways of being-in-the-world provided by urban codemaking; we will return to these guilds throughout the article to articulate the various positions afforded.

Given the modus operandi of pervasive games, emphasising gross physical movement and player-to-player cooperation, their design can encourage physical activity and social communication. In comparison with the use of mobile devices to simply track mundane physical activity,

pervasive game play, offering a novel state of being-in-the-world, can encourage novel bodily action and cooperative movement tied to the gamestate.

The most recent iteration of *Urban Codemakers* is currently testing this hypothesis to assess whether kinaesthetic play and aesthetic experience have an impact on wellbeing and physical health. It evaluates players via a musical game of tag through the collection of biometric, mood, and well-being data to measure the impact of play on such phenomena. In this game, the urban codes play the additional role of musical motifs in a spatially arranged sound design, exploring a sonic layer that builds on the freeform wayfinding of earlier designs. This mode of engagement again explores alternate ways of being in urban space enabled by play.

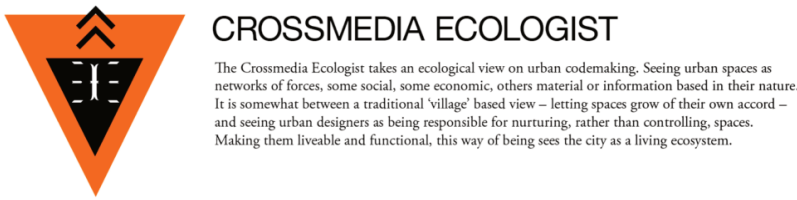


*Figure 4. The in-game description of the Crossmedia Ecologist guild.*

## THEORETICAL FOUNDATIONS

### Being-in-the-GameWorld

In phenomenology, *Da-Sein* (There-Being) and being-in-the-world are phrases used by Heidegger that largely replace 'human', 'consciousness', or 'mind' in his philosophical project. This replacement operates as a critique of those prior terms, and its ontological thrust is twofold. Firstly, to indicate the foundational relationship between Being and context: one's being is a *there*-being, an *embodied* understanding of being, from the micro (body, age, gender identity) to the macro (historical, political, geographic, socio-cultural etc.). Secondly, as being-

in-the-world one is *being-in-meaning*. This is not a selective process of a mind but an inescapable ontological fact. To be in a world is to care (*Sorge*); whether this manifests as fear, love, hate, apathy, depression et cetera, one is always-already *in*, meaning negotiated through one's inherent *thereness*.

Significantly, understanding is not just synonymous with acts of mental representation, as with Descartes' 'thinking thing' (*res cogitans*), but is embodied, situated. For example, one shows understanding of a glass not only by mentally representing or describing its chemical structure, or each step involved in grasping, lifting, tipping, and sipping; one may also illustrate understanding by picking up the glass and drinking from it. Merleau-Ponty is emphatic on this point, "Whether a system of motor or perceptual powers, our body is not an object for an 'I think', it is a grouping of lived-through meanings which moves towards its equilibrium" (2005, 177). We can expand on Merleau-Ponty's point via Heidegger's famous tool analysis where he uses the example of a hammer, differentiating between appreciation of the hammer as a Euclidean object, versus using it to strike a nail or break a rock. He defines our everyday encounter with the world as the latter, as *zuhandenheit* (readiness-to-hand), meaning objects we first and foremost *use* in a contextually-sensitive manner, e.g. hitting the nail, rather than observe in a detached analytical way, which he named *vorhandenheit* (presence-at-hand).

The key point: we do not typically encounter objects in the analytical mode, but as ready-to-hand (*zuhanden*). For example, I am hanging a painting: with skilled use the hammer, nail, picture frame, lighting and wall all recede from mental circumspection, becoming *zuhanden* equipment in the pursuit of my project. Only if the wall resists the nail, or the hammer is too heavy, does skilled coping breakdown; I then inspect the hammer in a *vorhanden* manner, analysing its suitability for the task.

Being is being-in-the-world, and to understand one's world is to skillfully cope within it *as* some-body. Merleau-Ponty once more: "We

must therefore avoid saying that our body is in space, or in time. It inhabits space and time" (ibid., 161). We are, in essence, a 'clearing' (to use Heidegger's term) wherein meaning (emotional, intellectual, social, tactile et cetera) comes into being. Taken together, solidified over time, these networks of meaning constitute phenomenological 'worlds' (the *world* of fashion, of banking, of medicine etc.) which are fundamentally historical; their meaning is always in process and open to negotiation.

This experience of interpreting and generating meaning through an embodied involvement with the world is 'worlding', and when we assume particular roles in a world ('carpenter', 'lecturer', 'consumer', 'wife' et cetera) we are 'Daseining'; though this raises the question of authentic versus inauthentic Dasein, such discussion is outside the purpose of this article.

To reiterate a few key points: purpose and competence are often not mentally deduced but *felt*, as equipment becomes an expansion of one's being-in-the-world. Rather than engaging in mental representation, one simply picks up and uses the golf club, the game controller, the mobile phone in a way appropriate to Dasein. Consequently, and this is where the context of a pervasive game is particularly important, the object appears as particularly actionable *always in relation to its environment*; using the hammer in a specific way and for a specific purpose, for example as a tool to construct a chair, only makes sense within a culture and society where the Dasein of 'carpenter' exists. Therefore 'world' and 'being' are mutually constituted as being-in-the-world.

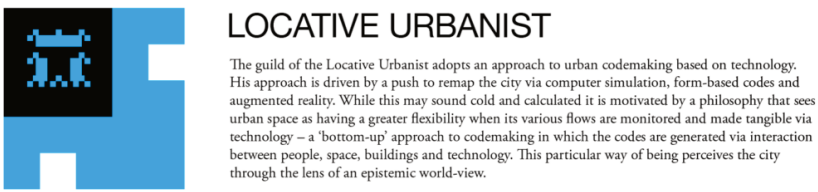


*Figure 5. The in-game description of the Locative Urbanist guild.*

## Homo Paideia

Following this, we are essentially playful; when a bucket becomes a seat, a child's fort, a helmet, a basketball basket, or a weapon, we are simply shifting the meaning of phenomena encountered in our various worlds. This is not to argue, as Sartre holds, that we are the sovereign lords of being (i.e. existence precedes essence); we are not wholly in charge of where, when and what meaning occurs. To do so is to sustain a weak form of Cartesianism that Heidegger wholly negated in *Being & Time* (2008).

Instead, as per Heidegger, we hold that meaning is always-already present, and further a process of negotiation *within* the historical situation, between not only person and world, but between things, between worlds, between the essence of an entity and its environment. I am not free to choose to be a gamer if 'gamer' is a phenomenon beyond the horizon, i.e. hermeneutic parameters, of one's current world.

A more (post) modern twist on this, as Andy Clark provides (2003), is that we are *natural-born cyborgs*. Simply put, a unique ability, as a species, lies in our extraordinary capacity to incorporate (in-*corpus*) the being of our environment. This sounds rather like science-fiction or poetry, but consider how, in practice, we skilfully cope with tennis racquets, hats, pianos, doors, cars and keyboards as assimilations into our sense of bodily space; how we are always projecting ourselves futurally. For a very mundane example, even something basic such as using a door only makes sense to us as part of a larger project; fulfilling the Dasein of 'waiter' I open the door to access the kitchen to pass an order to the chef to preserve my job to pay my rent, and so Dasein's essential futural projection continues.

A designer of pervasive games should understand this ontological position intuitively; to design a game is to negotiate with entities and their environment in provoking revelation of meaning in players. Yet attempting to shift what a phenomenon means to a player can be

stretched only so far before the game becomes unintelligible. If design is essentially a gesture directing the recipient (to design-ate), then the communiqué must take into account its users' perceptual prejudices; knowledge creates perception, as to perceive some *thing* is to already know what you see (otherwise one asks "what am I looking at?").

Therefore, a central question for the initial design of *Urban Codemakers* became, what does the city and its various phenomena *mean* in this historical moment and within this social-cultural environment, to this demographic of city-dwellers, and what is the space's psychogeography? How can we acknowledge, and therefore shift this understanding through design, in a provocative and productive manner?

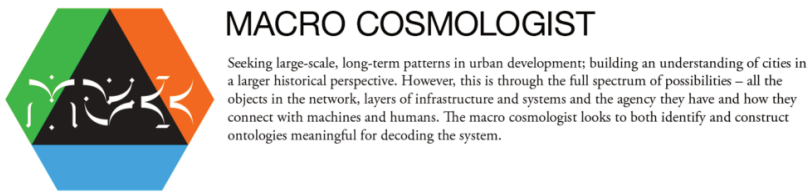


*Figure 6. The in-game description of the Macro Cosmologist guild.*

## The Situationist International

As an artistic project *Urban Codemakers* is inspired by the ethos and strategies of the Situationist International (SI), an organisation that grew out of the Letterset International. It was founded by an international collection of intellectuals and artists including Guy Debord, Michèle Bernstein, André Breton, Asger Jorn and Atilla Kotanyi.

There is congruence between hermeneutic phenomenology and the SI's metaphysical formulation; as Heidegger is anti-Cartesian, against the ontological separation of body and mind, so is the SI against the cold rationality of urban architecture and planning, which they believe fails to

consider impact upon the context of daily living and human wellbeing; the *Da* (situation) of *Sein* (Being).

Though there was and remains debate on the formation of the group, its goals and methods, we are concerned with three terms that became central to the SI's writings and practices. Firstly, the concept of 'psychogeography' is captured in Ivan Chtcheglov's 1958 piece (written originally in 1953), *Formulary for a New Urbanism*:

> *"A mental disease has swept the planet: banalization. Everyone is hypnotised by production and conveniences – sewage system, elevator, bathroom, washing machine… It has become essential to bring about a complete spiritual transformation by bringing to light forgotten desires and by creating entirely new ones… the need of constructing situations as being one of the fundamental desires on which the next civilisation will be founded." (1993 [1958], 169)*

As a practice, psychogeography is concerned with the "study of specific effects of the geographical environment, consciously organised or not, on individuals' emotions and behaviour" (Debord 2016 [1958], online). Chtcheglov specifically advocates a design style that is poetic, humorous and, as he remarks, is driven by a "need to *play* with architecture, time and space" (1993 [1958], 169, emphasis in original). Suggesting future technology would allow for a kind of plasticity in architecture responsive to the situation, Chtcheglov supports a "*Continuous Dérive*" (170, emphasis in original); as the architectural space around one changes, one is playfully disoriented and awoken to poetic possibilities. The concept of psychogeography naturally allies itself to a phenomenological analysis, emphasising embodiment and emotional response, favouring a *zuhanden* experience of space and personal wayfinding over a *vorhanden* analysis of the architecture or pursuit of Cartesian coordinates.

Dérive ('drift') was articulated by the SI as a strategy of experimental behaviour, embodied as an unplanned journey through a space guided by the space's psychogeography in a *zuhanden* manner, as Debord describes in *The Theory of the Dérive*:

> *"In a dérive one or more persons during a certain period drop their relations, their work and leisure activities, and all their other usual motives for movement and action, and let themselves be drawn by the attractions of the terrain and the encounters they find there." (2006 [1958], online)*

Here is another instance of 'worlding'; wayfinding becomes a method of bringing into existence novel ways of being-in-the-world through the collective experiences of the players. Of course, this begins as novel, ephemeral and strictly personal, but, repeated over time, across identities, groups, cultures and cities, this phenomenological transformation may find persistence in one's sense of being-in-the-city. As Debord remarks in *For a Revolutionary Judgment of Art*:

> *"REVOLUTION IS NOT "showing" life to people, but bringing them to life. A revolutionary organization must always remember that its aim is not getting its adherents to listen to convincing talks by expert leaders, but getting them to speak for themselves, in order to achieve, or at least strive toward, an equal degree of participation." (2016 [1962], online, emphasis in original)*

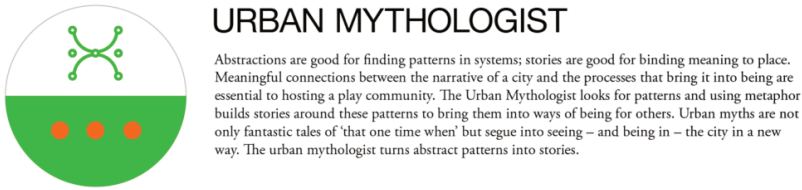


*Figure 7. The in-game description of the Urban Mythologist guild.*

## Interpretive Phenomenological Analysis

In applying these ideas to the design and comprehension of pervasive games, and in this case expanding on the ways in which urban codes operate, we used Interpretative Phenomenological Analysis (IPA). IPA developed as a method to apply phenomenology to collective experience, countering its misreading as a philosophical standpoint that advocates subjectivism (as seen in Sartre). As mentioned, Heidegger's

phenomenology is founded upon understanding the human as *not* the sole arbiter of an entity's meaning; rather, meaning is generated in negotiation with the entity and situation, hence Dasein (There-Being).

The goal of IPA is to find commonalities in the experience of phenomena as embodied in a lifeworld (*lebenswelt*), a common structure of experience shared between people. Upkeying players into the world of *Urban Codemakers* revolves around the concept of revealing a different way of being-in-the-city; making the city itself as 'ready-to-hand' for play-ability. If the participants can experience the city in a ludic way, then they may comprehend that space as ideationally plastic, shifting Dasein, their Being-*there*: the city becomes a site of potential, meltable, to be remade by the group.

This is where IPA can help design, and, in our example, illuminate links between wayfinding, psychogeography, and urban codemaking. Players may engage in wayfinding through the *Urban Codemakers* world in two basic ways: I *feel* this is the right way (ready-to-hand), or, experiencing breakdown in understanding, I *think* this is the right way (present-to-hand). Our design focuses upon achieving the former; we want participants to engage in a frictionless, embodied sense of equilibrium and satisfaction as much as possible. Simply put, the goal of this design is to pull the player up into another phenomenological world; our idealised player is not trying to *get* to a particular location, but rather *discovering* a new way of being-in-the-city.

This aligns with the goals and processes of psychogeography, but in augmented form, orientating and keying players via the urban codes. As abstract works, the markers are exceedingly polysemic when stuck to an innocuous building wall; the dissonance of this intensely colourful, polygonal and altogether alien 'thing' in the city is juxtaposed by the grey, red and black of concrete, brick and tarmac. Such design generates the vortex, the possibility for one to key into the Operative or Character World; urban codemaking attempts to mark a new spatial organisation

upon the carapace of the old through a phenomenological melting of one into an-Other.

With this intended experience in mind, how do we use IPA in practice? Each player's being-in-the-world has its own unique configuration, yet all share a phenomenological 'lifeworld' (*lebenswelt*) both macro logically, as inhabiting the same society, culture, time period et cetera, and micro logically, as connected with other players via the framework for exploration designed by the Urban Codemakers. Critical to IPA is the way in which questions are framed to players. Using the example of wayfinding, again the question is not 'What do you *think* about finding your way through the city?' but 'How do you *feel* moving through the city?' and further, not 'Describe your process of figuring out the right way' but 'Can you discuss the *feeling* of the right way by describing a particular moment?' This approach is new to our process, therefore we are yet to formally interview players in a structured study, however, playtesting and observation have indicated some possible avenues for exploration; indeed players already tend to speak in this manner about their experiences.

Going forward, we are using IPA to perform a kind of playful twist on the phenomenological reduction via *Urban Codemakers*, comparing competitive versus collaborative modes of play, designs that highlight the paidic to the ludic, and those that utilise augmented reality as a form of mapmaking for the player. The aims of this approach are fourfold: firstly, to achieve a deeper understanding of the essence of the *Urban Codemakers* experience, its baseline commonalities across variation; secondly, to activate urban spaces in a form of 'readymade' level design transforming them into an alternate phenomenological world; thirdly, to explore strategies for pervasive game design that combine aspects of treasure hunt and urban adventure; and fourthly, to humanise urban spaces and engender a sense of community and connection in opposition to feelings of alienation commonly associated with urbanity.

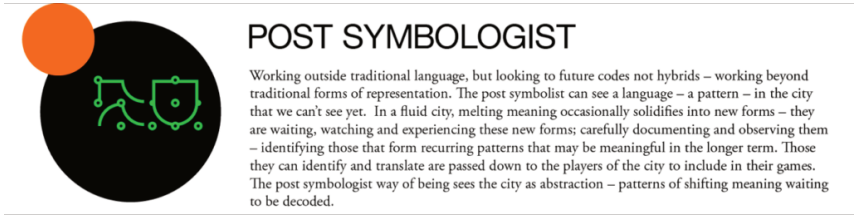


*Figure 8. The in-game description of the Post Symbologist guild.*

## DE-SIGN

As outlined, design is an act of communication, but this should not be viewed solely as an act of addition; it is also an act of subtraction. As the prefix 'de' indicates, to design is to move away from one sign as much as it is a movement towards the generation of another. Though this holds true of all design, it is especially acute in pervasive games, where the designer is frequently confronted by a very stubborn accretion of human history. This is all the more evident in a city, which is of course the primary site (and sight) of *Urban Codemakers*. Train stations, skyscrapers and car parks are all macro-objects that broker little interaction with their material affordances unless one is willing to commit a crime or spend enormous sums of money (perhaps both). Whilst one can toy with secondary qualities, e.g. the colour of a building's wall, manipulating primary qualities, e.g. the length or width of the wall, is outside the scope of most designer's budgets and permissions.

Therefore the metaphor of melting is especially important for designers of pervasive games; design in this genre is not a *sui generis* act of creation, as is possible with digital games (within the bounds of the software's affordances), but an alchemical process of morphing the experience of space in cooperation with the accretion of history that a city embodies.

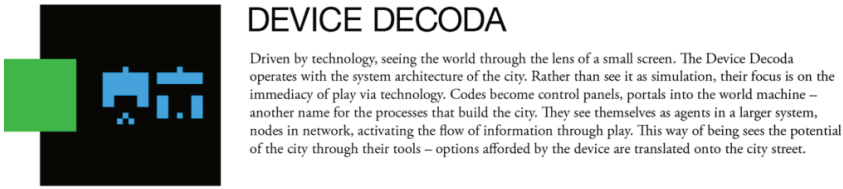


*Figure 9. The in-game description of the Device Decoda guild.*

## De-coding

The design impetus of *Urban Codemakers* is to encourage searching, collecting and scoring. These modes of engagement upkey the participant from Social-Actor to Operator-Player; the urban code simultaneously upkeys from abstract art piece or unfamiliar material marker to game token. All of a sudden, its value as an art piece, or as a material object, becomes secondary to its value as signifier of immaterial game points. In switching to a lusory attitude (Suits 2005), e.g. searching for the codes to score points, the person enters another way of being-in-the-city, decoding the codes and larger gameworld.

As mentioned, perception is highly selective, and when one upkeys to Operative, or possibly Character World, one's entire perceptual apparatus recalibrates to facilitate this sense of being-in-the-world. As the now-player moves through the city, the laneways, churches, skyscrapers, car parks and so forth are *re*-vealed; no longer sights of staid business or uneventful passage they are upkeyed into the gameworld, and become sites/sights for play. Not all of the urban codes are physically collectable, in some iterations of the project the codes are scanned by mobile devices bringing out digital layers of engagement. The consistent aesthetic of the codes indicates that there is something meaningful and tangible, yet covert, to be experienced in the city. This first layer of engagement sees the codes operate as a set of signs or signifiers of an alternate world; the mobile device is the key that activates another layer of reality for the player. The mobile application used in these devices

is designed as a scanner – it presents a tool 'ready-to-hand' and in observing players it is used as such.

As mentioned, upon scanning codes with a mobile device digital layers are activated, displaying architectural interventions into streetscapes or adding notes to a musical score collected from the street. These encounters are designed to encourage free (or 'paidic') play. In their comments surrounding these experiences (see Conway & Innocent 2016), players often highlight the pleasure of bringing-forth and sustaining novel ways of Being. Discussing activity with other players, playing together, and engaging with seeds of narrative embedded in the processes of play bring to the foreground and make more tangible the new world within the city. Language has a dominant role here too, as familiar places are renamed within the fiction of the game world. Many players noted they had held onto the codes collected after this process, and in some cases arranged and built them into model cities after play to remind them of the experience.

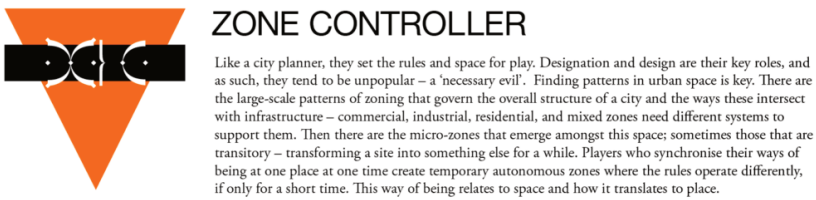


*Figure 10. The in-game description of the Zone Controller guild.*

## CONCLUSION: THE SPACE-TIME SMELTER

"We will not work to prolong mechanical civilisations and frigid architecture that ultimately lead to boring leisure… The architecture of tomorrow will be a means of modifying present conceptions of time and space" (Chtcheglov 1993 [1958], 169). The goal of *Urban Codemakers*, as a pervasive game design, is to provoke this re-conception of space.

Perceiving, interacting, and imagining the world that emerges through their own particular experiences via urban codemaking, players begin to reveal a different way of being-in-the-city; instead of a space that often results in a breakdown or indeed prohibition of play, the city instead becomes ripe for a lusory attitude (Suits 2005). This act of becoming is not simple, however, when the designer is confronted by the mass of history, chronological, material and ideational, that most cities represent. As with all significant mass, its gravity is felt; its pull sets parameters, known areas that players move towards and around; landmarks represent particular density, and therefore significant areas of attraction; the constellation of object relations creates tidal movement, and common ways of moving through and between spaces. This all generates friction for the designer of pervasive games, and as she attempts to rework the city's meanings, so it resists and, oftentimes, is abrasive or outright obstinate.

In speaking of our design approach, we therefore find it fruitful to think in terms of smelting; to extract an inherent but hidden quality of the cityscape, to work within its parameters in generating something new. Indeed, this is embodied not only in our design practice but also in the player activity. As the codemakers move across the environment they rely on its local affordances as part of the hermeneutic process of interpreting the parts to understand the whole, and indeed, interpreting the whole to understand the parts. As we have suggested, this is not simply an hermeneutic circle, indicating a flat back and forth, but a *vortextual* movement, not dissimilar to Whannel's discussion (2010) of modern media consumption, wherein one's Dasein moves vertically.

As the players of the pervasive game become more adept, more aware of the various layers of the gameworld (or as hoped, simply more prone to project this lusory attitude onto the everyday), they may move up and down between phenomenological worlds wherein experiencing phenomena takes on a markedly different accent. For some, this is a revealing of the urban code as score token, which leads them into an Operative mode entailing an instrumental movement across the cityscape

allied to a strategic use of mobile devices, transport systems, and indeed other players. Though this is a fascinating mode of being and very appropriate for certain games and genres (such as chess or certain sports), for the authors' design intentions, this is too close to the mundane practice of viewing entities as commodities, highlighted by Heidegger as the essence of technology, En-framing (*Ge-Stell*); all things come into meaning as homogenised resources for consumption. Overall, this highlights a failure on behalf of the designers to fully melt away the encrustations of the Social World in their design of the Character World.

For others, the markers become indicative of a new set of pathways, social relations and engagements with entities that can take on a variety of meanings unmoored to any instrumental or otherwise extratelic purpose. In this Dasein, to be an urban codemaker is to dwell autotelically, paideiacally, incorporating a more playful sense of existence less bound by rigid, ludus exigencies. This way of being is the idealised player of the designers' hermeneutic vortex, as it is in this mode the possibility of smelting one's immediate environment is greatest, hopefully *re*-vealing one's world. The probability of creation, identified in the article's opening quote (Nieuwenhys 1959) as required for the wellbeing of urban living, is augmented. In this manner, the design of *Urban Codemakers* is a modest attempt at applying a paidic panacea to the quotidian oppression of urban life.

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# Finding a Way

## Techniques to Avoid Schema Tension in Narrative Design

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## ABSTRACT

Game designers and game writers do not have the same understandings, processes, or approaches, and this impedes good practice. This is *not* due to the two modes being so different or incompatible however, as has been claimed now and in earlier narratology and ludology debates. Instead, this article argues that incompatibilities are due more to the schemas of creation: the mental models we are taught and create with, that thwart more integrated practices. We learn to create and think about games in one way, and narrative in another. This siloing is due to a predictable differentiation rhetoric that occurs at the emergence of a new medium: games are not stories, games are not films, VR is not film, X is understood by not being Y. This arbitrariness of difference facilitates a schism in the creator's mind, where elements, roles and

industries become irreconcilable. Indeed, whole swathes of wisdom are put to the side in an effort to be recognised as different. When narrative is used in games, then, developers rely on external design grammars, where models from other artforms are imported and shoehorned. There have been attempts to reduce such siloing, but integration cannot happen merely through recognising common elements or traits within a game object. Instead, this article argues that a common understanding can be found through the common factor of the audience or player. To illustrate this point, two successful audience/player-centered approaches from filmmaking and education are outlined, along with a tweaking of the successful MDA framework, providing structures for creatives to avoid the problem of design schema tension and create better projects.

## Keywords

narrative design, game design, games writing, screenwriting, design schemas, serious games, narratology, ludology, learning design, games education, transmedia, cross-media.

## INTRODUCTION

As a writer-designer who works with game developers, filmmakers, visual arts organisations, communities, corporations, and agencies, I am always looking for efficient interdisciplinary practices. As an industry and academic educator, I am always looking for ways I can help creatives avoid habits that can thwart great work. As a researcher, I am always looking for ways I can deepen, discuss, and share my discoveries. This article presents a perspective on a problem, and offers solutions for developers and educators alike to implement. The problem is the siloing of narrative and game elements, roles, and industries.

Developers who view narrative and game elements as separate (and perhaps even incompatible) produce games where they are experienced separately. For example: narrative is relegated to cut-scenes, text-laden

diaries and pop-ups, and on-screen dialogue, and is often in conflict with the mechanics. Famously, the term "ludonarrative dissonance" was introduced by designer Clint Hocking to describe this occurrence, and it attests to the pervasiveness of this siloed thinking (Hocking 2007). Indeed, there is a relationship between how narrative designers, designers, and writers perceive the relationship between narrative and design, and the end-product.

To get around this, efforts to integrate narrative and game modes are often channeled into including writers during the beginning of development to have a voice in the decision-making. Indeed, an aphorism that I previously put forward to explain what facilitates best practice is, "early and equal." (Fingleton, Dena, & Wilson 2008, 63) The idea behind these approaches is to ensure the writers are not spending all their time retrospectively applying narrative elements to fixed gameplay, and therefore providing weak links between them or at worst perpetuating the dissonance between them. This has been called a "narrative wrapper" approach, which has been criticised by game writers such as Richard Dansky, who is the Central Clancy Writer for Ubisoft, for facilitating bad practice:

> *"And so when we talk about the "narrative wrapper" of a game, we're implicitly stating that the narrative is not of the game itself. It's something we're supposed to wrap around the gameplay to make it transportable and attractive, and keep the targeting reticule from dripping burger grease on our fingers, but it's ultimately unattached and disposable." (Dansky 2014)*

A response to this issue is the emergence of the "narrative designer" role, where the relationship between writing and design is assigned to a person as a responsibility during development. For instance, Gameloft Entertainment Toronto Inc. describe the narrative designer role as someone who "works closely with a project's core design team at every step of the way to develop a strong symbiotic relationship between the game's mechanics, design, and structure, and the narrative/story being used to support and enhance that structure." (Gameloft 2016) Likewise, the narrative designer for Crystal Dynamics, involves having

to “[c]onceive scenarios, missions and objectives that are tied to larger story goals” (Crystal Dynamics 2016); Obsidian Entertainment’s narrative designer needs to “[e]nsure game concepts and mechanics are appropriate to fiction and positioning” and “[c]ontribute to all aspects of game design” (Obsidian Entertainment 2016); and Supermassive Games’ narrative designer needs “a superb understanding of story and the intersection of it with gameplay” (Supermassive Games 2017). These roles remind us there is a division of game and narrative elements, but now it is seen as necessity to undo that siloing.

My contention is that these difficulties have nothing to do with any so-called incompatibility of narrative and game elements, but instead are born from conflicting ways of *thinking* about narratives and games. They are divided in our minds and so do not easily blend. To understand how this could be the case, I draw on the theory of schemas. Introduced by cognitive psychologist Frederic Bartlett, schemas explain how we remember not just subject matter but how to categorise and apply them (Bartlett 1932). “A schema is a cognitive construct that organizes elements of information according to the manner with which they will be dealt.” (Sweller 1994) This is so we don’t have to crowd our mind with details, and instead we classify experiences into retrievable bundles. If I need to ride a bike, I remember how all the actions go together rather than remember each individual step. I can then apply the same principle to exercise bikes, or use skiing to help me understand rollerblading for instance.

Story and game design schemas, then, are our ways of understanding stories and games. We learn them through experiencing actual stories and games, and as practitioners we also learn them through articles, books, workshops and consultations. I am not alone in holding this view. Schemas have been applied to design before. Donald Norman has spoken about “mental models,” and how systems are designed according to the designer’s mental model, while the user also has their mental model (Norman 1988). This is why we have usertesting and playtesting: to find where our mental models are not aligning. Game researchers Craig

Lindley and Charlotte Sennersten also discuss “story” and “game play schemas” (original wording) from a player perspective, where the former is about patterns that make stories comprehensible, and the latter is about the orchestration of cognitive resources to generate motor outputs (Lindley and Sennersten 2006). So let’s take a step back and look at why narrative and game schemas have developed as isolated and incompatible mental models, as this will help us understand not only how this happened (so it may be prevented from happening again), and to aid in determining a solution.

### CAUSES OF DESIGN SCHEMA TENSION

Why is it that we have narrative and game design schema tension? What causes design schema tension? The obvious answer is that narrative design schemas were developed before game design schemas. Writing for theatre, novels, film and television has existed for longer than games (digital games specifically). So, game design schemas are understandably different to narrative design schemas. But the reverse is what should be true. It makes sense that game design would be heavily influenced by the processes and approaches of more mature artforms. But this is not the case and let us look at why. The following describes two key factors that contribute to the phenomenon of design schema tension in game design (and many artforms): differentiation rhetoric and external design grammars.

## Identity and Definition by Differentiation

When a new area of interest emerges there are the inevitable stages of development as it moves from being an anomaly on the fringes to everyday. All artforms go through this process, electronic/video/digital games included. For example, recently we’ve seen this play out with VR, when Janet Murray declared it is “Not a Film and Not an Empathy Machine.” (Murray 2016) Semiotician Yuri Lotman observed this

process, and explained it as an individuation process, with its primary mechanism being the boundary: “Every culture begins by dividing the world into ‘its own’ internal space and ‘their’ external space. How this binary division is interpreted depends on the typology of the culture.” (Lotman 1990, 131) A culture, in other words, forms itself through binaries of inside and outside, us and them, good and bad.

As artforms become more pervasive, this process of boundary forming individuation manifests itself in *differentiation rhetoric*. We have this laid bare in the Narratology and Ludology debate in the late 90s and early 2000s. I won’t duplicate the arguments here, but what emerged from that debate was an indisputable goal: the need to recognise and study game phenomena as a unique cultural form in itself. The debate successfully championed games being treated as a unique phenomenon that could not be understood through current frameworks and lenses. Indeed, it was common for ludologists and cultural theorists to jointly agree on their orientation against narratology.

While it meant better recognition and understanding amongst peers, this differentiated identity came at a cost. Game theorist and journalist Dan Golding, for instance, has reviewed the history of videogame scholarship and found the definition of games as configurable texts became the primary approach to understanding what games are for scholars and practitioners (Golding 2013). Golding continues, explaining how games became distinguished through theories such as Espen Aarseth’s “configurative function” of “scriptons [that] are in part chosen or created by the user” (Aarseth 1997, 64); and Markku Eskelinen’s “configurative practice” where games are “a combination of ends, means, rules, equipment, and manipulative action.” (Eskelinen 2001) Games became understood as different to the fixed texts of other artforms through the idea of games being configurable. To Golding, this “notion of configurability has had long-standing repercussions across a significant range of videogame scholarship.” (Golding 2013, 33) A definition through textual difference can cause harm. Indeed, as Brian Upton, Senior Game Designer at Sony Santa Monica, explains: “interactivity is

a thing that games can DO. It is not what games ARE." (Upton 2015b, original emphasis)

Indeed, by separating narrative and game modes as distinct phenomena, integrated use has been thwarted. We now have a siloing of game development roles, and ultimately, functions within a game. We have "ludonarrative dissonance," (Hocking 2007) we have "Aristotle versus Mario," and "Save the Cat" versus "Slay the Dragon." (Bryant and Giglio 2015) There has been, in short, a splintering of narrative and game modes in the name of identity-forming. This happened in academia and industry, as a way to recognise and legitimize the area of interest. But if we look at this through an instructional designer lens, we can see two disparate mental models that developers then have to exert extra cognitive effort to mentally integrate. This is perhaps why this task is assigned to a person, the narrative designer, rather than everyone on the team. Indeed, one can see how this can affect existing developers, however, the question then arises, how are the next generation of narrative designers being taught?

## External Design Grammars

How do game designers and game writers learn to do narrative design? The most well-known narrative and game schemas are taught by people who work with, and think in, one or the other. Developers learn about games from people who make digital games and/or tabletop games, and they learn about narrative from people who write films and TV (less so from novelists, and even less so from theatre despite congruence with performance). Developers looking to understand story go to the people who work in story, and vice versa. How does this phenomenon occur in textbooks?

There are key texts (among others) that show up on curriculums worldwide: *Game Design Workshop* (Fullerton 2008); *The Art of Game Design* (Schell 2010), *On Game Design* (Rollings and Adams 2003), and

*Rules of Play* (Salen and Zimmerman 2003); and while each of them have differences in their discourse and framing, there are patterns in the citations. They do what most game, screen and novel-writing books do: reference three-act structures through Aristotle's *Poetics* (Aristotle 1997 [330BC]), Joseph Campbell's *The Hero with a Thousand Faces* (Campbell 2012 [1949]), and Christopher Vogler's development on Campbell's monomyth with *The Writer's Journey* (Vogler 2007).

A game-writing approach is then explained as being different through pathing structures. These are the nodal diagrams that explain how a player can access different parts of a story in different ways; a linear, strand-of-pearl structure or a branching structure for instance. Then to bring in the concept of the hero's journey, there is a repositioning of the hero's journey as the player's journey, a "first-person character arc." (Freeman 2004) Developer and educator Jesse Schell goes further, explaining that "[b]ecause so many videogames revolve around the theme of heroism, it is only logical that the hero's journey is a relevant structure for a powerful videogame story." (Schell 2010, 273) Famously, we've also seen how developer Jenova Chen applied this thinking to *Journey* (Chen 2013), along with other practitioners.

Indeed, students and some professional developers alike utilise these touchstone narrative structures during development. But as we have seen with the development of different types of games (Lazzaro 2004; Hartmann and Klimmt 2006; Kallio, Mäyrä, Kaipainen 2011; Hamari and Tuunanen 2014), heroism is not a universal desire for play, and further to that neither is playing a hero that initially refuses the call to help others.

But let's take a step back here and ask, why are such structures taught to game developers? Education researcher James Paul Gee has a helpful concept here: that of "internal" and "external design grammars." (Gee 2003) Similar to Lotman's binary of the internal and external, Gee refers specifically to the design grammars of individuals. *Internal design grammars* are "the principles and patterns in terms of which one can

recognize what is and what is not acceptable or typical content in a semiotic domain." (ibid., 30) That is, can you identify what is typical and what is atypical? Can you identify a game in its design form? Can you identify problems in its early form? Do you know how to identify a typical and non-typical platformer in the design document stage, and are you able to identify issues the designers will face based on that document?

Whereas an *external design grammar* is understood as "the principles and patterns in terms of which one can recognize what is and what is not an acceptable or typical social practice and identity in regard to the affinity group associated with a semiotic domain." (ibid.) Can you list all the key texts or works? Do you know the identities involved? Do you know what people value in the field? Do you know the social practices of the affinity group? Do you know facts about the domain? In this regard, a person with an external design grammar would be able to list the most well-known platformers, key auteurs or studios behind them, facts about them, and how fans communicate about them.

It is my uncontentious opinion that Aristotle, Campbell and Vogler are invoked by many games educators and developers because they have an external design grammar of narrative. They know the things that everyone else refers to, not what people who work in the field have found to be fruitful. This is not to claim that it is only game developers who refer to these structures, they certainly aren't. But there are other approaches screenwriters are aware of that have proven more helpful in their attempt to create better works. Their insights, however, could only be accessed by those with an internal design grammar—someone with a narrative schema.

So we have external design grammars and differentiation rhetoric, both working to create and maintain a design schema tension. We have seen the consequences of this in practice with both the cognitive effort required to integrate these disparate approaches, and the wrapping and

shoehorning that is done to make these elements reach some kind of gestalt (or not) within a game. How do we resolve these tensions?

## ATTEMPTING TO HEAL THE RIFT

In this section I will talk about what is happening already to heal the rift and what I propose to propel this process further. The "narrative designer" role is an attempt to address this issue, but as mentioned previously, it places the task of integration into the hands of a person and maintains the schemas they are trying to integrate in the first place. It is a promising but temporary solution that does not get to the heart of the problem. Another approach is one explored by narrative and game theorists, where they seek to view games as having elements that are shared with other artforms, both narrative and game-based. It is a transmodal approach where narrative and game elements are analysed across media to reveal the congruences and differences (Frasca 1999; Juul 2001; Frasca 2003; Eskelinen 2005; Ryan 2006; Dena 2009). Games and films, for instance, both have characters and settings. We all need to create characters, we all need to create settings. There are some aspects that stay the same across media, and some that are different. By recognising that we have similar elements that instantiate in different ways, we can conceptually bring them together. Indeed, the "cognitive effort required to mentally integrate disparate sources of information can be reduced or eliminated by physically integrating the various entities." (Sweller 1994, 302)

A more recent proposal is a "ludonarrative toolbox" that aims to provide "a common ground for game designers and academics to discuss the relationship between ludocity and narrativity." (Koenitz et al. 2015) In this approach, practitioners are offered an evaluative lens to help situate what they're doing through semantic differentials: is it canon or not, scripted or procedural, in the author's or the player's control? In all of these transmodal approaches there is a focus on setting, props, objects, and characters, or on traits. The theorist or developer is not thinking about the experience of the players. In the ludonarrative toolbox they

may think about categorisations of player ability with player control, but not the actual experience during the game. It is because of focus on the game as object that the approaches are, I argue, less likely to impact practice. Both game designers and game writers know there are settings and characters, but knowing this and talking about it doesn't necessarily aid their creative process or mutual understanding. Transmodal approaches make sense on the face of it (I too have put my theories forward), but they ultimately don't do enough bridge work to break us out of our respective silos. I find that design schema tensions persist when we think about games, and films, and books, as isolated objects. These tensions can be avoided through resituating our focus away from *what* we make, to *who* we make for.

## From First-Order to Third-Order Design

To explain the shift to a player/audience-centered approach, I draw on what design researcher Richard Buchanan describes as the orders of design (Buchanan 1998). For Buchanan, how we perceive the "product" we design changes over time. In the first half of the twentieth century, for instance, we focused on "symbols," and this correlated with the discipline of graphic design. To Buchanan, this is called "first-order design". (Buchanan 2001) We then moved to understanding "things" with industrial design, which is "second-order design." And then in the mid-1990s we shifted to designing "activity" with interaction design, which is "third-order design"; and then "thought" with environmental design ("fourth order design") — which includes the greater system involved in "products." These orders represent stages of design influenced by the context of their times, but they also represent perspectives that can persist no matter what the era.

What we see in the external design grammars of narrative (e.g.: The Hero's Journey); the transmodal lens of characters, settings, events, and props; and the ludonarrative toolkit of semantic differentials, is an emphasis on first and second-order design. They all focus on the object,

the symbols, and things, and not the activity—what players do. But note, both non-games and games approaches have this mental model of first and second-order design (it isn't just non-interactive folk). However, focusing on the object has consequences. As the late Brian Clark niggled in his influential talk on phenomenology: we're "craftsmanship" and "object addicts" who love to talk about the "details and intricacies" of objects, not realising that objects only exist when we interact with them. (Clark 2013).

Golding, too, argues that the repercussion of the configuration definition of games is that "it carries with it assumptions and preconceptions that emphasize formal and textual processes to the detriment of experiential factors and the act of play." (Golding 2013, 37) Likewise, game researchers Jussi Kuittinen and Jussi Holopainen analysed key game design books and compared them to key design theories. In conclusion, they found the game design books focus on the object of design:

> *"Judging from the selection of the game design literature we analysed, game design is heavily governed by the object of the design, games. Although this may seem like an overly obvious statement, it carries with itself the connotation that the activity called design, is left to too little attention. Whereas the books concentrate on teaching the reader the principles and elements of game design, at the same time they leave aspects of design activity such as representing, moving and reflecting to little consideration." (Kuittinen and Holopainen 2009, 7)*

What does this mean? By focusing on the game as object, scholars and practitioners have focused on the characteristics of the game: its features, mechanics, characters, setting, UI, and so on. But in many areas of practice things have developed in a different direction. In his study on the design processes of AAA videogames, for instance, Ulf Hagen found a disparity between what game development handbooks and textbooks taught was an outcome of the first phase of development — the game design document (GDD) — and what is actually happening in AAA studios. (Hagen 2012)

These studios are moving away from Big Design Up Front (BDUF) and Waterfall development (Royce 1970), where conception needs to be completed and is a locked blueprint for production. Instead, Hagen explains, there is "a new paradigm in game development" that has emerged, that differentiates itself from the traditional method of creating games. (Hagen 2012, 75) The new paradigm includes a focus on player experience rather than features; and on agile development methods such as the integration of design and implementation. In other words, third-order design; which as Buchanan foretold, "[w]e are now in the early formative stage of understanding how third and fourth–order design will transform the design professions and design education." (Buchanan 2001, 12) Third-order design is what connects the artforms; we all have people that experience our projects, and we make better work when we consider them as part of the creation process. That doesn't mean moving production, prototyping and testing earlier, as Katherine Neil warns that this leaning on early prototyping can be damaging (Neil 2016). By bringing the execution stage in earlier, we are robbing ourselves of important design reflection: "our creative process [is] held hostage by the oftentimes alienating and frantic churn of the production and testing cycle." Instead, what we can do is develop design schemas that acknowledge the experience of our work at all stages of development. So how can narrative design work with third-order design, and why is it effective?

## STORY AND GAME MEET CUTE: A PLAYER-CENTERED SCHEMA

The following outlines three proposals that avoid design schema tension. One is a tweaking of an existing framework (MDA) that will aid in reframing games as narrative-inclusive phenomena for educators. The next is an already-proven model from screenwriting (sequence questions) that refocuses narrative structure as an audience/player-oriented approach. The final proposal is drawn from education

(transformational learning) that re-situates the hero's journey as a player transformation structure.

## From MDA to EBE

One of the models most commonly utilised to teach game design is the "MDA framework". (Hunicke et al. 2004) MDA, synonym of Mechanics, Dynamics and Aesthetics, was introduced as "a formal approach to understanding games — one which attempts to bridge the gap between game design and development, game criticism, and technical game research." The authors sought to offer a framework that represents game artifacts not as fixed objects like movies or books, but "as systems that build behaviour via interaction." Indeed, over a decade ago, they succeeded in offering a framework that entwines both a "consumption perspective" and design. The lenses are described as follows:

> *"Mechanics describes the particular components of the game, at the level of data representation and algorithms. Dynamics describes the run-time behavior of the mechanics acting on player inputs and each other's outputs over time. Aesthetics describes the desirable emotional responses evoked in the player, when she interacts with the game system."*

An example they offer is a babysitting game where perhaps you are trying to find a baby and get them to sleep. The aesthetics could be exploration and discovery, the dynamics would not be about competition but instead about getting the baby to express emotions like surprise and fear, and the mechanics can be talking to the baby, chasing the baby, and sneaking. The framework is immensely helpful in getting game development students to think beyond their player-perspective of games as rules and winning. It includes their player strategies (how to lure the baby out for instance), but also how those strategies were facilitated by the mechanics, and then how it made the player feel.

However, there are two issues that have led me to make some changes to the language used. I feel the framework does address these in spirit and intention, but the actual wording can cause some confusion. The first is the last word: “aesthetics”. The sense that it is used in this framework does not correspond with the usage taught to students through art history, design, and psychology. So I have instead used the word “experience”. The second is the second word: “dynamics”. I have chosen to use the term “behaviours” to emphasise that it is how the player then acts within in the videogame or in their interpersonal interactions with live players. The last word I’ve changed is specific to the point of this article: “mechanics” to “elements”. When we talk about the ways we can influence the player, we don’t want designers to fixate on mechanics being the only communicative act. We can influence them through the emotional design of the Playable Character (PC)-Non-Playable Character (NPC), NPC-NPC, and PC-PC relationships; through music and sound effects; inputs and physical devices; through art, lighting, and anticipatory play (Upton 2015a). Indeed, as Upton explains on the problems with focusing on mechanics:

> *“One of the drawbacks of associating games so closely with interactivity is that it biases design away from stillness. It encourages the construction of games that are action-packed, with lots of short-term business for the player to attend to. But if the moment-to-moment demands of immediate play are too pressing, we may never have the mental space for longer arcs of internal play. It’s hard to plan your getaway in the middle of a gunfight, even if planning your getaway would be fun. And it’s hard to think about the deeper meaning of a play experience if your entire attention is required merely to sustain it.” (ibid., 78)*

Through the slight tweaking of MDA (mechanics, dynamics, aesthetics) to EBE (elements, behaviours, experience), I find I can steer students into a direction that avoids design schema tension. They are open to games being more than mechanics, and so narrative is not viewed as a wrapper. I still give students the pivotal MDA paper, but just offer a quick personalisation of the terms. So, this is one approach. The next two structures are offered not just to educators but also developers (which can be the same person of course). Let’s address Aristotle and Acts.

## From Three Acts to Sequence Questions

The notion of a three-act structure is helpful to film, TV, and games if we draw on its core principles of a beginning, middle and end. Any experience has these traits for an audience or player. What does not translate well are the specifics of what happens in the beginning, middle, and end. In filmmaking for instance, there are usually set events that are meant to happen at exact page numbers (which correlate to time on screen). Games have different run times and what constitutes the beginning, middle and end is not as clear cut and is not helpful to minute-by-minute design. Indeed game writers Richard Rouse III and Tom Abernathy have criticised the three-act structure because most players do not finish games, and because (citing Microsoft's research by Hendersen 2014) players do not remember plot elements anyway (Rouse and Abernathy 2014).1 But there is an approach to structure that is utilised in screenwriting and works exceptionally well with games. It is one that switches the emphasis away from plot points to what people experiencing the game are thinking. I am talking here of "sequence questions".

While the concept of sequences has antecedents in the 1800s, it was championed by film director, producer, writer and educator Frank Daniel in the 1970s and 1980s. He researched successful screenplays and discovered they all shared this trait. Then through his role as the head of the Graduate Screenwriting Program at USC, he designed a curriculum around the sequence method. Paul Joseph Gulino then popularised Daniel's approach in the now key text: *Screenwriting: The Sequence Approach* (Guilino 2004). The sequence approach is observable in many great films: *Being John Malkovich*, *Double Indemnity*, *The Fellowship of the Ring*, *The Graduate*, *North By Northwest*, *One Flew Over the Cuckoo's Nest*, *Toy Story*. But as explained in the forward to Gulino's book, "…unlike other popular approaches to screenwriting, the sequence method focuses on how the audience will experience the story and what the writer can do to make that experience better." (Marlowe in ibid., xiii)

With its emphasis on the audience experience, the sequence approach is part of the mental model that correlates with best practice in game design. How? Sequencing divides the experience into a series of questions for the audience to consider. There is the overall question introduced at the beginning and answered near the end, and then multiple short-term questions to keep driving the audience's interest. As Gulino explains, the series of dramatic questions sequences "offer the opportunity to give the audience a glimpse of a great many possible outcomes to the picture before the actual resolution." (Guilino 2004, 13) They wonder what possible outcome could happen and hope or act towards it. In his book *The TV Showrunner's Roadmap,* Neil Landau talks about the critical element of the central question in a TV series:

> *"A good central question stokes the audience's curiosity and their need to know more. How is this problem going to be solved? What's going to happen? [NP] All great TV series present us with strong central questions. […] Central questions are the key ingredient of "must-see TV". We're waiting to see how the crime story or a love story is going to play out. As long as we keep wondering and anticipating and discussing and posting—we're going to keep watching. As soon as all questions are answered, the series is forced to either introduce new central questions or end." (Landau 2013, 31)*

This notion of a question driving the audience is not unique to screenwriting, it has been observed in novel writing. Philosopher Noël Carroll studied philosopher David Hume and his discussions of best practice:

> *"Hume observes that a very effective technique of narration involves presenting the reader, viewer, or listener with a chain of events about whose outcome she is enticed into becoming curious—about which she wants to know "what happens next?—but, then to hold off telling her." (Carroll 2007, 3)*

Carroll continues to describe how questions drive the experience for the audience. They do not experience closure until all questions are answered. For instance, will X marry Y? or will X kill Y? Feature film developer Stephen Cleary explains further how the sequence question

operates and how it always needs to be about external plot and not internal movements (Apocalypse Films, 2015). He argues that screenwriters need to focus on action more than character, more on how your audience feels rather than how your character feels. Without doubt, there are correlations with the design of games here, where the designer needs to think about what the player's objective is and how they will understand what it is and how they will learn how to do it. Indeed, Carroll also entertains the idea of questions and answers becoming problems and solutions (Carroll 2007, 7). Sequence questions, then, are always from the perspective of the audience and grounded in the actions of the characters (what characters do). So, following the question structure of "will X verb Y?" in games, we could have the player question "how can I X?" How can I get to the other side of the chasm? How can I jump higher? How can I avoid the tumbling rocks? How can I move that box? With sequence questions, we have a method that allows writers and designers to speak the same language and have the same design goal: the experience of the player.

Indeed, Robert Denton Bryant and Keith Giglio, who have worked on screenplays and games, refer to the sequence approach in their 2015 book, *Slay the Dragon: Writing Great Video Games*, and draw a parallel between the structure of sequence mini-objectives and objectives in level design (Bryant and Giglio 2015, 99). And in 2013, Jeremy Bernstein, who also writes across film, TV and games (such as TNT's *The Librarians* and EA's *Dead Space 2*), gave a talk at the Game Developers Conference on how sequence structure works better for games because it is objective driven and works with gameplay loops (Bernstein 2013). These creators, who champion the sequence method, it should be noted, have internal design grammars with both games and film/TV. This means they have had to deal with the cognitive load of disparate schemas, and worked to reduce the tension. Here we have a structural method with no schema tension that represents best practice for games, films, TV shows, and literature. What of the "hero's journey" then, and how this can be developed for third-order design?

## From Hero's Journey to Transformational Learning

With sequence questions we have a method used in film and TV that is about audience and player actions: what they think may happen and what they need to happen. In this section we look at how the player and audience member can be changed by the experience. We move from their objectives to their worldviews. The pervasive structure in screenwriting is *The Hero's Journey*. You're told that there must a hero that declines the call to help others, and then goes through a series of tests and so on. But let's be clear about what this journey is. It is a journey based on stories from the past, stories written in a different cultural context where a male hero who was "tempted by a seductress" was accepted as being applicable to all. Other practitioners and theorists have criticised such nuances, such as the recent proposal by transmedia professional Jeff Gomez for a "collective journey" rather than a "hero's journey":

"Story, he says, no longer needs to be linear. It no longer requires the polarization of good and evil; the kind of violence and single-minded righteousness that gave the model such a "masculine impulse," as he calls it." (Gomez in Staffans 2017)

The structure still has utility, but for actually transforming a player now (who may be of any gender and not need to think in terms of conflict) it is not as effective. Indeed, while the flipping of the hero as the player is an attempt to translate the structure to games, it isn't as effective because players do not experience the journey in that way. Not all players would want to deny the call for help, for instance. It needs to be adapted to work. Watching (and empathising with) a character transform is not the same as being transformed yourself. In games (and other interactive projects), this is the critical design question: how can I change someone's mind? How can I get them to understand something? Teach them a new skill? Get them to feel something? What is needed is something that moves the player through an internal journey. How? One answer to this question is in education.

It should be no surprise that an educational model can work for games. As Gee has explained, "[g]ood games […] are crafted in ways that encourage and facilitate active and critical learning and thinking." (Gee 2003, 46) The idea of education and games may, though, still be thought of as applying only to certain games: for transformational games where the design is focused on the player being changed in a way that persists after the game. Indeed, while this easily falls within the remit of serious games, any games can be included. As Sabrina Haskell Culyba, Senior Designer at Schell Games, explains in *A Field Guide for Design Leaders on Transformational Games*, transformation comes in many forms: knowledge, skill, physical, disposition, behaviour, belief, relationships, and identity (Culyba 2015). Now, it should be noted there are other helpful structures out there used for player transformation, like designer Erin Hoffman's "sophia" process where "fun" and learning can be understood as a "cognitive mechanical process by which we convert fear to happiness through surprise." (Hoffman 2015) But here I want to draw attention to a particular model of 'transformational learning' that emerged a few decades ago.

Transformational learning refers to a pedagogical approach that facilitates a worldview change. It came about in the 1970s when adult-learning educator Jack Mezirow was working with women who were returning to study after a major life event such as divorce, or a death in the family. Their lives were completely changed, and over time he recognised a pattern in how a transformation takes place, and documented the principles (Mezirow 1978). This approach has since been developed by Mezirow and numerous others in schools, PhDs, books, and conferences. Dr. Patricia Cranton, for instance, describes transformational learning as a process where:

> *"[A]n individual becomes aware of holding a limiting or distorted view. If the individual critically examines this view, opens herself to alternatives, and consequently changes the way she sees things, she has transformed some part of how she makes meaning out of the world." (Cranton n.d.)*

How can this notion be employed as a structure? After decades of research into effective pedagogical approaches, there are what are considered the "phases of transformational learning" (Mezirow 2006):

1. A disoriented dilemma;
2. Self-examination with feelings of fear, anger, guilt or shame;
3. A critical assessment of assumptions;
4. Recognition that one's discontent and the process of transformation are shared;
5. Exploration of options for new roles, relationships and action;
6. Planning a new course of action;
7. Acquiring knowledge and skills for implementing one's plans;
8. Provisional trying of new roles;
9. Building competence and self-confidence in new roles and relationships;
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective.

A "disorienting dilemma" is externally-imposed through the death of a loved one, divorce, job change, retirement, or relationship breakup. But it can be facilitated through an eye-opening discussion, or creative project. For us, it is a catalyst at the beginning of the game. We're used to writing a catalytic event for a protagonist, but we need it for the player. In this structure, our catalytic event asks the player to question themselves and the way they've seen the world in a particular way:
*"Anomalies and dilemmas of which old ways of knowing cannot make sense become catalysts or 'trigger events' that precipitate critical reflection and transformations. Changing social norms can make it much easier to encounter, entertain, and sustain changes in alternative perspectives." (Mezirow 1990, n.p.)*

This leads to a "reassessing [of] our own orientation to perceiving, knowing, believing, feeling and acting." (ibid.) Many games offer a confrontation of assumptions, but those assumptions are based on our interpretation of the game. The unreliable narrator of *The Stanley*

*Parable* (Galactic Cafe 2013), the twists in *Bioshock* (2K Boston and 2K Australia 2007), *Spec Ops: The Line* (Yager Development 2012), and *Assassin's Creed* (Ubisoft 2007-present). Interestingly, if we consider assumption flips that are not about the game but instead about the player, the disoriented dilemma often happens at the end of a game. Examples include: Braid (Number None, Inc. 2008) where we think we are the good guy saving a princess but it turns out this is not the case; and Chrono Trigger (Square 1995) where you are charged for actions you thought were normal. In this model, we need to enable a disorienting dilemma for the player, where their assumptions about how their own world works are confronted, at the beginning rather than later. For instance, you start playing a game representing a matriarchal society, and you find it disorientating because it feels so different. Depending on your culture, this may provoke questions about your own world.

This disorientation facilitates a self-examination of feelings (you need to have an emotional response) and assumptions. Some may argue that self-examination and assumption reflections have no place in games, as games are about interactivity or rules or winning (whatever identity-forming definition differentiates the most). But as mentioned earlier, stillness is as much part of action games and so shouldn't be ignored as part of the design. Reflection happens already in games, but can be consciously introduced further. In his book *Triadic Game Design* (Harteveld 2015), Casper Harteveld relates how he designed for reflection in his serious game. There are two kinds of reflection: "reflection-on-action" (afterwards) and "reflection-in-action" (during), both of which are needed in transformational learning (Schön 1983). Harteveld found the former easy, but wanted to facilitate reflection *during* the game in a manner that didn't require pausing it. He came up with players having to give a "situation assessment" where they report to an NPC on whether a situation is not serious, serious, or very serious (which forces the player to think about and categorise the experience) (Harteveld 2015, 248).

The process of self-examination and developing a new way of thinking, then, also involves understanding "intellectually and empathetically, the frame of reference of the other." (Mezirow 2006) This is facilitated, Mezirow explains, when we participate freely and fully in a discussion. For narrative designers, this can be with other players or NPCs, or delivering information through other means. Traits of a successful consideration of other points of view include having accurate and complete information, being open and empathic and withholding judgement, being able to understand and weigh evidence to assess arguments objectively, becoming aware of the context of ideas and assumptions, having equal opportunities to participate in various discourses, having a validity test that assists until new perspectives take hold, and being free of coercion.2

If we keep following the structure, then there needs to be some way they can share their discontent with others, which may be other players or NPCs. This means ensuring there are ways to express emotion through movement or dialogue, for instance. The following steps — building confidence, new behaviours, planning, acquiring knowledge and skills, experimenting with roles, building competence — are all part of instructional design in games already. We have to teach players how to learn the skills or actions or system of the game in order to navigate and succeed in it. To do this we use instructional design techniques such as those outlined in Rudolf Kremers' book, *Level Design: Concept, Theory, Practice*, which include, teaching by doing, teaching by example, formal tuition (overt and covert), and teaching through experiment (Kremers 2009).

Looking over all the stages of transformation, there are some correlations with the hero's journey (see table below). The ordinary world may be represented in the game, or can be considered as the player's life before the game. Conversely, returning with the elixir is reflected in the player reintegrating what they've learned into their everyday life. As we can see, we have a model that is about the player journey. We just have to figure out how to affect each person directly, rather

than making assumptions about what is disorienting for all. There are other approaches to be explored as the overlap between game design and learning design becomes more widely recognised and utilised by designers and educators alike (Toppo 2015). But what we have here is the guiding principle of the player/audience as the focus of the journey, drawn from an already successful model of human change in adult education.

| **Hero's Journey (Vogler)** | **Transformative Learning (Mezirow)** |
|---|---|
| The Ordinary World | *[Player's ordinary world before you enter the game]* |
| The Call to Adventure | Disorienting Dilemma |
| Refusal of the Call | Self-examination |
| Meeting with the Mentor | Assessment of Assumptions |
| Crossing the Threshold | Relating Discontent to Others |
| Tests, Allies, Enemies | Explaining Options of New Behaviour |
| Approaching the Cave | Building Confidence in New Ways |
| The Ordeal | Planning a Course of Action |
| The Reward | Acquiring Knowledge and Skills |
| The Road Back | Experimenting with New Roles |
| Resurrection | |
| Returning with the Elixir | Reintegration *(into player's everyday life)* |

**Table 1:** Juxtaposition of Hero's Journey (Vogler) and Transformational Learning Structures (Mezirow).

## CONCLUSION

The inciting issue of this article has been that games currently suffer from a narrative and game binarism that repels gestalt. It was offered that this binarism is an artificial construction rather than an irreconcilable trait. Through the notion of a design schema, it was explained that that binarism comes from how games and narratives are framed to us through professional discourse and education. These design schemas

produce a tension because they are the result of a rampant differentiation rhetoric that draws a thick line between what games and narratives are. Subsequently, developers have what is recognised as an external design grammar of narrative. So, narrative design schemas have to be imported from other disciplines, following what is well-known rather than what is the most effective (the two are not always the same).

We then looked at some of the attempts to address this design schism with the narrative designer role, transmodal and common traits approaches. However, it was argued that by relegating the task of integration to a person, and focusing on the elements of a game object, developers are still left with no concept of narratives and games, as distinct phenomena. A switch to focusing on the audience or player was argued to be the key to finding a common base that avoids design schema tension and facilitates best practice. Explaining this through the existing notion of orders of design, it was shown that third-order design is where the activity of the audience or player are part of the mental model of creation representing contemporary design practice.

Finally, three solutions to address the problem of design schema tension are offered. The first was the tweaking of the MDA (mechanics, dynamics, aesthetics) framework to be consciously inclusive of non-game elements and less ambiguity and multidisciplinary confusion with the use of EBE (elements, behaviours, experience) terms. The second is the replacement of the notion of plot points in narrative arcs, with the successful Hollywood approach, audience-oriented sequence questions. The third and final proposal was to provide a structure that replaces the hero's journey with transformational learning phases from education.

The audience/player-centric schema was proposed to be an approach that will avoid design schema tension, and facilitate better games. It will aid the work of narrative designers, writers, and designers. It also assists transmedia writers and designers who work on games and films, TV shows, and books, as we've seen an increase with productions like *Halo* (Bunge 2001-present), *Assassin's Creed* (Ubisoft 2007-present), *Angry*

*Birds* (Rovio Entertainment 2009-present), and indies like *Firewatch* (Campo Santo 2016-present) and *Life is Strange* (Dontnod Entertainment 2015-present) for example. It means they can use the same design schemas across productions.

I am interested in seeing how the player transformation structure can be developed, discovering more models. I can see congruences with Hoffman's emotional arc for learning mentioned earlier, and encourage educators to resituate how they teach narrative to games students to avoid creating another generation of design schema tension.

It is hoped that the outcome of this article is a consideration of the critical damage an exclusionary approach (where one artform needs to be differentiated to be identified) has as it defers understanding of what makes any artform great: its affect on others. Differentiation tactics are good at short-term identity-forming, but terrible at attracting experts from other areas (as points of similarity are downplayed or rejected), community building (as there is a limit to how many different approaches/people are welcome) and ultimately making good work (as it precludes cumulative insight).

The ultimate point is not that a player-centric approach is the pinnacle of design schemas. There will be and are other epiphanies of practice. The point is not to simply shift to new structures. Creatives use whatever tools work for them. Instead, the point is to be open to changing for the better. How do we do that? A helpful guide may be whether the insight brings us closer together or further apart. That doesn't equate to choosing to be the same or different. It is about honouring what both unites and differentiates us, not just the latter. And the most obvious connection between all artforms is who is experiencing our work.

## NOTES

1. For Rouse and Abernathy, that last point is particularly telling: players remember characters not plot and so we should not worry

about plot. Character certainly is critical, but players and playtesters have narrative and game schemas that obscure insight too. What if, for instance, players were asked to retell the decisions they made? Would we see the retelling of the plot emerge?

1. On this last point, let us note Tiltfactor's research into "embedded games" where they found obfuscating the serious game "circumvents players' psychological defenses" and "triggers a more receptive mindset for internalizing a game's intended message." (Kaufman, Flanagan, and Seidman 2015) Perhaps, therefore, not announcing the serious game nature of a project enables the player to feel less coercion?

## BIO

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# Scarcity and Survival Horror

## Trade as an Instrument of Terror in Pathologic

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## ABSTRACT

This paper questions the extent to which the relative scarcity of both gameplay options and in-game resources in survival horror video games can be read as a subversion of the metaphorical and idealised capitalist systems that underpin many forms of gameplay. While survival horror games do tend to offer an alternative to the usual rhythms of work, reward and empowering reinvestment found in many video games, the dystopian absence of common resources, gameplay and features (particularly that of an in-game economy) can just as easily be read as creating a nostalgic longing and appreciation for the norms of more conventional gameplay. Ice-Pick Lodge's *Pathologic* (2005) is considered as a rare and potentially subversive example of a survival horror game that creates an atmosphere of terror and uncertainty for the

player through the fluctuations and predatory movements of its in-game economy, rather than through the absence of this feature.

## Keywords

Survival horror, scarcity, in-game economies

## INTRODUCTION

In an early discussion of survival horror games, Tanya Krzywinska notes that the often-maligned movements between cut-scene and gameplay, common within videogames, are particularly well suited to address and explore a recurrent theme found in horror fiction "in which supernatural forces act on, and regularly threaten, the sphere of human agency." (2002, 207) Indeed, many elements of survival horror gameplay might be seen as restrictive or frustrating when compared to other titles. Survival horror players are often limited in terms of in-game movement, field of view and, crucially, their ability to acquire and stockpile in-game resources such as healing items, weapons and ammunition.

The conditions of scarcity that players of survival horror games are required to operate under becomes very apparent when considering the ways in which more conventional forms of gameplay tend to emphasise patterns of progressive acquisition. As Kelly and Nadri (2014) note, many games associate success on the part of the player with a trajectory of growth, expansion and accumulation, where the player moves from a position of scarcity in early gameplay to a position of abundance as they complete various tasks and challenges. This trajectory can be identified in many different categories of gameplay, from action-focused first-person shooters like *Doom* (Id Software 1993) where players acquire increasingly more powerful weapons as they progress through the game allowing them to defeat larger numbers of adversaries; to strategy games like *Civilisation* (Microprose 1991) where successful players will usually increase their territory from a single settlement to an entire

map; to role-playing-games such as *Skyrim* (Bethesda Softworks 2011) where success is achieved by acquiring wealth, items and experience as the player explores and completes quests. Online multiplayer games of various kinds (such as *League of Legends* (Riot Games 2009) and *Eve Online* (CCP Games 2003)) also tend to associate successful play with acquisition, whether of rankings, cosmetic items, abilities or in-game resources.

Laurie Taylor (2004) argues that most forms of gameplay take capitalist arrangements as their underlying structural metaphor, wherein the successful labour of the players inevitably produces value that is then reinvested in gameplay in a satisfying and reliable manner. Jane McGonigal (2011) offers a similar analysis, arguing that one of the chief appeals of video games is that they offer players a more satisfying form of work than they can often find in their real lives. McGonigal characterises the work-like tasks found in a game like *World of Warcraft* (Blizzard 2004) as a "virtuous circle of productivity" (53) in that they invariably result in rewards that improve the player's position and open up new, more interesting forms of labour within the game, encouraging them to continue "working". This regularity of reward and advancement in return for the investment of time and labour supports McKenzie Wark's (2007) contention that many games present their players with an idealised version of capitalist relationships, where there is an uncomplicated relationship between work, skill development and material reward, essentially operating as they should rather than as they frequently do in real life.

This trajectory of work, reward and reinvestment is explicitly represented by the "in-game economies" that can be found in a variety of single and multi-player games, which allow players to trade the accumulated rewards of successful play for useful resources or abilities. While common in role-playing, strategy and action games, in-game economies tend to be either entirely absent or minimised in survival horror, as they do not usually fit with either the fictional context of these games (which typically isolate the player within a dystopian

environment) or with their gameplay, as the condition of scarcity that they impose is intended to prevent the player from accumulating a reassuring quantity of resources. The intention of this paper is to explore the implications of this absence as one of the ways in which scarcity is used in survival horror games, questioning the extent to which the disruption of the normal patterns of work and reward can be read as a critique of the capitalist systems that provide a metaphorical structure for many forms of gameplay. The 2005 game *Pathologic* by Ice-Pick Lodge will be examined as a case study to explore the ways in which scarcity may be used as a means of not just indicating the dystopian absence or breakdown of these systems, but as a way of revealing their predatory and (at times) terrifying nature. *Pathologic* is unusual in that it offers a rare example of a survival horror title that not only includes an in-game economy as one of its features, but also uses it to build an atmosphere of tension and terror. Before Pathologic can be examined, however, it will be necessary to define both in-game economies and survival horror gameplay.

## IN-GAME ECONOMIES

In his study of video game economies *Synthetic Worlds* (2005), Edward Castronova (2005) argues that all video games can be understood as economies, in that they present a virtual environment in which players are required to make choices under scarcity. These choices may be between gameplay options (e.g. deciding which strategy to pursue or which direction to move in) or, more generally, deciding how they will allot the limited amount of time that they have to spend within this environment. According to Castronova, time is the resource that players most frequently expend within all game environments, with players choosing to allot their time in ways that they believe will generate the most fun.

Castronova understands in-game economies as systems that track a very specific set of choices within the larger economies of the games themselves. An in-game economy operates as a designated system for

buying and selling various in-game resources and attributes. These types of "economic systems" are designed with the sole or primary intention of creating or enhancing fun for players through either real trade (exchanges and deals made between human players) or simulated trade (exchanges between human players and merchant bots). Castronova considers the first type of in-game economy as providing "real economic activity" in that the trades have the potential to create value within the game's real economy. The second type is dismissed as simply a mechanism for converting one form of in-game resource into another as the stable, static nature of these exchanges means that nothing is added or subtracted from the real economy of the game.

While Castronova is uninterested in simulated trade, these types of exchanges can nonetheless provide players with an area in which to exercise their agency by choosing which in-game resources they will prioritise, as well as tangible and reliable rewards for in-game "work" due to the fixed rates at which these exchanges are usually made. For example, in a single-player role-playing game like *Baldur's Gate* (Black Isle 1999), the player will usually be assured that once they receive a reward, they will be able to convert it into needed resources in a safe environment at a predictable rate of exchange. Trading does not usually present players within a challenge or a difficulty within most single-player titles, but rather it offers them relief from more stressful and demanding actions and provides reliable sense of progress by allowing them to directly apply the outcomes of successful gameplay.

Taylor (2004) understands these types of in-game economies as "narrativised and explicit" (147) representations of the metaphorical capitalist system that provide the underlying structure for many forms of gameplay. They work to further immerse the player in the familiar treadmill of work, reward and reinvestment, accepting the arrangements and values of these systems as norms. In *Persuasive Games* (2007), Ian Bogost briefly considers the "procedural rhetoric" that is imparted through the types of gameplay associated with in-game economies. Bogost suggests that games like *Animal Crossing* (Nintendo 2001) may

train players to function as consumers through the ways in which they use their explicit in-game economies to present the player with goals that create a stronger desire to complete in-game tasks (e.g. performing well in the game will provide them with resources to improve their in-game house, buy furniture, etc.). In this sense, Bogost argues, the procedural rhetoric conveyed through game economies works to behaviourally condition players to function within a capitalist society, where the goal of labour is to produce surplus value for aspirational reinvestment. Bogost suggests that the patterns of work, reward, and reinvestment that players are encouraged into through both explicit in-game economies and gameplay more generally could be understood as operating in the same way as "ideological state apparatuses" (ISAs) in the writings of Louis Althusser (1970), where state institutions (particularly education systems) are perceived as working to condition their participants to accept both the values of capitalist society and their role within it by reproducing the processes of production.

Furthermore, the usually static, safe and reliably player-centric nature of in-game economies in single-player adventure, role-playing and action titles can be read as further supporting McKenzie Wark's (2007) argument that digital games provide players with an "atopian" refuge from the real world "game" of contemporary consumer capitalism, where both the rules and chances for success are often stacked against them. Trade and investment in real life can often be fraught, complex and exploitative, whereas the digital "gamespace" usually presents these activities as simple, pleasurable, and empowering for the player. As Tanya Krzywinska (2015) argues:

"A leading pleasure of games is that they provide an ordered predictable system which affords players a multi-sensory, clearly demarcated affirmation of their skill, competency and autonomy, thereby providing a counterweight to an arbitrary, unpredictable and anxiety-inducing real world." (295)

Survival horror titles, by contrast, attempt to frighten players by disrupting the predictability of these systems. Therefore it is unsurprising that they do not often include an in-game economy, given the sense of reliability and stability that is usually associated with this feature in single-player games. Coupled with the conditions of relative scarcity imposed in survival horror, this presents the possibility of a critique or subversion of the rhetoric that is expressed through forms of gameplay that emphasise acquisition. However this needs to be contextualised within a more detailed examination of survival horror.

## SURVIVAL HORROR GAMEPLAY

A number of scholars emphasise the "survival" element as a distinguishing feature of survival horror, noting that many games tend to frame the player's successful actions as great accomplishments (saving the kingdom, the world, etc.) whereas in most survival horror games the player's main goal is simply to escape a threatening situation and/or not die (Therrien 2009; Taylor 2009). The player character is often, if not always, presented as being trapped in an enclosed environment, which may constrain their exploration, movement and field of view (Kirkland 2005). The weakness or vulnerability of the player's in-game avatar is considered to be another key characteristic, as survival horror games tend to present them as facing overwhelming odds, and being constantly harried and threatened rather than as empowered and conquering (Hand 2004). This vulnerability may be conveyed through the relative normalcy of the player characters in survival horror who tend to be ordinary citizens rather than highly trained or exceptional individuals (Pruett 2011). This vulnerability can also be conveyed through the player's access to in-game resources, with players being forced to contend with underpowered weapons and less plentiful ammunition and healing items (Perron 2009; Kirkland 2005). The limitations placed on the player's powers, movements and resources are what force them to inhabit a "survival space" (Browning 2011) in which the decisions they make are unusually fraught.

Tanya Krzywinska (2015) notes that survival horror games are defined by the contrast they present to the usual pleasures of gameplay, working to produce a very different effect by undermining the player's confidence in their own skill and the reliability of reward. Krzywinska elaborates: "Survival means scraping through, simply to face yet another dire situation, rather than providing any clear signification of dominance…" (ibid., p.296) Rather than seeking to provide the player with a sense of power, success and affirmation that will encourage them to continue to reinvest their time and effort in the game, survival horror games make the player feel vulnerable and afraid, often by removing the sense of control and self-determination present in other forms of gameplay. Krzywinska (2015) provides the classic survival horror game *Silent Hill* (Konami 1999) as an example of this trend, in that it "deliberately interferes with player performance by taking away the power to see what is coming…" (296).

While Krzywinska is discussing the player's limited field of view in *Silent Hill* in this passage, the "power to see what is coming" could arguably be one of the chief pleasures found in gameplay outside of the survival horror category, in that the mastery of game systems allows for a kind of predictability, meaning that the player can accurately anticipate the rewards for their labour and how these rewards may be applied to future challenges. For example, the acquisition and mastery of new firearms in a *Call of Duty* (Activision 2003) leads the player to anticipate how they might be utilised in new gameplay contexts. Survival horror builds its fear out of unpredictability, attempting to disrupt and withhold this sense of mastery for as long as possible, leaving players "… unable to act as efficiently as would be expected…" (Krzywinska 2015, 296). Success in a survival horror title ideally creates a sense of relief for the player at having survived, for the moment, in an unsettling environment, rather than the sense of triumph that accompanies success in many forms of more conventional gameplay, where the player may feel that they have demonstrated their mastery of a particular gameplay system or feature.

## In-Game Economies and their Absence in Survival Horror

As survival horror titles attempt to frighten the player by limiting their ability to predict and plan for future in-game challenges, they tend to strictly limit the in-game resources that can be acquired within their environments, e.g. ammunition, weapons, healing items, etc. The relative scarcity is intended to limit the player's confidence, emphasising a conservative, methodological approach over risk-taking and experimentation (Therrien 2009) and forcing players to explore at a slower pace while making careful, sometimes anxious decisions about how their resources are applied (Kelly and Nardi 2014). Giving players access to an in-game economy would therefore work to lessen the tension of survival horror, allowing players to plan ahead more easily by choosing which resources to prioritise or convert.

Taylor (2004) briefly considers the scarcity of resources and lack of a 'narrativised' economy in survival horror games, suggesting that they might serve as a subversion of the capitalist system that she identifies as underpinning the structure of most single-player gameplay. In survival horror games, Taylor argues:

"… players cannot progress in the typical game manner – that of killing enemies and gaining more experience or items in order to become stronger and kill more enemies. Instead, horror games… alter the typical gaming metaphors to make players operate in a system where work (running around and killing enemies) does not always grant payment (additional ammunition or items)." (150)

This suggestion, however, does not address the way survival horror games present their disruption of typical game progression as a terrifying experience for the player. The restrictions placed upon players in survival horror games may arguably make them long for the relative abundance and ease of more conventional gameplay rather than question or critique the assumptions upon which that gameplay is premised. Furthermore, the ways in which survival horror games deviate from

the usual objectives and pleasures of conventional gameplay are often reflected in their narrative and setting, which typically confront players with a dystopic landscape where normal social order has broken down. Survival horror games create a sense of terror through the contrast that they present with the stable, reliable and idealised systems of work and acquisition that are present, both metaphorically and explicitly, in other games.

Gianni Vattimo (1992) observes that dystopian fictions and fantasies often evoke a mood of ironic nostalgia for the world that has been lost, allowing readers or viewers to approach its artefacts and affordances with a contemplative attitude that emphasises their desirability over what may be problematic or contestable about the social and technological trajectories that they belong to. For Vattimo, the pleasure of dystopian fiction often tends to reside in the ironic longing that the audience can engage in for the norms of the technological or social order that has broken down, rather than in any genuine critique. Survival horror games can be seen as providing their players with a similar ironic longing, both in terms of how their dystopian narratives and settings may create the desire for a normal or welcoming social order – with titles like *Silent Hill* and *Resident Evil* (Capcom 1996) often forcing players to transverse the ruins of locations that might have been the source of valuable resources and services in other games: hotels/inns, hospitals and shops – and also in regard to the limitations and restrictions that define their gameplay according to Krzywinska (2015), creating a contemplative appreciation and desire for the rhythms of more conventional gameplay.

With regard to the rare examples of survival horror games that do feature some kind of in-game economy; when it is implemented the feature is usually presented as a remnant of the older, civilised order that once existed within the now devastated location. Games like *System Shock 2* (Looking Glass Studios 1999), *Bioshock* (Irrational Games 2007) and *Dead Space* (Visceral Games 2008) allow players to use in-game currency to purchase resources from terminals and vending machines that appear at intervals within their various levels. While the human

populations of the sites within these games have died or fled, the machinery of commerce remains in place, offering players the welcome opportunity to purchase extra goods at stable, predictable prices in usually safe locations. In this sense, the in-game economy can also be used to provide the moment of relief or dissipated tension that Pinchbeck (2009) identifies as a part of the cultural schema of horror as a genre. Thus when they are implemented at all, economies in survival horror games are often used to provide players with a brief respite from anxiety and dread and to indicate the security and stability of the normal capitalist social order that is otherwise absent from the game's narrative.

While it is certainly true that the structure and rhythms of the "work" performed by players in survival horror games are very different to those found in other types of games, this alone does not support Taylor's (2004) suggestion that survival horror constitutes a subversion of the metaphorical capitalist systems that underpin "normal" gameplay. The absence of the normal (reliable and idealised) relationship between work and reward in survival horror could just as easily be read as reinforcing these systems through the sense of terror, vulnerability and unpredictability that this removal is intended to create. A more genuinely subversive survival horror game, along the lines implied by Taylor (2004), might attempt to create its atmosphere of terror through the manipulation of these systems rather than their dystopian removal. This is something that Ice-Pick Lodge's *Pathologic* manages to do, especially with regard to its implementation of an in-game economy as a source of dread and anxiety for the player.

## ICE-PICK LODGE'S *PATHOLOGIC*

Ice-Pick Lodge's *Pathologic* (originally titled *Pestilence: the Utopia)* frames the player as a visitor to an isolated town in the early twentieth century who quickly becomes caught up in the outbreak of a deadly and mysterious virus known as "the Sand Plague". Players are required to explore the town from a first-person perspective, navigating its geography and social hierarchies in order to find a potential solution

to the crisis. The player has twelve in-game days in which to resolve the crisis before the game ends, each of which passes over two real time hours. During each in-game day, the player is presented with a range of objectives that will take them to different locations within the town, and it may not always be possible to complete the objectives within the game's strict time limit. When the twelfth day is reached the game will end, offering the player various outcomes depending on how successful they have been in completing the daily missions. The tasks demanded by the game's missions are not usually challenging in and of themselves (typically involving the player talking to the townsfolk and/or collecting items), but the time limit and the increasingly hostile, infected and dangerous terrain of the town make each of the days' activities fraught and stressful. Furthermore, the player is required to scavenge, loot or trade for the in-game resources they require to survive combat encounters, Sand Plague infections and the simple passage of time.

In *Pathologic* the chief threats to the player's survival are not monsters and other adversaries (though these are present to some degree) but the more prosaic dangers of hunger, exhaustion and infection. As in a role-playing game, the player's in-game avatar is defined by a set of attributes and statistics, but the role-playing trajectory of *Pathologic* involves the player doing their best to manage the degeneration of their character from a starting point of good health and fitness rather than the normal progressive accumulation of new abilities and enhancements. The player character will become hungry and tired as they struggle to accomplish their objectives, making regular meals and rest essential, as well as medical supplies to treat their exposure to the sand plague, or to heal wounds sustained in combat with looters and arsonists. In *Pathologic* the typical scarcity of survival horror impacts not just upon the player's ability to prevail in combat, but their continued ability to exist in the game world at all, even when performing tasks that would normally be considered low risk (e.g. travelling, resting or talking). Further complicating the player's struggle for survival are the interconnections between various attributes that demand their attention.

Eating food items and resting to decrease hunger and exhaustion can increase the player's level of infection. Frequently using drugs to decrease infection may also damage the player's health. Whereas most survival horror games require players to maintain just one attribute (usually health or hit points, that can only be depleted in encounters with enemies), managing the player-character's overall well-being in *Pathologic* becomes a challenging juggling act.

It should be noted that *Pathologic*'s categorisation as a survival horror game could be contestable due to its lack of emphasis on the horrific monsters and jump scares usually associated with such titles. Its focus on managing the physical deterioration of the player character might also allow it to be understood as a pure survival game (similar to titles like *Don't Starve* (Klei Entertainment 2013) or the "survival modes" found in games like *Minecraft* (Mojang 2011) and *No Man's Sky* (Hello Games 2016) where limited resources are imposed in order to create stress but not fear for the players). However, *Pathologic*'s gloomy, oppressive atmosphere, the unsettling surrealism of both its dialogue and imagery, and the grotesquely organic nature of the Sand Plague infection itself support its inclusion, especially when coupled with the sudden, destabilising shifts in the game's environment and narrative. This is supported by the general tendency on the part of both players and critics to understand *Pathologic* as a survival horror title, despite its less conventional elements. For example, *Pathologic* is described by Sophia Edwards as an "open world psychological survival horror game" in a 2015 review of the Classic HD edition, and was included in a 2015 retrospective feature on "the 20 best horror games on PC" in the magazine *PC Gamer*.

## Movement and Time in *Pathologic*

As a survival horror game, *Pathologic* is unusual in terms of the freedom of movement afforded to the player. As noted earlier, one the defining characteristics of survival horror games is that their settings tend to be

restrictive and often claustrophobic, which helps to build an oppressive and terrifying atmosphere (Kirkland 2009). Girard (2011) goes so far as to argue that it would be impossible to maintain the mounting tension that defines survival horror game play in an "open world" environment. *Pathologic*, however, is able to maintain and build tension by imposing a limitation on the player's time, rather than their movement.

While time limits of various kinds are commonly found in video games, they are usually restricted to very specific tasks – such as fleeing from a monster, or reacting in combat. Failure to perform within these time limits usually results in a failure or game-over state, and the player may then make further attempts until they succeed and are rewarded for their effort. In *Pathologic*, not only are players able to continue the game if they fail to complete their major or minor daily objectives within the two hour time limit (though this may result in more citizens within the town succumbing to the plague), the game ends once twelve in-game days have passed, irrespective of the player's actions, which provides an interesting contrast to the ways in which narrative time is usually handled in video games.

While games in adventure, role-playing and survival horror categories may track in-game time in particular ways (for example with day/night cycles), narrative time within the game (i.e. key developments that lead towards the conclusion of the game's plot) only tend to move as a result of player actions. For example in the role-playing game *Skyrim*, innumerable in-game days and nights can pass, but the dragon attacks that are central to the game's main quest will only begin once the player has performed a certain set of actions. Most survival horror titles follow a similar pattern in their use of narrative time, with key events only occurring when the player triggers them or is present to witness them. Particular challenges may need to be completed within a limited space of time (e.g. avoiding a deadly alien within certain areas of the space station that provides the setting for *Alien: Isolation* (Creative Assembly 2014)), but the narrative of the game will not proceed without the player's action (the space station will only explode at the moment that the player

makes their escape and not before, no matter how long it takes them to accomplish that escape in real time). Barring a few exceptions (like *Shenmue* (Sega 1999), for example, where a fail state will result if too many in-game days pass without the player taking action to advance the plot), urgency in a game's narrative is usually indicated via dialogue or environmental cues rather than a time-limit on the gameplay itself.

It is unsurprising that games are generally unwilling to impose a restriction on the time that players spend within them. As discussed earlier, Castronova (2005) identifies time as the principal resource that players expend within game environments. The most successful (i.e. "fun") games are those that encourage players to invest as much of their limited time in them as possible. Rettberg (2007) expands on this, noting that the commercial success of a game has a lot to do with the amount of time that the player can potentially spend within it, with the "treadmill" of work, reward and reinvestment found in massively multiplayer games like *World of Warcraft* encouraging players to continue to pay monthly subscription fees, or the "size" and "replay value" of single player games affecting the perceived value-for-money that they offer players in comparison to other games on the market. As games essentially compete for the time of their players, they do not usually impose strict limits on exactly how much time they can spend within the game, instead allowing them to largely determine the pace of their progression – if a player is inactive or "wastes" time within a game they will not usually lose the opportunity to experience narrative and gameplay content when they eventually choose to do so. The players' "real time" is limited, but "game time" is often an essentially limitless resource.

In *Pathologic*, time becomes another scarce resource within the game's "survival space" (Browning 2011), making the possibility of this kind of loss a constant factor, depending on how and when the player choses to accomplish in-game tasks, or the speed at which they are able to explore game environments. This makes the player's in-game choices even more tense and fraught than in a typical survival horror title, as what is at stake is not just success or failure within gameplay and fiction (surviving each

day or ultimately solving the town's crisis), but also within the "real" economy that underpins all games, according to Castronova, in which time is traded for fun.

## Pathologic's In-game Economy

The scarcity of time as a resource becomes a major factor in the player's engagement with *Pathologic*'s in-game economy. From the outset, the player is required to trade for vital in-game resources if they are to survive to the end of the day. As opposed to most role-playing and survival horror games, resources like food, medicine and ammunition cannot often be found within the game environments and therefore must be either purchased with currency in shops, or bartered for with various non-player characters (NPCs). On Day One it appears that this gameplay feature will provide at least some of the types of "fun" that Castronova (2005) associates with in-game economies; allowing players a space in which to exercise their agency (choosing what to purchase) and setting goals (which future purchases they will save for). However, where most in-game economies in single-player titles are essentially static or closely mapped to the player's advancement and progression, *Pathologic* attempts to simulate an economy that fluctuates in accordance with the events of the game's plot. The outbreak of the Sand Plague causes the populace to panic in Day Two and attempt to buy and hoard food, resulting in a drastic hike in prices. Day Three sees a downwards adjustment after the spike in demand passes, but also leaves many of the food shops understocked or entirely empty. As prices continue to fluctuate and shops become less reliable, players may find themselves engaging in an alternative economy of barter with NPCs on the streets: some may be willing to trade medical supplies for bottled water, others bullets for jewellery, or scrap metal for canned goods. Particular NPCs may offer better trades, but they will also become harder to find safely as the plague worsens and bandits and arsonists start to stalk the town.

The in-game economy works to decentre the player by responding the game's plot and environment rather than their progress and needs. Rather than providing a safe, reliable space in which the rewards of successful gameplay can be reinvested through a "narrativised and explicit" feature (Taylor 2004), the instability of *Pathologic*'s in-game economy, coupled with the strict time limit, makes trading as tense and uncertain as battling monsters in more typical survival horror titles. While struggling to complete their daily tasks, the player must also race against time to acquire resources and currency to trade and make it to the shops, without necessarily knowing if the goods they need will be in stock or the price at which they will be offered. As Krzywinska (2015) notes, survival horror as a genre is often best defined by the features of more conventional gameplay that it deliberately withholds from the player. The trading in *Pathologic* takes this a step further, often requiring players to deliberately sacrifice gameplay options and longer-term goals so as to ensure their short-term survival. Saving for expensive protective clothing and simultaneously buying enough food becomes impossible due to rising prices. Firearms and ammunition may need to be sold in order to purchase much-needed medicine. Trading in *Pathologic* doesn't simply empower the player by allowing them to reliably reinvest the rewards for their in-game work, but is often an agonising and deeply uncertain process through which hard-won resources and gameplay advantages can be just as easily stripped away.

The unusual instability of the in-game economy impacts upon the role and importance of in-game currency. In *Pathologic*, currency loses (and regains) its meaning quite suddenly at various points. This often has the effect of disrupting the player's confidence in their own sense of progress; in that time-consuming activities, which would normally be rewarded in most games (completing side-quests or defeating enemies and looting their valuables) can be rendered inconsequential due to a sudden increase in prices, or a shortage of goods. This lack of safety and the unreliability of the in-game economy may cause the player to question the play styles that they have been trained into in other types of single-player games – where in-game currency (if it is present) typically

only loses its meaning or value once the player has reached a point of such success and affluence that there no more meaningful purchases for them to make. Instead of offering rewards and resources that make the game easier, completing side-missions (or "distractions", as they are frequently referred to by key NPCS) in *Pathologic* may result in a meaningless or entirely absent reward, and require players to expend resources that they may need later in the game.

Furthermore, the unstable nature of the in-game economy and the value of its currency make the player's moral position within the game harder to track. Many games use choices surrounding the altruistic donation or ruthless acquisition of in-game resources/currency as ways of defining player characters as "good" or "bad", which often works to reduce the complexity of moral decision making to a binary of right or wrong (Heron and Belford 2014). Furthermore the fact that these decisions are so frequently linked to in-game economies (such as in *Knights of the Old Republic* (Bioware 2003) or *Baldur's Gate,* for example) constructs "goodness" as another reward or resource that can be purchased through the reinvestment of value under Taylor's (2004) understanding of typical gameplay systems, while also reinforcing the meritocratic assumptions that Schultz (2012) identifies as underpinning them – constructing players as making charitable decisions about their individually owned wealth without reference to any collectivist approaches to redistribution. *Pathologic* presents players with the opportunity to make altruistic gestures – using accumulated medicine to ease the suffering of NPCs, or donating food or money to help those in need, but there is no consistent system of reward or acknowledgement for this behaviour, like the karmic "good vs. evil" axis found in games like *Fallout* (Interplay Entertainment 1997), and these decisions do not result in the player receiving a "good" or "bad" ending to the game's narrative, as in *Bioshock*. Because the unstable, fluctuating economy denies the player a reliable sense of progression, there is always the chance that these sacrifices may lead to a literal self-sacrifice further down the track (i.e. reaching a point where it is impossible to complete or persist within the game) and this is reflected in the game's narrative, where players are frequently told that paying

attention to their own needs and health ahead of others is important, as they are vital to resolving the crisis within the town, so the indifference or callousness that would simply be constructed as "bad" in many games could also be read as sensible, or directed towards a greater good. The moral positioning of the player within the game is consistently presented as murky or ambiguous throughout *Pathologic* – no matter the choices they make as they struggle to save themselves and the town, a certain number of NPCs will come to perceive them as a malign presence.

The positioning of the in-game economy within *Pathologic* (unstable and unpredictable, yet also essential to the player's survival) directly feeds into the sense of fear, unease and alienation that the game attempts to evoke for the player by overturning or disrupting many of the certainties they might expect from other games, with regard to both their sense of success and progress, and also their role as hero or protagonist. However, it also reflects the broader themes of *Pathologic's* narrative, which deals with the predatory nature of both the town's internal hierarchy and the broader national/political system that the town is situated within. The town is repeatedly referred to by NPCs as a carefully calibrated machine geared towards the production of beef through the countless bulls that are slaughtered in its abattoir. Its social order is strictly divided between the legions of butchers and workers who are segregated in a decrepit slum known as the "terminity", the ordinary merchants and citizens of the town proper, and the three ruling families that exist in an uneasy alliance, each dominating a different sphere of influence within the production process (labour, capital and civic authority). Just as the outbreak of the plague disrupts and complicates the player's ability to balance the various statistics that define their character's physical well-being, it also disrupts the balance of the town, resulting in the deaths of vital leaders within the various sections of its society, internal conflict, sudden movements in the game's various markets, and a breakdown of law and order that is followed by a brutal and oppressive reassertion of first civic and then military control. Just as the player characters are constructed as being prepared to sacrifice the lives of individuals to halt the plague, the higher levels of the

social hierarchy are prepared to sacrifice entire sections of the town to restore balance and functionality (with one member of a ruling family locking down the terminity early in the game to prevent the plague from spreading). As the days progress, the ruling families themselves are revealed to be disposable cogs in the capitalist machine, when the arrival of a government inquisitor places their status and lives under threat. The authority and safety of the inquisitor herself is then called into question by the arrival of an army regiment.

Depending on their choice of character at the start of the game, the player may receive letters from ominous government officials ("The Powers That Be") who make it clear that they value the town solely as an economic unit of production – the player is instructed to halt the outbreak at all costs and is informed that the complete eradication of the town's populace will be considered acceptable so long as the town's infrastructure remains intact. Just as the player may frequently find themselves the exhausted victim of the fluctuating economy, the economic order that surrounds and defines the town itself is constructed as oppressive and capricious. While the town's chief unit of production, the bull, is never seen in the game, it acts as a guiding metaphor for the town's layout and organisation, with various districts taking their names from items of a bull's anatomy. When the player zooms their view of the map out, they will see that the layout of the town resembles a bull's body, and when they do so again, in the last few days of the game, the map of the town will be entirely replaced by a crude anatomical diagram of a bull. The town and its populace are reduced to a simple understanding of their role within a vast, uncaring economic system. Both the surrounding narrative of the game and many of its ludic elements work to invert or counter the idealised version of capitalist arrangements that are implied through the in-game economies found in many forms of conventional gameplay (and also implied through their dystopian absence or minimisation in most survival horror games). The capitalist system and its attendant meritocratic assumptions, as represented in *Pathologic* through its in-game economy and narrative,

does not principally work to promote the rising success of the individuals within it, but rather to reduce them to disposable components.

## CONCLUSION: SCARCITY AND *PATHOLOGIC*

Like most other survival horror titles, *Pathologic* uses scarcity as a gameplay feature to create an unpredictable atmosphere of tension and unease. This disrupts the usually reliable connection between in-game "work", progress, and wealth/resources identified by Castronova (2005) as a component of what makes game economies fun, and by Taylor (2004) in her critique of the assumptions that underpin gameplay structures. However, *Pathologic* also offers an unusual variation on the survival horror formula, which allows it to present a more substantial critique or subversion of the typical work/reward/investment rhythms of conventional gameplay. Rather than simply removing or avoiding gameplay features like freeform exploration or an in-game economy, *Pathologic* incorporates these usually reassuring or empowering features into the survival horror experience, which allows it to present a provocative critique of the metaphorical capitalist systems that underpin many forms of gameplay. This operates at both the procedural and representational levels of the game, with the player's increasingly frantic struggle to manage the degeneration of their various attributes under a strict time-limit, mirroring the degeneration of the town itself. Rather than terrifying the player by isolating them within a ruined or dystopian environment, *Pathologic* positions them as entering the town's social order just before the moment of crisis, allowing them to witness and participate in the terrifying logic of its movements between chaos and the re-imposition of order. Rather than denying players access to an in-game economy, it uses it as a tool to terrify them with its predatory movements in response to conditions of danger and scarcity.

Aldred and Greenspan (2011) note that Game Studies in the 21st century has tended to emphasise thematic and cultural understandings that build out of the "procedurality" of game mechanics, while neglecting the representational techniques used in the narratives and aesthetics that

frame and contextualise gameplay. They argue that both aspects need to be considered, as the understandings derived are often complementary, rather than contradictory or oppositional. I would suggest that this is particularly true in the case of survival horror games, where investment in the gameplay often requires at least some level of investment in the game's fiction, chiefly with regard to the desire/willingness to be scared by both its procedural rhythms and representational content. In this regard, survival horror titles may be unusually well suited to delivering social/political/cultural forms of critique in ways that have not yet been fully explored by game developers, critics, or scholars. *Pathologic* demonstrates this by expanding both the gameplay and subject matter of survival horror to apply the idea of scarcity in a novel manner, using it to explore (in both a ludic and narrative sense) how terror can build not just out of the absence of familiar systems, but also the player's placement within them. *Pathologic* ultimately demonstrates that impersonal and unpredictable systems can be as terrifying as any monster, positioning the market's brutal indifference as a horror that is truly challenging to survive.

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# Adolescents as Game Designers

## Developing New Literacies

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## ABSTRACT

The main goal of this paper is to analyse adolescent activities when designing video games in an innovative school environment based on affinity spaces. We analyse the development of digital literacies, understood as a critical understanding of the game in terms of its dimensions and the relationships between them, which contribute to turning it into a system. Methodologically speaking, the study relies on ethnography and action research. The project was carried out at a secondary school in Madrid, during the 2012-2013 academic year as an extracurricular programme. The participants were a group of twenty adolescents (14 girls and 6 boys) aged 14 to16, and their teacher. The members of the research team acted as participant observers. The analysis carried out was two-fold, considering firstly the tasks that took

place over the course of time in relation to the adolescents' representations of the game, and secondly the products of these activities, which were present in the creation of the game. The results show that the students developed critical skills in relation to the game which are related to digital literacy.

## Keywords

adolescents, design, video games, literacy, affinity spaces, critical thinking

## INTRODUCTION

### Relevance

The main goal of this paper is to analyse how designing video games in a school environment contributes to developing digital literacies, which is understood as the process of becoming aware of the specific dimensions of the game as much as the multimodal discourses supporting the process. We start from the idea that playing games in entertainment situations is associated with the satisfaction of overcoming certain challenges involving difficulties which, in one way or another, are related to the process of constructing meaning from digital objects.

In general terms, studying video game design allows us to approach two elements: play and games (Stenros 2016). In this paper, we consider play to have a double meaning; firstly, it is a context in which players are present, and secondly, it is a player's experience. It is a prerequisite for a game designer to have played previously. All the students, the teacher, and the researchers were regular players. We also understand that the relationship between the context and the players is mediated by the game, which is considered as an object, and is defined by a set of rules which allow for the achievement of goals. It is the situation and the

previous playing experience that contributes to making the game design process meaningful.

Salen and Zimmerman (2004, 32) explore Huizinga's (1938/2000) ideas and relate the concept of play with the construction of meaning, and with the player themselves. Sicart (2014,1) refers to play in very broad terms, also associated with the concept of meaning: "To play is to be in the world … Play is a mode of being human." At the same time, meaning is built on something that surpasses the player and the game (Pierce-Grove 2014, Tulloch 2014). From this perspective, we assume Juul's definition (2005,1), "To play a new video game is therefore to interact with real rules while imagining a fictional world, and a video game is a set of rules as well as a fictional world." The rules and fictional worlds are present in the game. Both are relevant in this study, which analyses how designing games at school contributes to the students becoming aware of the elements present in the game, which are organised as a system. All the students who participated in the study had played video games before, and in the first two sessions of the workshop we explored their experiences in previous play situations by discussing specific games. When designing games it is important to bear in mind players' previous experiences.

Also relevant is the work of Kafai and collaborators (Kafai 2006, 2012), who analysed game design in learning contexts. According to these authors, the process involves the coordination of multiple activities and the construction of meaning. They analysed particular skills in entertainment situations, "gaming fluencies", when adolescents design video games on Scratch. They referred to the use of technology, the creative process and critical thinking. In any case, developing critical approaches was shown to be particularly difficult in after-school settings. In this paper, we consider the ability to use and re-write other media in a reflective way as a critical skill. This involves re-reading these media as texts. Using this idea as a starting point, we want to explore whether the students can develop these skills, which are less frequent in leisure situations, starting from the design process in a school context.

## Goals

The specific goals of this paper are the following:

- To explore the game design process in the classroom as a way of supporting the acquisition of new literacies. Students become producers, not just receivers.
- To analyse how the process of designing video games helps raise awareness of their multiple dimensions, considering the relationships between the virtual and real worlds.
- To examine the situations of support between designers and the tools they use during video game creation by focusing on meaningful, shared spaces.

## Structure

First, we will outline the theoretical model supporting our research, based on three closely intertwined concepts. We understand literacy as the ability to gain awareness of the game's dimensions and the relationships between them. These skills are present in the design process, which involves the software that supports it, the artistic view, the narrative and the sound effects, among others. In addition, we focus on the role of context as a framework of shared meanings from which the game's representation is constructed. Second, we will introduce ethnography and action research as our methodological approach. Third, we focus on the data and its interpretation, considering the changes that took place throughout the process. The fact that the analysis took place over time allows us to delimit different phases during the study. We will focus on the game creation process by one of the groups to show how sound, narrative and mechanics come to coexist as a system. The awareness of all of the game's dimensions contributes to the development of new literacies and critical thinking, understood as the

ability to apply what is acquired in new situations to other situations when creating new games.

## THEORETICAL MODEL

Our proposal is based on three fundamental concepts: design process, game literacies, and shared spaces. Figure 1 includes the main theoretical concepts to understand the process of game design taking place during the workshops. This theoretical framework was outlined prior to carrying out the study. First, we considered several game design models, including the contexts of play as well as the games' elements. Second, to carry out the game design process, the students needed to manage and master multimodal and computational discourses. As well as the use of a formal language, it is important to bear in mind the mastery of multimodal symbols such as images and sounds. Third, the design process is an interdisciplinary practice, in which interaction between the participants allows for the combination of multiple dimensions which give rise to the game as a system.

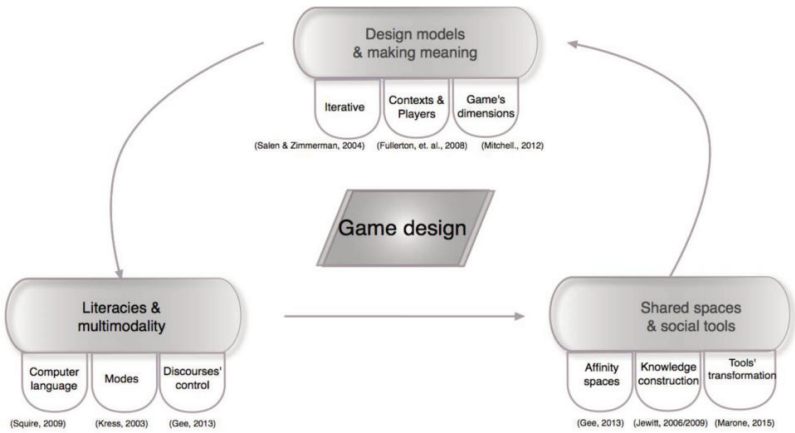


*Figure 1. Theoretical model*

## Game design and making meaning

In order to promote literacy related to video games, we rely on design processes involving awareness of the elements that shape them. Several investigations have focused on games from a design perspective. Three models stand out, considering the time when they were published.

Firstly, we will look at the classic studies of Salen and Zimmerman (2004, 2006), which proposed an iterative design that involves playing as the game is built. This is ongoing learning. The starting point is a prototype that defines the rules and the mechanics. Juul (2005) extended this perspective when he defined the game by focusing on two fundamental elements: a) the rules, which must be clear for the gamers and define the challenges they face, and (b) the fictional world, which is projected in other elements of the game such as graphics, sound and texts.

The second model, which is closely related to the previous one, was proposed by Fullerton, Swain, and Hoffman (2008) and suggested three principles to support the design process: 1) understanding how games work, (2) generating the design prototypes that define the essential elements of a given set and considering the feedback generated to implement it, and (3) considering the social framework within which it is generated, often associated with business strategies and industries. From this perspective, (Nitsche 2008; Lacasa, Pernía, and Cortés 2015) outlined certain dimensions that need to be considered: the game, its context and the representations that players build.

More recently, Mitchell (2012) offered a third model. He organised the creation process by interspersing rules and narratives and emphasising the process. Based on a summary, goals are defined and a pitch is created. This takes into account the characters, their actions and the game environment, considering its visual components and the sound as well as the interface and navigation strategies. From this starting point, and understanding design as a collective process, the emerging activity

relates to a set of roles within an interdisciplinary framework. These roles involve specialisation as people generate and understand various complex products associated with the specific dimensions of the game.

Finally, we will look more closely at the contexts of the game, from which its meaning is generated. McKenzie (2012) points out that game design depends on a specific cultural context. This suggests shared interests inspired by the player's practices, which allow them to explore relevant games from interests at specific times. Johnson (2012) goes even further and establishes relationships between the theme of the game and its mechanics, which are essential dimensions to construct its meaning.

In short, we seek to blend the different design models to create a workshop to develop and transform game representations, connected to an awareness of game dimensions. New digital literacies will be facilitated by the creation and design of a new game.

## Game design and literacies

Squire (2009) referred to the concept of literacy in relation to the introduction of video games into school contexts. In his opinion, strengthening literacy could be achieved by establishing educational programmes that included video games with a three-fold approach: play, reflection, and design. The relation to literacy stems from the fact that this ability involves meaning construction whilst interacting with technology in its many forms, which are present in game design. Furthermore, creating a game means producing multimodal texts. This author argues that what distinguishes these texts from other media is interactivity, which is directly related to immersive environments, community design, and digital storytelling. His ideas can be summarised through the following excerpt:

> *"I argue that games are an experiential, interactive medium where we participate (and cocreate) new worlds. Although these worlds are synthetic,*

> *simulated worlds, they are worlds constructed to provide particular kinds of experiences, which might be called* ***designed experiences****. Games literacy can be defined as developing expertise in designing rewarding experiences for oneself within a gameworld (particularly within the game's semiotic and rule systems)." (Squire 2009, loc. 639)*

Semiotically speaking, texts produced in a digital world go beyond the written word which has traditionally dominated in school environments. It is this new discourse associated with screens, which applies to video games, that demands new forms of literacy to master multimodal discourse. In this respect, Kress and collaborators (Jewitt and Kress 2003, Kress 2010) outline two dimensions to understand the world we live in today: 1) The image supersedes the domain of written language, and (2) screens take precedence over the pages of a traditional book. According to this author, writing and image are governed by different logics. Writing is closer to oral language; it is organised according to the logic of time and its elements are sequenced temporarily. However, the logic of image relates to spatial organisation and the simultaneity of visual elements. What is relevant for this paper is that we are faced with two forms of building meaning. Schools focus on the first one, and image literacies go unresolved. Other authors (such as Machin 2013, and Jewitt 2006/2009) provide a framework focused on the concept of multimodality, which helps us understand how to use discourse during the game design process. Designing video games requires new forms of expression and communication, which the students have to master.

In relation to video game design, Rowsell (2013) says that the process involves working with modes, which allows for higher levels of abstraction and universalisation across discipline-specific practices. She refers to Halliday (1978) to expand on the ideas of Kress (Kress and Van Leeuwen 2001):

> *"To be a mode that expresses, that represents, that signals a person or a context, it needs to have three functions: interpersonal functions that speak to an audience; more immaterial qualities that express ideas, values, beliefs, emotions, and senses as ideational functions; and, physical features*

> *that materialize these more ephemeral qualities of texts as textual functions." (Rowsell, 2013, loc. 192)*

From this perspective, modes are ways of expressing the human experience involved in game design and practice. Modes have a social and ideational function, because they express shared views of the world.

Finally, according to Gee and collaborators (Gee and Hayes 2011, Gee 2013), literacy in relation to game design is the ability to master discourses. It is understood as a tool to interpret the world. Literacy is linked to language, considered as a set of conventions. From this perspective, game literacy relates to the ability to know and consciously master the internal and external grammars of the game. Other authors also delve into the process of mastering the discourses involved in particular tasks (Barton and Lee 2013).

In short, in this article we define literacy as a skill associated with awareness and a critical reflection of the multimodal discourses and the elements that make up the game understood as a system. Its meaning is generated in certain social and cultural contexts. This reflection allows us to transform, control and rebuild its elements at an action and representation level. We assume that collective work creates frameworks for new meaning constructions that support the process of awareness of the game elements. The process is supported by the verbalisation of the elements using different discourses.

## Shared spaces and social tools

Creating a video game is a collective task in which the creators distribute the tasks and generate situations of mutual support. Specific tools are present in these scenarios to facilitate the sharing of tasks and interaction. We also assume that collective work creates frameworks for sharing knowledge and for the construction of new meanings that support awareness of the game's elements. Collaborative scenarios involve the creators taking on particular roles as they interact among

themselves. At the same time, creative processes are supported by the verbalisation of the game's elements through the use of different discourses.

Several studies refer to shared spaces when playing or designing games, and we will focus on the main ones for the purposes of this research. Gee and collaborators (Gee 2013, Hayes and Duncan 2012) refer to the concept of affinity spaces as a facilitator of learning. These are digital environments linked to the internet, or real spaces where people share resources and values, supported by certain technologies (Pellicone and Ahn 2015). This is a synchronised intelligence, with multiple skills combined in a network so that capacities are strengthened. In this context, the whole is more than the sum of its parts. When designing games, people interact around a common goal – designing the game – but at the same time, this overall goal is compatible with the range of diverse interests relating to the multiple tasks performed in the process. In addition, the affinity spaces involve not only knowledge, but also action. For example, when designing the game, creators need to reflect on what would be the best sound to go with a particular challenge. They also need to act on and improve the game so that it can be played. Therefore, not all creators need to be experts in the same tasks; they need to interact with each other to give rise to a new product. In addition, people who specialise in a particular task need to master specific multimodal discourses, for example discourses involving sound and images, just as much as they need formal language (Marone 2015).

In the same line of research, Jenkins, Squire, and Tan (2003) refer to workshops at the MIT Comparative Media Study, focusing on the design of video games and working with industry, specifically with Sony. There, the students are given a task to generate ideas to plan the creation of a game. Collaborative work takes place for a set period of time, for example between 20 minutes and an hour. The groups are interdisciplinary. The core of the project is that students have to create a pitch to sell their game in front of an expert committee, just as they would do in the real world, rather than in an academic context. Mitchell

(2012) provides a broader perspective on situations that facilitate effective video game design in a school context, albeit inspired by professional scenarios. For this author, games have become increasingly complex, supported by increasingly sophisticated technologies which require specific skills. This study, which offers guidance on the design process, provides strategies to create characters, props, interfaces and environments. For example, the author discusses, in detail, the various moments involved in the process of designing a game from an interdisciplinary approach. This begins with the creation of a script and a pitch, which includes the key features of the game, highlighting the visual design, the sound, the manner of navigation, the levels and structure of the game, and the environments. In short, the process of designing a game requires collaboration by people who play different roles, depending on their particular skills and knowledge.

Until now, we have focused on the collective space shared by the creators. Squire (2012) focuses on the tools used in those collective environments, which he calls DARs (During Action Reports). These reports include an overview of the goals, motivations and thoughts arising during the design process. These reports are cognitive tools that contribute to the production of new ideas when shared. They are built from experience in action, and they contribute to new knowledge construction. Producing these reports means delving deeper into the structures of the game.

## METHODOLOGY

### Methodological approach

We start with a qualitative approach that allows us to understand the creative environments. We are inspired by the paradigms identified by Lincoln, Lynham, and Guba (2011), and Brennen (2013). First, the critical theories that consider reality and truth to be shaped by specific historical and cultural conditions. Second, a constructivist approach,

rejecting any permanent standards by which truth can be universally known. Finally, a participatory and cooperative inquiry understood from a transformative perspective that emphasises the subjectivity of practical knowledge and the collaborative nature of research.

Considering the techniques of approximation to data and the methods of analysis, we also rely on the practices of visual ethnography (Pink 2013, Delgado 2015), which consider both images generated by the researchers, and sources of data such as those created by the participants. Therefore, we go beyond ethnography supported by observations that underlie the written texts. In addition, we took some principles of action research (Kemmis, McTaggart, and Nixon 2014), including the following: shared ownership of research projects, community-based analysis of social problems and an orientation towards community action.

## Contexts and participants

The project was carried out at a secondary school in Madrid, during the 2012-2013 academic year. This is a private school located next to a university, where the research team worked for three consecutive years introducing commercial video games as educational tools in the classroom to promote digital literacy by using machinima strategies. To afford continuity to this work process, we decided to develop an innovative experience related to the creation of video games.

A group of 20 students (14 girls and 6 boys) aged 14 to 16 participated in the project. These students had previously participated in workshops with the research team, so they were familiar with the world of video games. They worked in one large group and five small groups over the course of fourteen 90-minute sessions, as part of an extracurricular programme. We sought to promote collaborative work, and relevant games were discussed in large group situations with a view to the participants becoming gradually able to analyse them and consider them

during the creation of the game itself. In addition, groups of five students were formed, each of which created a video game. The students played different roles: team director, designer, programmer, art director and sound director. We used Game Maker software to support this process.

The teacher and the interdisciplinary research team (consisting of two educational psychologists and two specialists in communication and computing) took part in the programme. They were all involved in planning and monitoring the workshop. Both the researchers and the teacher sought to identify any preconceived ideas the students had brought to the classroom about video games. As well as being a motivational factor, this is the first step towards promoting awareness of the elements that define games. An analysis of these conversations also reveals the models that are present in the daily lives of adolescents in relation to video games. Table 1 includes a summary of the sessions.

| Session | Date | Group of students | Objectives of the session |
|---|---|---|---|
| 1 | 2012 11 29 | Large group | Collective session planning. Introduction.<br>Brainstorming. Reflect on video games. |
| 2 | 2012 12 13 | Large group | Select games. Analysis.<br>Learn to analyse video games. |
| 3 | 2012 12 20 | Large group | Reflect on video games.<br>Introduction to Game Maker Software.<br>Organise working groups. |
| 4 | 2013 01 10 | Large group and small group<br>(5 groups*) | Introduction and discussion: what is a pitch?<br>Define the video game to be created in each of the small groups. |
| 5 | 2013 01 17 | 5 small groups | Pitch presentation, discussion and evaluation. |
| 6 | 2013 01 24 | Groups organised by roles** | Discuss roles in the small groups.<br>Distribute tasks among the group members. |
| 7 | 2013 02 07 | 5 small groups | Video game prototypes on paper.<br>Art and scenarios.<br>Game Maker approach. |
| 8 | 2013 02 14 | 5 small groups | Work on the creative process.<br>Each expert takes his/her own role. |
| 9 | 2013 02 21 | Groups organised according to roles | Programmers combine art, design and song through Game Maker. |
| 10 | 2013 03 07 | 5 small groups | Work on the game, supported by the research team. |
| 11 | 2013 03 14 | 5 small groups | Work on the game, students work together.<br>Final product becomes clear. |

| | | | |
|---|---|---|---|
| 12 | 2013 03 21 | 5 small groups | Students focus on the levels of the game, the characters and their movements through the screen. |
| 13 | 2013 04 04 | 5 small groups | Work on the final presentation.<br>Review the final report on the working process. |
| 14 | 2013 03 11 | 5 small groups | Final presentation. Each group introduces the video game focusing on 3 main points: introduction, demo and post-mortem. |

**Table 1.** Sessions, details and objectives of the workshops

* Students who all have the same role work together in small groups (directors, art designers, programmers, game designers & script writers, sound directors)

** Students with different roles collaborate to create the video game

## Data and analysis

Based on the perspectives outlined above, we can assume that human activities, in this case the creation of a video game mediated by technology in a formal learning context, acquire meaning in the social and cultural context in which they arise. Data collection and analysis was carried out from two complementary perspectives that are interlinked both conceptually and through time.

- First, the reconstruction of the workshop allowed us to observe evolution and learning in relation to the process of generating awareness of the game. We used qualitative techniques focused on the participant observation by the research team (Boellstorff, Marcus and Taylor, 2012). This reconstruction came from summaries collected during the sessions, along with photographs and video recordings.
- Second, the analysis of the video games created by the groups

(Fernández-Vara 2015), paying attention to both the context and the formal elements of the game. We were especially interested in the activities involved in the game's creation (Mitchell 2012) related to the design, sound, narrative and programming.

The corpus of data comprises all video and audio-recorded sessions, the photographs taken at key moments of the workshop, and the video games created by the students. The researchers also created an interpretative summary of the sessions. The data collected appears in table 2.

| Data collection tool (1) | Total | Data collection tool (2) | Total |
|---|---|---|---|
| 1. Video recording (14 sessions) | 39:39:52 | 7. Blog | 54 |
| 2. Audio recording | 33:17:45 | 8. PowerPoint | 7 |
| 3. Group interviews | 05:26:33 | 9. Drawings | 125 |
| 4. Photographs | 1290 | 10. Sound files | 50 |
| 5. Radio interview | 1 group | 11. Video games (3 trailers) | 00:03:35 |
| 6. Researchers' summaries | 11 | 12. Written material (texts) | 10 |

**Table 2.** Data collected throughout the workshop sessions

## RESULTS

In accordance with the objectives proposed, we will show how adolescents built successive representations of the created game, becoming aware not only of the game's mechanics but also of other dimensions such as sound, narrative and elements present in the game context. We will explore how the fact that the process took place in a formal learning environment provided critical skills related to digital literacy.

First, we will examine how the participants understand what a video game is through the analysis of different games selected by them. Subsequently, we will look at the process of creating a new video game by one of the groups, paying special attention to how its elements were

generated. Finally, we will show the representation that young people built around the video game after creating their own. Figure 2 provides a summary of the structure of the workshops.

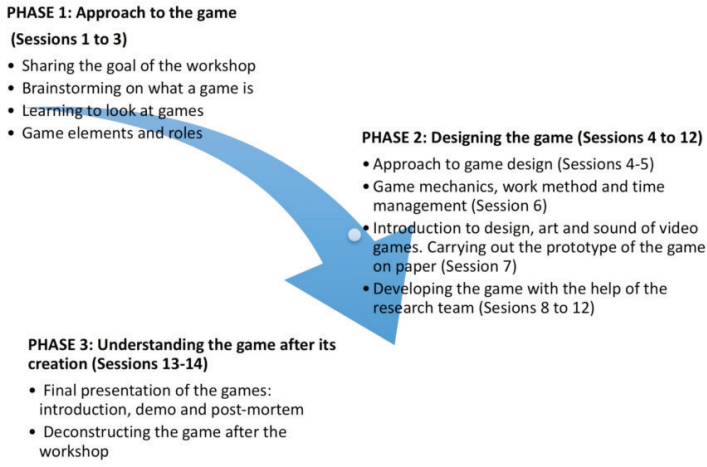


*Figure 2. Phases and workshop sessions*

## Approaching the Game

The first three sessions of the workshop can be considered an example of what happens in an innovative school context. They have features of formal education in that dialogue and conversation occupy most of the time. Learning takes place by exploring abstract concepts that go beyond the concrete, supported by oral and written discourse. There is a certain degree of innovation, in that the topics discussed during the conversations are not topics which are commonly talked about in classrooms.

## Sharing the goal of the workshop

Converting the video game design process into an educational task required that we reflect on the purpose of the workshop with the students,

thereby creating a platform for the construction of shared meanings, as the goal of the successive sessions was to create a video game. In addition, as indicated, the starting point was to analyse previous experiences from a double perspective, both as players *and* as creators, contributing to digital literacy through a process of awareness of previous experience (authors). Fragment 1 is a good example of these conversations:

> Researcher: Does anyone know how to make a video game? Has anyone ever tried?
> Student: I have. Researcher: Great, how did you do it? Student: I made a video game using a Nintendo DS simulator. Researcher: Did you make a new game or did you modify an existing one? Student: I modified one I had. **Fragment 1.** The goal of the workshop: creating a video game (2012 11 29 – Session 1)

Designing a new game is rather different from transforming an existing one. The researcher tried to facilitate reflection on the concept of game, starting with what the students considered to be a good game:

> Researcher: We are going to discuss some ideas about how the workshop will work. First, what you expect of it, and then, how we are going to work. And another very important idea: (…) To make a game we must first think about what a good video game is. Being able to tell that a video game is good does not mean we will be able to create one, but at least we need to know what's there. (…) I mean, models help us think better, so let's see which games you like and why.
> **Fragment 2.** What is a good video game? (2012 11 29 – Session 1)

Creation does not emerge from nothing; in many cases it is necessary to rely on what others have created as a starting point. There are many elements for reflection behind the screens of existing games, such as the game environment, the challenges the player faces and the strategies that will be put into practice (Fernández-Vara 2015). To facilitate awareness of these elements, we carried out a very simple first analysis of some of the students' favourite games, such as *Guitar Hero, Portal, Prince of Persia* and *Final Fantasy.*

## Game elements and creator roles

So far, we have seen how games were approached in a school context through dialogue, supported by students' own experiences as players, which forms part of the process of generating literacy (Squire 2009). Again, formal education strategies are different from the strategies used in leisure situations. While abstract thought is promoted in school contexts through conversation, practice plays a more significant role in leisure situations. Based on the ideas put forward by Mitchell (2012), we organised the video game creation process so that programming, narratives, sound and art were interlinked. It was important to emphasise that each student would play his or her own role as part of a specialised creation process. We sought to create a similar scenario in the classroom to the structure of work teams that design games in the professional world. In the excerpt below, the researcher introduces the task and explains that each participant has their own role:

> Researcher:
> We are going to design the game as a team, because this way it will be easier to work and learn other things. (…) In a team, everyone plays a specific role. Remember the credits at the end of movies. To design a video game, the following are the five main roles: – A person who is the director of the game – Another person who is responsible for programming – Someone who is responsible for the sound (…) – The script. – The artist. Then, you have to design the screens, define the story, decide what the platform will be like, and the problems in the game. But we will combine those roles, so the director or the programmer won't be on their own. We are a team with a shared goal which is to design a game, and this will be hard if you do not talk among yourselves to coordinate the team. This means that some roles are intertwined with others. **Fragment 3.** The roles involved in the design of the game (2012 11 29 – Session 1)

In this first session, the teacher and researchers had two goals. Firstly, to introduce the activity, as shown in the fragment above. Secondly, to discover the expectations of the participants and to generate expectations among them in relation to the working method to be followed, with a particular focus on the roles to be carried out by each student. To

summarise, the distribution of the five roles (directors, art designers, programmers, game designers and script writers, and sound directors) among the students serves a dual purpose: it contributes to their awareness of the game's dimensions, and reinforces the social organisation of the working environment. From this perspective, organising the design process through working teams, in the style of non-formal education and based on a professional, real-world model, could be considered a motivator for learning.

## Games and video games

After the initial discussions, it was time to focus on the concept of the game itself. We tried to go beyond specific examples and used a strategy which probably hadn't been seen outside the classroom, as students tend to remain at the practice level in leisure situations. This time, they reflected and wrote a text individually about what they understood by games and video games. Here is an example:

> What is a game?
> "A game is an object or a set of conditions defined in a given situation in order to have fun and entertain yourself. Games can also be educational, that is, we can learn by playing". What is a video game for you? "To me, a game is an electronic game. It is projected on a screen and you have a series of commands or controls that can be used to modify what appears on the screen. Video games, in my opinion, are the type of games to which teenagers dedicate most of the time". **Fragment 4.** What is a game and a video game? (2012 12 20 – Session 3)

If we focus on the student's interpretation of the concept of a game, it is clear that for her, games are linked to leisure situations. The text shows that she refers to a game as a set of conditions, based on certain rules and mechanics, which is geared towards achieving certain challenges. Using tools designed for entertainment in the classroom defies students' expectations, because generally speaking, leisure does not tend to be associated with schools. Finally, when the student refers to video games, she relates them with the digital world.

In short, students establish links between the video games they usually play and the process of creating their own video games. When players become creators, they use certain skills related to new forms of literacy, such as analysing the game's dimensions and taking on the different roles they play in the creative process (Gee 2013). We observed that, in this first phase, before they become game designers, the students approached video games based on their experience with commercial video games. To this end, they held discussions in large and small groups, which helped to clarify their previous ideas on games and video games.

### Design of the Video Game

We will now analyse the game designed by one of the groups and the design process. The perspective used is that of a participatory culture (Jenkins, Itō, and Boyd 2015), where adolescents are not only the recipients of content but also active producers. Halverson (2012) talks about participatory media spaces, where design becomes the focus of intentional learning. In this work, the learning space is designed as an interdisciplinary space around the game elements and the environment associated with the roles that each of the members of the group plays in the process.

## Confronting the Design of the Game through "Pitching"

The design process took place in a small group situation over nine sessions, through several consecutive moments. The students produced a sketch that was later materialised in a pitch, and shared and discussed with the other groups. Mitchell (2012) and Squire (2012) point out the importance of the moment when a synopsis is outlined, goals are defined and the logline is closed. By imitating a real context, each group presented their game as if they were offering it to potential producers

who would provide the funding. We felt this situation added a motivating element to the task.

Considering these preliminary ideas helps students to develop an overview of the game environment, rather than concentrating on precise details or specific mechanics, which can be determined later during the design process. First, they need to consider the broader dimensions of the game, such as the goals, setting, characters, actions and the environment that provides the backdrop for the story (Mitchell 2012). To design the game, the students need to focus on the act of playing and this is possible when using a program such as Game Maker, which allows the user to practice and compare any steps made in the creation process at any time. Adult guidance was necessary to help ensure students' awareness throughout the process. The adults asked key questions that contributed to the development of literacy in relation to the students' awareness of the game's dimensions.

In the example below, the researcher tried to help the students towards the first step in creating the game by contrasting the "how" and the "what":

> Researcher: (…) We don't want to know how, we want to know what (what the game is about). We are going to focus on the challenge behind the game, that is, the goals. We are going to describe the main characters and their environment. And we are also going to focus a little on what the game will look like.
> **Fragment 5.** The content, the objectives and the characters (2013 01 10 – Session 4**)**

The idea is that the core of the game involves a problem and some characters. The story, although obviously present, is not as important as the challenge and goals that players face.

Through verbalisation – a strategy linked to a conscious justification of tasks that is common in the classroom (authors) – the students built a first approach to the game. Fragment 6 is a sample of this conversation. In

this case, we asked students to share what would be presented formally the next day as a test in the large group.

> Student: It's a blender which wants to take a girl's fruit away to make a smoothie with it. The girl wants to rescue her fruit, so the goal is to neutralise the blender by unplugging it. The girl is short, brown-haired, she looks like Dora (The Explorer). And the bad guys in this game are the cupcakes, which are like the mushrooms in Super Mario, and the blender itself.
> Researcher: What about the visual aspect? Student: It will be like a cartoon in bright colours. **Fragment 6.** Talking about the first ideas of the game (2013 01 10 – Session 4)

The student, who played the role of director in this small group, provided an initial approach to the game, its main goal and the characters. The goal of the game is "fighting the blender that stole the girl's fruit." As in other games, the story behind the screen is oriented by the goal; fighting to solve the main character's problem (Nitsche 2008). We were also able to observe how the students were inspired by other games. For example, they referred to Super Mario and its levels of play, and Dora the Explorer, a famous TV character who inspired the design of the protagonist. The students are aware that games need some references or models for their design (McKenzie 2012). Figure 3 shows the design of the characters created for the game.

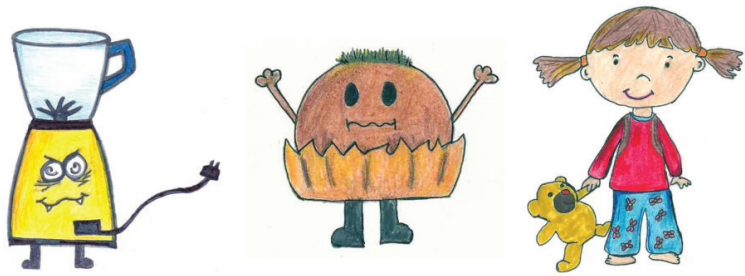

*Figure 3. The characters of the game*

Based on these first ideas, the students worked on the development of the pitch, which was presented before the large group at the next session. The characters, spaces and the weapons are no longer just an idea, now they have an image. By analysing the explanation offered by each of the creators, we can see how the design progressed:

> Student 1: Our game is called Carlota Fruit, who is the protagonist. It is a linear, visual and personal game. (…) The main character is called Carlota, who goes to school every day and one day forgets her rucksack and leaves her fruit in her room. When she returns, all her fruit is gone because an evil cupcake stole it. The action takes place between the school and Carlota's room. The kitchen is the final stage and there are several levels.
> Student 2: The main character is a short, brown-haired 8-year-old girl called Carlota. She goes to the kitchen and finds the evil blender (Marina) and her minions, light cupcakes and explosive cupcakes. Light cupcakes walk faster and explosive cupcakes, well, explode. These are the main characters. Student 3: The goal of the game is to pass all levels. At the end of each level you find this [points at cardboard] and have to pick up the fruit and get to the next level. When you get to five you have to defeat the blender. If you lose, you go back to the beginning. If not, you win. Student 4: The reason why the game is linear is because it is inspired by *Super Mario*, but with a touch of *Call of Duty*. Regarding weapons, we wanted to use real weapons along with a fantasy story, which is the reason why I have drawn on elements of the game such as cupcakes or fruits to make weapons.

(…) **Fragment 7.** Pitch (2013 01 17 – Session 5)

This fragment includes the essential elements of the game. Pitching the game furthers the students' understanding and development of it. The students have thought of a striking name (*Carlota Fruit*), and they have defined the setting and the type of game: "It is a linear, visual game." The story is the same, it has not changed. It was logical from the start. Now they have better defined characters − in this case, cupcakes − and actions. They have also thought of levels and the final goal: to collect fruit until the final fight with the blender. Again, we can see the influence of other games such as *Call of Duty* for creating weapons, according to the information provided in the post-workshop interview. All this shows how the game makes sense within an imaginary world built by the students from their experience with other games (Salen and Zimmerman 2006).

## The Game as a System

Once the students have outlined their game, the next step is to make their ideas a reality using digital tools such as Game Maker. In any case, we want them to be aware that the tool is not everything, as clearly expressed by the researcher:

> Researcher: On the one hand there's the program, which you don't know how to use, but we'll teach you. But the program isn't everything, as we will see. Each of you has a role, one or two of you will use the program but the rest will have to do different things, because having five people use the machine would be a waste of time. (…) You have to organise the planning.
> **Fragment 8.** Beyond tools (2013 01 24 – Session 6)

This is the first time the students are faced with the software. They begin to investigate the possibilities offered. The researchers also want them to understand how a game is made up of different elements that have to be prebuilt so that they can be integrated at a later stage. These reflections lead to a new question which will mark this session: What is behind the game? The researchers help the students to think about the elements that

will contribute to the gameplay and which will be materialised by using Game Maker.

> Researcher 1: (…) It is not only about defining whether the dummy jumps here or there, you also have to see the connection between one jump and the next. And that's the game as a system. No element makes sense without the other. (…) You have to have an overall vision of the game. For example, what is the overall vision in Super Mario?
> Student 1: To not get killed. Student 2: Getting from one point to the next without dying, jumping… Student 1: Catching coins. Researcher 1: All the resources you have shape the game, just like the levels do. Here, we'll only build one level, but every level is a system. These are not isolated elements. **Fragment 9.** Game challenges (2013 01 24 – Session 6)

At first, the students define the goals of the game through simple actions that the character can perform and the resources to carry them out. This involves solving problems to continue playing, making decisions that have immediate consequences and considering that even mistakes play an important role when it comes to moving forward in the game (authors).

### 4.2.3 The Visual Style and Sound Atmosphere

After introducing the software, it is necessary to explore other components of the game. The students will have to consider in depth the design of the levels, the setting and the sound. The researchers provide insights and tools that will be required to work on multiple dimensions of the game.

> Researcher 2: We want you to think about the game using paper and pencil. Think of representing the entire level, of how the player would move, how the characters would move, think of the camera, of what the player would be like in the game….
> Researcher 1: Now we will also show you visual examples of different artistic styles, so that you know you don't have to make everything exactly the same. Researcher 2: The key today is defining the atmosphere, not seeking specific sounds, but looking for a main theme, maybe. **Fragment 10.** Design, art and sound, key parts of the work (2013 02 07 – Session 7)

At this point, we approached the game from a new perspective; the design of the levels, including the challenges and problems to be faced by the player. These levels must also be associated with different screens, with the design based on particular artistic models that provide unity to the game as a system. They need to feature sounds to guide the attention of the player. Each challenge is connected to the acquisition of multimodal and critical discourse (Machin 2013). Later on, the students work in small groups and individually on specific tasks related to the role they play in the team. Figure 4 is an example of the situation:

*Figure 4. Designing the prototype (Sessions 7 & 8 – 7 to 14 February, 2013)*

The groups continue this work for several sessions (Sessions 8 to 12). They have clearly defined roles within the group and they have developed a great capacity for teamwork. Everyone knows what to do and they move fast. They look like a video-game design company. Figure 5 features a screen showing the game design once the different elements have been integrated.


*Figure 5. The game through their screens (an example)*

Through practice, the students understood the benefits of teamwork and the importance of their individual responsibilities when the functions to be performed are distributed among different people. They learned that the process of creation is linked to the various roles played – the tasks assigned in relation to the various dimensions of the game – and that this creative process is a collective, interdisciplinary task.

### Learning from the Design Process

The final workshop sessions allowed us to take stock of what had been learned through the analysis of the creations (Gee 2013). There were two key moments in terms of understanding the final phase of the workshop: 1) The formal presentation of the video games created, and 2) the final interviews with each group.

## Presentation of the Video Game Created

In order to ensure a successful presentation, they are organised into three parts: an introduction that offers the context for the project, a demo of

the video game created and a section called ‘post-mortem’, where we analyse whether the elements worked or not. Fragment 11 refers to the main aspects of the game, the changes made to the initial approach and potential enhancements.

> Student 1: If we had had time to finish, we would have made many types of weapons, but so far we have only made the boomerang-shaped banana. We were also going to unplug the blender and set it loose around the kitchen. At first, we thought of unlimited lives, but then switched back to three. The scenarios would be the kitchen and the school, but then we had the kitchen, the park, the house and back to the kitchen. We were only going to build platforms for the cupcakes to move along, but now we’ve added the pipes.
> **Fragment 11.** Final presentation of the game: exhibition of post-mortem (2013 11 04 – Session 14)

There are various aspects worth highlighting in this passage about the changes that students had to implement as they advanced in the game design. For example, unlimited lives was changed to three. The order of the scenarios and the number of levels was modified. In addition to the originally planned platforms, pipelines were added to create new possibilities for action.

All these changes, and the need to improve, denote that students are aware of the dimensions of the game. They have understood the levels and the stories that lie behind them. The students were aware of the different dimensions involved in the process of creating the game, which contributes to a specific digital literacy. They mastered specific skills closely related to the design process, the use of multimodal discourses, and the understanding of computational language (Squire 2009, Holland, Jenkins, and Squire 2003)

## Learning after the Workshop

We will now look at the post-workshop interviews for the same group of students. At this point, the students have a different perspective;

they now focus on specific aspects behind the various screens. They observe the game critically, considering it as a whole and identifying the possibilities for its potential transformation.

> Director: Yes, now I look at games thinking of how things are made, from a completely different point of view. Before I only focused on the game, on playing, that was all. Now I see everything and I ask myself questions. It has changed my view of the game. I used to think it was very easy, but it isn't.
> Sound: I thought it was all computer-generated. Researcher: So it's not as simple as it seemed, there is so much more to it. (…) Director: Now we value the work of the people behind it much more, doing everything is a lot of work, especially now that video games are so amazing.(…) —— Researcher: Can you learn from what you are doing with the game? Designer: We learn from programs, about how to do things and stuff. Researcher: Do you think that what you are learning relates to the content of your classes? Sound: When I designed the levels, I remembered that in technology classes we learned about dimensions, technical drawings and stuff. Director: We also learned from presenting it, about the economy, marketing (…) Programmer: Exactly, this is basically like a company. Designer: And, for example, in language classes we learn to write stories, narratives. **Fragment 12.** A new perspective on the game (2013 03 21 – Group 4 Interview)

From their answers, we can infer that designing the game was a motivating activity for them, which is an added value when it comes to opening the door to learning. Although the experience goes beyond learning in an academic context, students were able to connect what they learned during the workshop with the content of their academic curriculum. This underscores the value of this experience, which is aimed at the development of new forms of literacy.

## CONCLUSION

Video games are being used increasingly in classrooms to facilitate the acquisition of curricular knowledge, and in this context they are referred to as serious games. Commercial video games are used with different goals than usual, for example, to facilitate reflection on the game itself, to explore other contexts and to learn and teach ways to solve problems

((Lacasa 2013, Gee 2007). Using games as a starting point for reflection, and to generate discussion, is an initial step that shows how students develop critical literacy. The research presented in this paper goes one step further. The main goal is not just to reflect on the game, but to learn to design cultural objects by consciously mastering new forms of literacy associated with the activity of creating. Our guiding principle is not only play, but also the creation of these cultural instruments. Bearing in mind the objectives of the article, the following conclusions can be drawn.

The first objective involves new literacies and the idea of turning players into video game designers involved in creating and active learning in a digital universe, which allows them to acquire certain skills related to new forms of literacy (Gee 2013, Squire 2009). It is important to bear in mind that video games are well-known tools among the students, and form part of their everyday lives; in many cases, they rank very high on their list of interests. The main reason we chose to analyse and design video games is the fact that they can be used as learning tools. The process of learning is based on active participation through reflection on the game, considering firstly its various elements, which constitute a system, and secondly the multimodal discourses present in the creation process.

The second objective is to design the game. The students can create and reflect as they interact with objects from the real and virtual worlds. Thinking from the standpoint of their own particular roles helps them understand the key dimensions that define a game, including its mechanics, stories and visual and sound aspects. Games can be understood internally, as a set of content and rules (internal grammar), or externally, in terms of people that participate in a set of social practices (external grammar) (Tulloch 2014, Gee 2003). Both the internal and external grammars need to be taken into account when designing the game.

Finally, the third objective (the learning situations organised between the researchers and the students during the creation of the game) is

directly connected to the context in which the process takes place, the instruments used and interaction with others. The roles and the design process, which were inspired by the way professional teams work (Mitchell 2012), were also a key feature of the workshops, generating a context in which conversation and problem-solving processes promote literacy and critical multimodal discourse (Machin 2013). The students learn that creation is linked to the roles they play and the tasks assigned to them, and that it is the result of a collective task.

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