

**Agential Flow:
Practical Applications of Flow Theory in
Modern Board Game Design**

Ezra Whittaker-Powley

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Abstract

This practice-based thesis examines the relationship between modern board games and flow theory in order to answer the following question:

How might the process of designing tabletop games incorporate flow theory to result in a more engaging experience for the end user?

Using processes of practical exploration, reflection and contextual research, a method of game design will be established that emphasises social interaction as a catalyst for player engagement. Key concepts will be explored through the design of prototype games and demonstrated via the development of a final artefact: a prototype board game titled *It's Just Business*. Findings will be compiled in order to formulate a qualitative framework for board game design, i.e., the agential play framework, which will outline key theoretical considerations of the design of agential engagement through board games.

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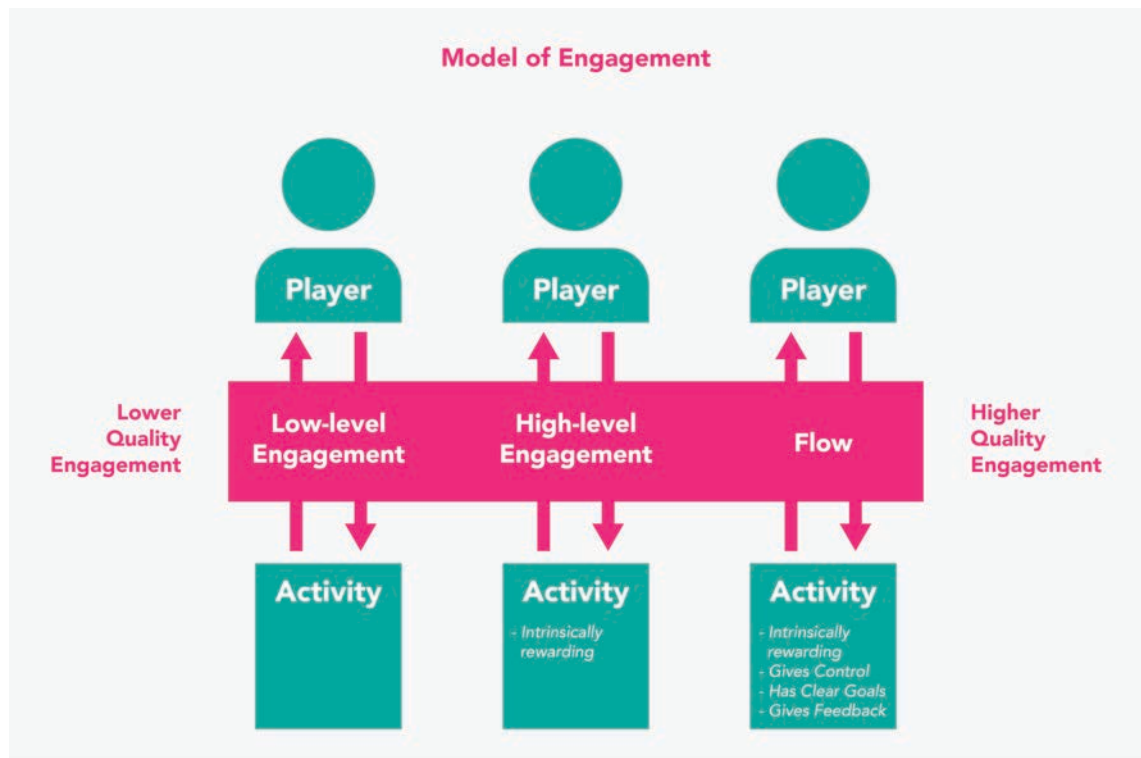


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Figure 2. Monarch.

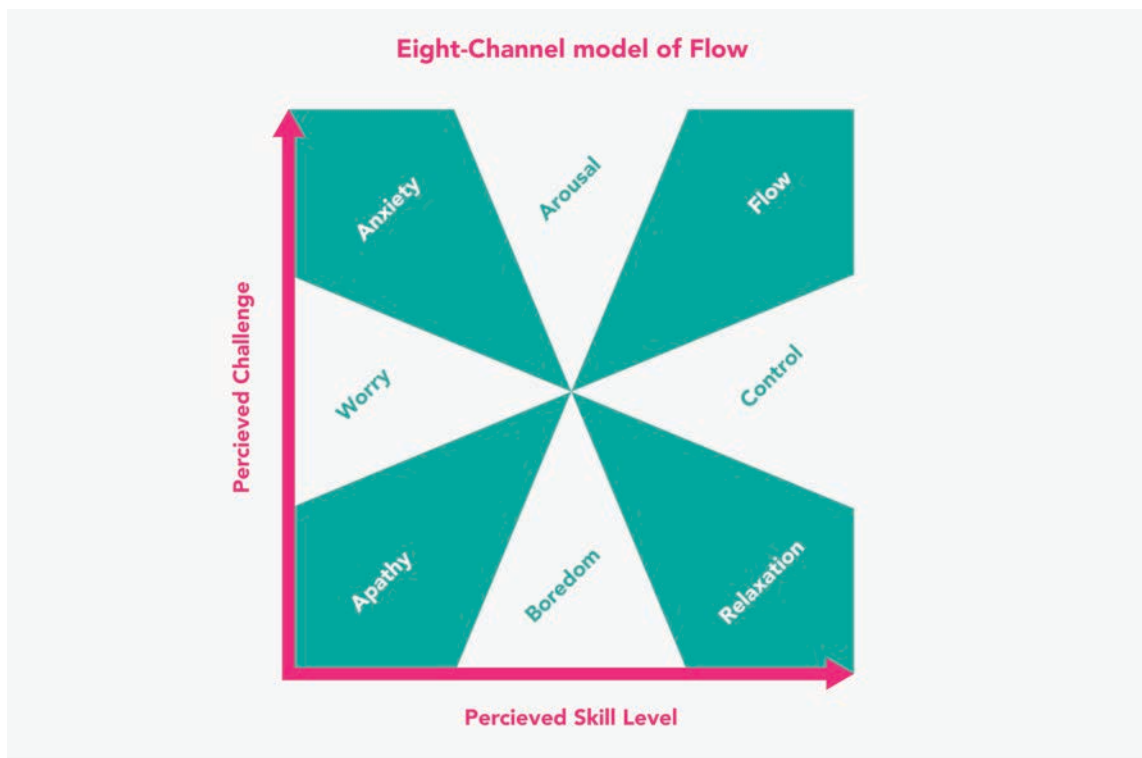


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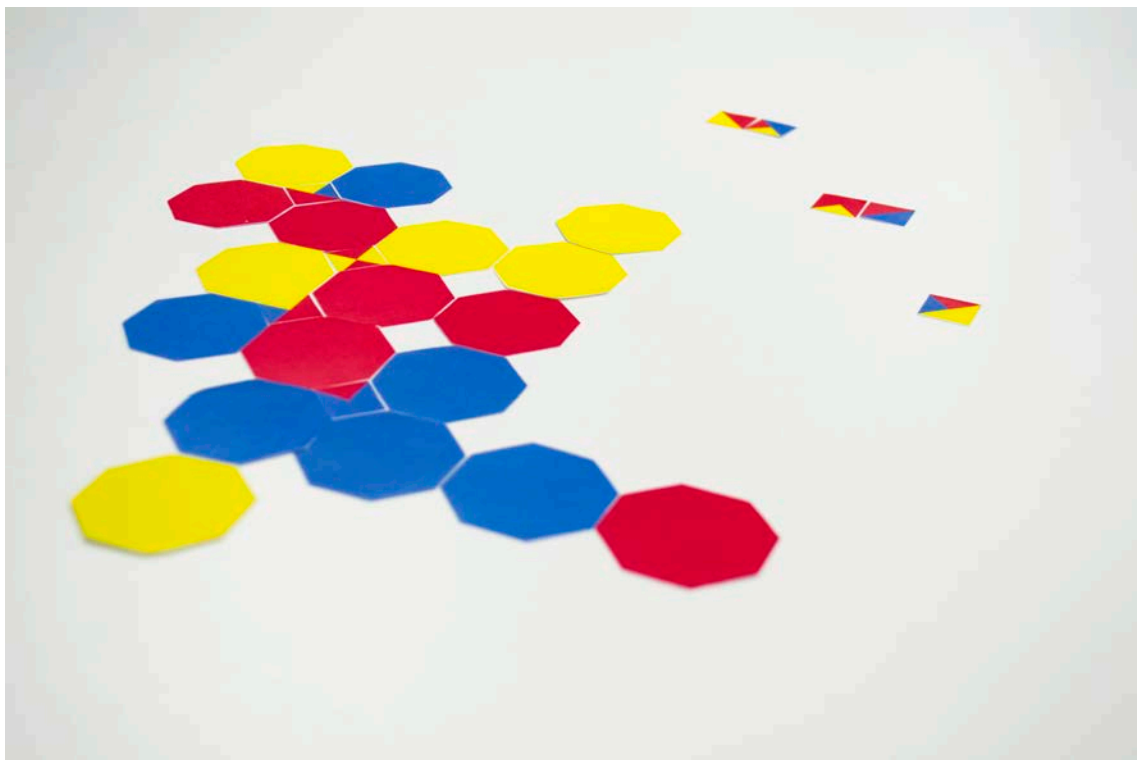


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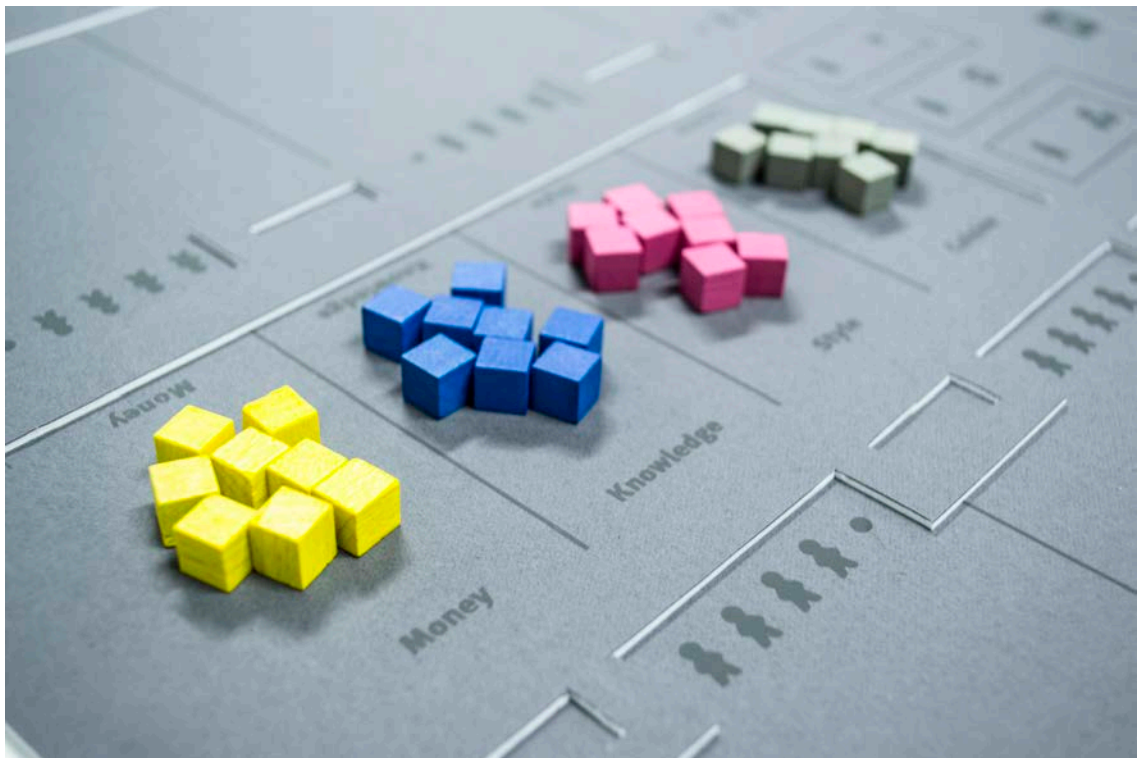


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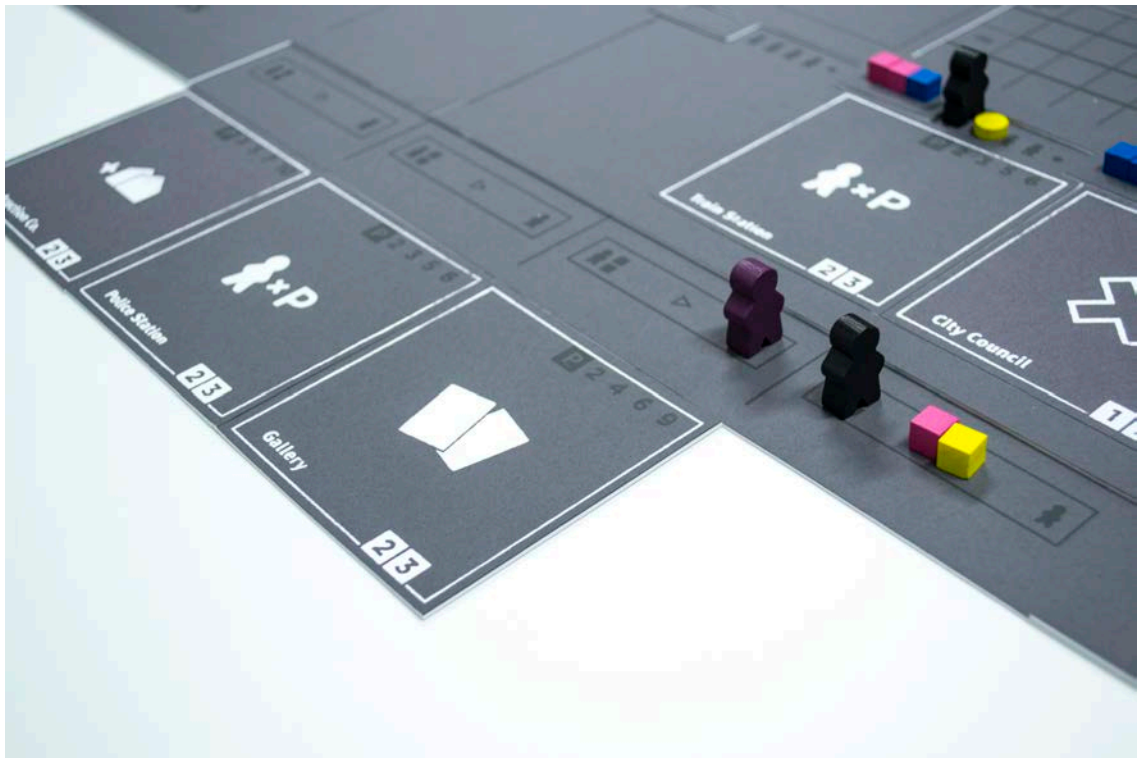


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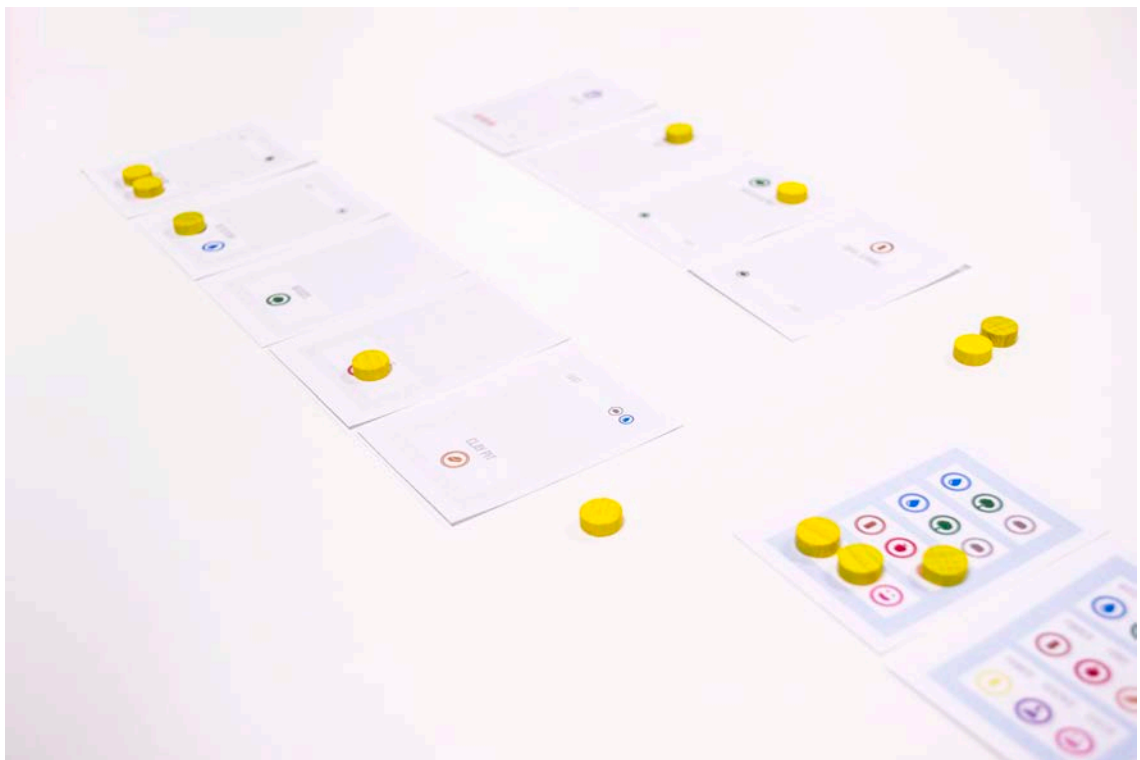


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Attestation of Authorship

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning."

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Ethics Approval

In early stages of playtesting, a call for participation was extended to the public. Ethics approval was thus required in order to ensure the comfort of participants. Through the process of gaining approval from the AUT Ethics Committee, a protocol was established for communicating with participants, ensuring that all necessary information regarding the research and playtesting proceedings was available. A consent form was required to be signed in order to participate, meaning that all participants were explicitly aware of playtesting and confidentiality protocol.

Ethics Application Number: 14/216

Approval Date: 20/01/14

Preface

Elias, Garfield, Gutschera & Whitley (2012, p. 8) determined that game characteristics are either *systemic* or *agential*. Characteristics that involve interaction between a player and the game system are considered systemic, whereas characteristics that involve players interacting with others are agential. It is the desire for agential interaction that has drawn people to board games for millennia; this same desire has established a thriving, modern board game culture, despite digital gaming's current cultural domination. Board games foster social interplay in ways that video games cannot. In doing so, they offer fascinating glimpses into the collective human psyche.

Chapter 1: Introduction

1.1 Research Purpose

Despite the increasing popularity of board games as a leisure activity, little research has been conducted on the design of contemporary board games (Woods, 2012, p. 8). Modern game designers are instead left to draw insights from a vast array of research and frameworks that are concerned only with digital games. While much can be learned by doing so, key differences between digital and analogue games remain unaddressed. In addressing this issue, the current research proposes a unique board game design approach, i.e., the use of the agential play framework. The hope is that this thesis will encourage further research into the area of board games and the creation of significant frameworks and theories that deal with board game design.

1.2 Research Context

It is important to note that this research was influenced by a personal background in graphic design. This means that a greater extent of contextual learning has been required and has allowed the research to be approached from a unique perspective.

A personal synthesis of graphic design and board game design was conducted in the year prior to the commencement of this research through the development of the game *Monarch* (Fig. 2), a project that attempted to apply the visual aesthetics of contemporary modernism to the area of niche board games. An instinctive concern for the graphic presentation of games continues to pervade the author's personal practice; however, it is the underlying mechanics of the game medium that serves as the focus of this study.

1.3 Research Outline

The first six months of this research focused on the practical exploration of engagement. Through processes of design, user observation, reflection and analysis, the concept of agential flow was conceived (see Chapter 4.2). Throughout the final six months of research, this concept was explored in greater depth through the design of a single, final artefact, titled, *It's Just*

Business (see Chapter 5). Finally, findings were brought together to form the agential play board game design framework (see Chapter 6). Throughout the entire 12 months of research, prototype development served as a method for generating and testing ideas. Summaries of developed prototypes can be found in the Appendix.

Chapter 2: Literature Review

2.1 Scope of Contextual Research

Research has focused on the following areas:

- Engagement
- Flow Theory
- Game design
- Eurostyle Games

As this research is concerned with the design of games and the way that players interact, the primary focus of contextual research has been game design and culture. Knowledge of basic design practises and reasoning has been an important basis for the study.

Initial investigations were undertaken in order to find the most appropriate method by which to measure participant engagement. The outcome of these investigations was the arrival at flow theory, which allowed valuable insight into player motivation on a psychological level. Being able to understand the reasons why players engage has been an important factor throughout the design process.

Research that deals with games and play at societal, genetic or anthropological levels was not looked into. This research relies on the fact *that* playing games is a universal human, however the precise reason *why* has little impact on the outcome of the research.

2.2 Concept

Defining Engagement

Engagement, as framed within this research, is concerned with player motivation and in particular, the initial motivation to play, as well as the desire for sustained participation.

Engagement can be viewed as the pursuit of such motivations. A participant will start with the

motivation to take part in an activity, drawn in by a variety of factors. If conditions permit, the participant may choose to *engage* in the activity through either passive or active involvement. As long as the player continues to find the activity motivating, they will continue their engagement.

Ryan and Deci (2000) discuss two types of motivation: intrinsic and extrinsic motivation. Intrinsic motivation is desire for the sake of intrinsic fulfilment through exploration, play and/or learning. One might find little joy in learning the clarinet, but find intrinsic fulfilment through the development of an inherently valuable skill. Extrinsic motivation is desire arising from external influences, such as rewards or punishments. If one was to find no joy or inherent value in learning or experimenting with the clarinet, he/she may, however, be motivated to practise playing the instrument in order to gain financial reward from performing with a local orchestra.

Ryan and Deci (2000, p. 61) note that intrinsic motivation results in “better quality of engagement”. Thus, we can make a distinction between high-level engagement, which is the result of intrinsic motivation and low-level engagement, which is the result of extrinsic motivation. In the interest of engagement quality, and because forms of extrinsic motivation might be construed as ethically dubious, this research will focus on fostering engagement through intrinsic rather than extrinsic motivation. As such, the term *engagement* can henceforth be assumed to specifically refer to high-level engagement.

We can determine high-level engagement by asking two questions:

- Was the player intrinsically motivated to start playing the game?
- Does the player continue to be intrinsically motivated to play the game?

We can then attempt to measure approximate levels of engagement by posing two further questions:

- For how long has the player continued to be intrinsically motivated to play the game?
- How strong had the player’s compulsion been to play and to continue playing?

Flow Theory

It makes sense, as we explore the notion of engagement, to consider the work of psychologist Mihalyi Csikszentmihalyi (1990), whose exploration of this topic led to the theory of flow.

Csikszentmihalyi determined, through extensive interviews, that when the right conditions are met, one can experience an emotional state of *optimal experience*, a state that he termed Flow.

Csikszentmihalyi describes flow as "a sense of exhilaration, a deep sense of enjoyment that is long cherished" (Csikszentmihalyi, 1990, p. 3). Often referred to as being "in the zone", flow is an emotional state that facilitates being fully immersed in the task at hand. This state can result when engaging in an activity that one finds intrinsically rewarding and over which one feels a high level of control. When flow is experienced, concentration is entirely focused on the current activity; perceptions of time tend to be altered and reflective self-consciousness is lowered.

Csikszentmihalyi (1990, pp. 49-67) provides a list of seven components of flow:

- A challenge or activity that requires skills
- The merging of action and awareness
- Clear goals and feedback
- Concentration on the task at hand
- The paradox of control
- The loss of self-consciousness
- The transformation of time

It should be noted that loss of self-consciousness, merging of action and awareness, transformation of time and concentration are all examples of flow characteristics, rather than flow conditions. As such, they cannot be directly addressed through design and will therefore not play a significant role in this research.

Csikszentmihalyi's eight-channel model of flow (Fig. 3) measures a participant's perceived skill level against the perceived difficulty of an activity to determine the participant's emotional state.

Flow exists as one of four primary emotional states, alongside anxiety, relaxation and apathy. As indicated by the above model, flow occurs when an activity presents a level of difficulty that matches the skills of the participant. A participant whose skill level falls short of the presented difficulty will experience anxiety. A participant whose skill level surpasses the presented difficulty will experience relaxation. When low-level difficulty is met by low-level skills, a participant may experience apathy. Worry, arousal, boredom and control serve as four intermediary states within this process.

It has therefore been established that in order for an activity to induce flow, it must:

- Present challenge
- Present clear goals
- Offer control
- Offer feedback

For a participant to sustain a state of flow, levels of difficulty must constantly shift in order to match the increasing skills of the participant. As Csikszentmihalyi states, "one cannot enjoy doing the same thing at the same level for long" (1990, p. 75).

In this research, the concept of flow serves as the highest level of engagement. As Csikszentmihalyi (1990) determined, to achieve flow, one must find the activity at hand intrinsically rewarding. We must then conclude that flow is, by our earlier definition, a form of high-level engagement. However, flow requires conditions beyond intrinsic motivation, meaning that participants can achieve a high level of engagement without necessarily experiencing a state of flow. The model of engagement that this research adopts can therefore be illustrated in Figure 1.

Since Csikszentmihalyi first published his seminal work on the concept of flow, many researchers have built on his theory. Sawyer's work on group flow (Sawyer, 2008), in particular,

plays an important role in informing the research, as do game design-centred reinterpretations of flow theory by scholars such as Chen (2007) and Sweetser & Wyeth (2005).

Game Design

In terms of the study of games, this research references Järvinen's *Games without frontiers: theories and methods for game studies and design* (2008). Järvinen presents a vast and comprehensive study that extends to many facets of game theory, including game systems, characteristics, contexts and psychology. Salen and Zimmerman also present a wide range of theoretical concepts in their book *Rules of Play* (2004). Elias et al. (2012) take a different approach in their book *Characteristics of Games*, providing a substantial analysis of games at an atomic level. These three works, unlike many game-centred studies, are inclusive of all types of games, comparing and contrasting characteristics related to sport, board and video games.

To comprehend the ideas presented in this research does not require an in-depth knowledge of game systems; thus, in the interest of brevity, the following summarised terms are those that are of particular importance to the research at hand¹:

- *Rules* are consistent instructions that dictate the actions that players can take and the resulting outcomes (Elias et al., 2012, p.71; Salen & Zimmerman, 2004, pp. 119-125).
- *Mechanics* are the primary interactions between the player and the game, as defined by rules, which result in particular outcomes (Järvinen, 2008, p. 254).
- The parts of the game with which one can interact through mechanics constitute the *game system* (Järvinen, 2008, p. 30).
- A game's *theme* is a metaphor for its ruleset, which adds context and aids comprehension (Järvinen, 2008, p. 77).

For a more holistic understanding of how the concepts exist within the wider context of game structure, see *Games Without Frontiers: Theories and methods for Game Studies and Design* by Järvinen (2008), *Characteristics of Games* by Elias et al. (2012) and *Rules of Play: Game Design Fundamentals* by Salen and Zimmerman (2003).

2.3 Eurostyle Board Games

Within the scope of board games, Woods (2012, pp. 15-20) defines the following subsets:

- Classical Games
 - Race Games
 - Space Games
 - Chase Games
 - Displacement Games
- Mass Market Games
 - Family Games
 - Party Games
 - Licensed Games
- Hobby Games
 - War Games
 - Role Playing Games
 - Collectable Card Games
 - Eurostyle Games

This research focuses on the particular genre of Eurostyle games, which are typically family-friendly, nonviolent and mechanically innovative. They emphasise game mechanics over theme (Woods, 2012, pp. 104-110) and as such, generally involve more strategy than other board games. Eurostyle games make for an ideal form through which to explore social interaction and engagement, as the typical game of this variety is developed to be accessible, family-friendly, offers plenty of player control and favours friendly rather than aggressive gameplay.

Despite this focus on friendly gameplay, Eurostyle games are commonly criticised within the board game community as being “multiplayer solitaire” (Woods, 2012 p. 102). This sardonically refers to the fact that many Eurostyle games, in the interest of minimising conflict, involve such little interaction that players may as well be playing individual games. This problem is

exemplified by games such as *Agricola* (Rosenberg, 2007) and *Stone Age* (Brunnhofer, 2008). This will be addressed as Agential Flow is outlined in Chapter 4.2.

It should be noted that the term 'board games' as it is used in this exegesis may also include tabletop games that, despite the lack of a physical board, share mechanical, thematic and contextual similarities with board games. For example, games such as *Dominion* (Vaccarino, 2008) and *Munchkin* (Jackson, 2001), though played using cards, exhibit traits that are more closely aligned with Eurostyle board games than with classic or collectable card games.

2.1 Research Question

This research will build on and draw from existing research on the aforementioned topics in order to answer the following question:

How might the process of designing tabletop games incorporate flow theory to result in a more engaging experience for the end user?

A new concept—Agential Flow will be introduced in Chapter 4 as a form of player engagement that integrates social interaction as a foundation. The Agential play framework will then address methods by which one might incorporate agential flow into board game design in chapter 5.

Chapter 3: Methodology

The research employs predominantly qualitative methods, particularly through heuristic, ethnographic and user-centred design processes.

3.1 Methodology

Ethnography

Through increased personal involvement with the participatory culture of modern board games, a substantial amount of knowledge on the subject of board games was gained through ethnographic observations. Additionally, the amount of information gained by playing and observing a large number of games with friends and colleagues was significant. Ethnographic methods (Brewer, 2000) have allowed for a better understanding of board game culture as a whole – the people, their motivations, their preferences and the games that they play.

Heuristics

Methods of heuristic enquiry have drawn on Wyeth & Sweetser's (2005) theoretical game-centred model, GameFlow. GameFlow uses Csikszentmihalyi's components of flow (1990) to analyse games and model player emotion. This differs from other heuristic models of game development and evaluation through its focus on player engagement, rather than usability. Sweetser, Wyeth & Johnson (2012 p. 2), upon re-evaluation of their model, determined that their original model is more suited to single-player games than multi-player games, since "Challenge and Control can vary considerably in a group situation". This particular problem will be addressed throughout this research as methods of analysis and mitigation are discussed.

User-centred Design

This research is guided by user-centred design principles, the end goal being to create enjoyable experiences for the participant. User-centred design situates the requirements of the consumer at the heart of the enquiry; thus, their wants and needs are paramount to the design process. Each of the research methods outlined have therefore been chosen and undertaken to

better understand player emotion and motivation. Through user-centred design processes, a sequence emerges in which gained knowledge informs future iterations of a product, resulting in a design process that is emergent and adaptive.

3.2 Research Methods

By taking on the role of participant-as-observer as defined by Gold (1958, pp. 220-221), rather than complete observer, information was gathered without disrupting or influencing group dynamic and interaction. Ethnographic techniques include:

- *Case studies* (Brewer, 2000, p. 76)
- *Participant observation* (Brewer, 2000, p. 59)

Sweetser et al. (2012 p. 2) also state that their model works best as a set of evaluative heuristics used alongside methods of expert review and playtesting, rather than as a stand-alone evaluation tool. Thus, such methods have also played an important part in the development of prototypes. Hoonhout (2008) discusses two playtesting techniques that were implemented in this research:

- *Verbal protocol analysis* (p. 66)
- *Post playtest interviews* (p. 72)

Swain (2008) outlines several techniques that focus on the design of game features, levels, control, experience and mechanics. Among these techniques, one was particularly relevant to the area of board game design:

- Quantifying the types of emotions evoked (pp. 128-130)

Case Studies

Once a concept of agential flow was reached, case studies became a valuable method of examining how it might be successfully implemented in board game design. By analysing

existing games to determine how agential flow manifests in current games, a greater understanding was developed about how it might be implemented in future games.

Of the games that were played during the course of research, two games stood out as being significant to the study of agential flow. These were *Lords of Waterdeep* (Lee & Thompson, 2012) and *Munchkin* (Jackson, 2001). These two games were by no means the only games in which agential play can be observed, however they were chosen because of their popularity and because agential flow manifests in the two games in differing ways. The case studies of each game can be found in chapter 5.1.

Participant Observation

Substantial data was gathered through the Ethnographic method of participant observation. Formal playtesting sessions were conducted over a period of ten nights, during which participants played one or two of four prototype games. The purpose of these sessions was to examine player emotion and engagement in response to various game mechanics. Participants were selected based on an interest in board games. Public were invited to participate through an advertisement in the university magazine, on screen advertisements at the monthly PIGsty Game Developers Association event, and through the online board game community page on the website Meetup.com.

Participants spent 90 minutes playing a game in groups, which ranged from three to five players. Written notes were taken throughout playtesting for further reference and analysis. The outcomes of playtesting are detailed in chapter 4.3.

Playtesting sessions involved a low level of secrecy. An outline of the research documenting the data that was being recorded and the purpose behind the research was given to each participant.

Throughout the course of study approximately forty informal board game sessions were attended as a social and leisure activity. While these sessions were not controlled or documented as the formal playtests were, they offered valuable chances to observe players in their own social environment, unaffected by pressure that would otherwise result from being observed. Through involvement in these sessions and in the board game community, the added dimension of personal experience (Brewer, 2000, p.59) was able to inform the research. Brewer states that one problem with becoming too involved in a particular community might cause a researcher to “lose their critical faculties (2000, p. 60)”. It eventuated that this was not a substantial threat to the integrity of the study, as participant feedback indicated that members of the board game community are able to critically consider their hobby, analyzing which elements of a design they enjoy, which they do not and why.

Verbal Protocol Analysis

Verbal protocol analysis involves asking players to *think out loud* and verbally relay their emotions in real time; such dialogue is recorded, then analysed and interpreted. Initial playtests for this research implemented an adaptation of this technique that involved, rather than asking participants to verbally express internal dialogue, the recording and interpretation of natural discussions that emerged (Hoonhout, 2008, p. 71). This approach was chosen because it was more appropriate to the social experience of playing a board game, where more than one inner dialogue is relevant.

Post Playtest Interviews

After each playtesting session, a focus group would be held in which participants would discuss their experience with the prototypes. Rather than conducting one-on-one interviews, as Hoonhout (2008, p. 72) recommends, a method of focus groups that included all participants was chosen as a more time-efficient method of collecting data. As participants were being observed in a social environment, it was important that participants were able to discuss their experiences as a group also. As Moore states, conducting a focus group encourages

participants to “consider how they feel about issues in light of other people’s feelings” (2006 p.144).

Post playtest interviews proved to be a more valuable method of gathering information than verbal protocol analysis. The vast majority of board games require or allow for at least some level of bluffing, either explicitly, or through the act of hiding information (Elias et al., 2012, p.161, 224). As such, observing players’ emotions while in the midst of play can be difficult, and often ineffective. Participant feedback thus becomes a valuable method for learning about player motivations and inner dialogues.

Hoonhout (2008, p. 67) states that a player “will not be able to have the full experience and talk about it at the same time”. In this research, post-playtest focus groups were conducted instead of one-on-one interviews to accommodate for the number of participants involved. Feedback was gathered by means of recorded audio and written notes for analysis.

As Moore (2006 p.144) suggests, only a small range of topics were discussed. Prompt questions focussed on participants’ emotional responses to game mechanics and events. When flow became central to the research, a greater emphasis was placed on understanding the levels of control that players felt, as this was the greatest indication on flow experience.

Questions included the following:

- “At which points during the game did you feel most in control?”
- “At which points during the game did you feel that you were not in control?”
- “How did your actions impact the game?”

The audio of focus groups was recorded and key statements were later transcribed for reference purposes.

Quantifying the types of emotions evoked

A method of quantifying player emotions (Swain, 2008, p. 128) was used to help gather data in

a way that could be easily analysed. During initial playtests player emotions were compared against Lazzaro's (2004 p.6) list of evoked emotions:

- Fear
- Surprise
- Disgust
- Naches (Pride)
- Fiero (Triumph)
- Schadenfreude
- Wonder

Flow theory offered a superior alternative to Lazzaro's list of emotions in that each of the eight emotional states that are modelled are distinctly and uniformly related, as illustrated by the eight-channel flow diagram (fig. 3). This allows for a more structured approach in which emotions can be more quantifiably observed as they relate to other emotions, and can be visually charted using the eight-channel flow model.

3.3 Data Collection and Analysis

Notes

Throughout formal playtesting sessions, written notes were taken, recording relevant information that related to player emotions in response to game prototypes. During focus groups, audio was recorded and relevant information was later transcribed. Gathered notes were compared and contrasted in order to establish patterns of emotional behaviour.

Surveys

Over the course of playtesting, various methods of gathering written feedback from participants were trialled. These methods all involved participants filling out written survey forms during playtesting, however the survey forms were altered over the sessions to gather data more efficiently while also being easier for participants to fill out. Early surveys involved players

charting their enjoyment of various game elements along a series of Likert scales. In later surveys, Likert scales were discarded in favour of simplified binary options, for example: Is the game a). too hard or b). too easy. Through only offering the two options, players were required make a decision where otherwise they might simply sit on the fence, thereby resulting in more useful feedback. It also meant that each question only required a choice of two options, streamlining the process for participants. Due to the surveys constantly changing throughout playtesting, it was difficult to compare data between sessions. As a result data was analysed independently for each session and then patterns that emerged were compared across all ten sessions.

Recording Emotions

Due to the way that the model of flow is structured, it became easier to model player emotion simply by recording players' levels of perceived challenge and perceived skill rather than noting down specific emotions. By cross referencing the two variables and plotting them on the eight-channel model of flow (fig. 3) one can determine the emotion state of the player.

Chapter 4: Observing Flow in Board Games

Over the past few decades, the concept of flow within video games has been explored by scholars such as Chen (2005) and Weibel and Wissmath (2011). Flow acts as a popular tool for designing engaging games and online experiences. As Chen states, "most of today's video games deliberately include and leverage the eight components of Flow".

In contrast, there remains a lack of studies focused on flow using board games. With the exception of the occasional mention (Woods, 2012), flow as a concept does not play a significant part in the area of board game studies. The biggest reason for this is likely the limited scope of academic research that revolves around board games in general, an area dwarfed by the number of studies focused on video games (Ortega-Grimaldo, 2008).

There may be another reason for flow not playing a bigger part in the analysis and design of board games. Most examples that Csikszentmihalyi provides of activities that induce flow are solitary in nature (solo sports, artistic endeavours) (Csikszentmihalyi, 1990). Video games, for the most part, fit this criterion (Zagal, Nussbaum & Rosas, 2000), p. 448). Board games, on the other hand, are not typically designed to be solitary experiences; in fact, as Woods (2012, pp. 173-193) notes, its social quality is considered by most players to be the most important element of a board game experience. This was reinforced by the author's personal observations, with a number of players citing the social aspects as being fundamentally important to the experience. As such, another important topic is how the nature of flow changes when applied to social activities. Csikszentmihalyi provides a number of examples of social situations that can induce flow, such as impassioned conversation with friends or an intense game of chess (1990, p. 72.); thus, it is clear that flow can indeed result from social experiences. The question that arises then is *how do these instances differ from those of a solitary nature?*

In *Group Genius* (2008), Sawyer discusses what he calls "group flow", i.e., flow experienced simultaneously by a number of people. The observation being made is that when a group

experiences flow, higher levels of creativity and innovation can be reached. Sawyer fails, however, to discuss the impact that the individuals in the group have on the collective experience.

4.1 Playtesting Outcomes

Franchise

The first prototype that was tested was a territory control game with the working title *Franchise* (Fig. 4). In *Franchise*, players are required to pay resources to open stores across six areas of a city. The game was an exercise in developing game mechanics from abstraction, rather than from theme. Mechanics were designed with an emphasis on traditional Eurostyle values, such as unclear leaders, and the mitigation of luck.

The game was, in terms of fostering high-level engagement, unsuccessful. Players cited a lack of meaningful choices and a lack of player interaction as fundamental problems. Measures that were introduced for allowing players to have a degree of control over the few random elements proved ineffective. Most players agreed that they believed the game could be improved by allowing the trading of resources between players. This would allow players more control when implementing strategies and would help to create a more enjoyable social environment.

Chromagon

The second prototype was an abstract strategy game with the working title *Chromagon* (Fig. 5). The emphasis throughout the mechanical development of *Chromagon* was on creating a game with rules as simple as possible, while still allowing for the emergence of complex strategies. During a player's turn, players draw an octagonal tile from a face-down pile of tiles, revealing it to be one of three colours. They then place the tile on the table to create an emergent, modular board. As objectives, players have three patterns that they must create from the placed tiles. When a player completes all three of their objectives, they are declared the winner.

Players tended to engage much more with *Chromagon* than with *Franchise*, despite the greater simplicity and often, as feedback suggested, *because* of this aspect. Players indicated that the fact that each completed move had wider implications on the strategies of other players meant that the game offered a greater level of social interaction. As with *Franchise*, this social interaction was cited as an important part of the experience.

Hunter/Gatherer

The third prototype tested was a worker placement game called *Hunter/Gatherer* (Fig. 6), which was designed to blend together cooperative and competitive gameplay. During the game, players take turns to act as the group leader, a role that does not allow them to score points, but affords a greater level of control within the group. The game mechanics were designed to encourage a certain group dynamic in which players would compete via the support of one another.

Hunter/Gatherer proved to be significantly more agentially-engaging than both *Franchise* and *Chromagon*. Participants were constantly engaged in discussion, debating the particular moves that would be most beneficial to the entire group. The game's greatest flaw, however, was that the level of control afforded to players was reduced due to increased pressure to perform actions that the group collectively deemed necessary. The game's static narrative also reduced overall player control. There was little variation in terms of what was required each turn, which meant that the same actions needed to be taken during each round.

City Builders

The fourth prototype was a city-building, resource management game called *City Builders* (Fig. 7). The premise of the game is that players must accumulate four different resources, which symbolise money, public support, workforce and knowledge, to spend on constructing new buildings in the city. Each building offers players the opportunity to trade, gather and manipulate resources in a unique way. Since players determine the rate at which buildings are built, they

can dynamically adjust the number of available options to ensure comprehension. When the game starts, there are only a few means for accumulating and trading resources, thereby allowing players to quickly grasp the rules of the game. By the end of the game, the board is filled with buildings, each offering unique actions and opportunities to players for exercising different strategies. At this stage, players have an understanding of the game that matches the increased number of possibilities.

City Builders proved the most successful prototype in terms of achieving flow. Players had a higher level of control, which was not greatly affected by others; in fact, the actions taken by other players, i.e., the placement of new buildings, gave rise to more possibilities and therefore, more opportunity for exercising control.

4.2 Agential flow

The concept of agential flow was conceived upon the analysis of playtesting sessions and draws on the aforementioned assumptions:

- To induce flow, an activity must offer challenge, control, clear goals and feedback (Csikszentmihalyi, 1990).
- Players desire social interaction above all else when playing a board game (Woods, 2012, p. 176).

In the interest of fostering flow, initial prototypes were designed with mechanics that specifically offered challenge, control, clear goals and player feedback. It was observed that when engaging with these prototypes, participants tended to interact less with other players, instead focusing on the game itself. This is reinforced by the common criticism of Eurostyle games as “multiplayer solitaire”. This leads one to assume that when a game system presents these flow prerequisites, players are encouraged to engage with the game system, rather than with other players. To design such a game will be to disregard the importance that social interaction has on the board game experience.

Considering the above, it is therefore logical to conclude that in order to encourage players to engage with one another, flow prerequisites must instead be channelled through social interaction, rather than arising directly from the game system. By acting as sources of challenge, control, goal clarification and sources of feedback, one can assume that players are able to experience a communally generated state of flow, henceforth termed *agential flow*. In this context, social interaction can include both direct and indirect interaction.

By analysing a number of pre-existing games, we can see that many games encourage agential flow through social interaction. Judging by the absence of any written theories that outline such a concept, however, one can assume that such implementations simply reflect the instinctive processes of experienced game designers.

The concept of agential flow seems to indicate that by adopting the proposed approach for designing flow through social interaction, games can be produced that challenge the notion of Eurostyle games as little more than multiplayer solitaire.

Chapter 5: Applications of Agential Flow

In the preceding chapter, the initial concept of agential flow was outlined and key ideas thereof were determined. In this chapter, these ideas are explored and expounded on through case studies and reflective analysis in order to determine how board game design can successfully integrate agential flow at a mechanical level.

5.1 Case Studies

The following case studies explore how the concept of agential flow is manifested in two popular Eurostyle board games.

Lords of Waterdeep

In a game of *Lords of Waterdeep* (Lee & Thompson, 2012), players take turns to place workers that collect resources from various areas on the board. These resources can then be spent to complete objectives that are worth points. The primary characteristic that sets *Lords of Waterdeep* apart from other worker placement games is the implementation of owned action spaces. A player is able to pay money to create new actions, which are available to all players, and that reward the owner of the action space each time it is used. The use of owned action spaces creates within the game another layer of social consideration. Players are required to decide if it is more rewarding to use one of the original action spaces, or to use one of the owned action spaces, benefiting both it's owner and themselves. When a player buys and puts into play an action space, they are simultaneously gaining an individual advantage and increasing the number of opportunities available to the collective group.

The value of owned action spaces are weighted as being more profitable than original action spaces in order to offset players' natural aversion toward assisting their competitors. Owned action spaces are chosen by the player; thus, the players determine which actions are valuable

and important. By extension, they are also able to influence the scarcity and value of each individual resource.

Munchkin

In *Munchkin* (Jackson, 2001), players gain levels by defeating monsters. The game is competitive, with players racing to be the first to reach level ten. During the initial stages of the game, however, players are encouraged to work together. On a player's turn, they may engage in combat with a monster in order to gain one level and earn new items. At this point, if the player's combat score is not high enough, other players are able to offer support in combat.

Helping another player in combat has few negative implications other than the progression of a competitor. This means that players are more willing to offer other players assistance. The lack of guidelines concerning how players can collaborate results in a high level of social governance. Players must negotiate rewards for assistance and players are able to dictate whose help they receive. This flexibility gives the collective players the power to determine social order within the game.

5.2 Designing for Agential Flow

Informed by initial stages of prototyping and playtesting, as well as the analysis of the games discussed above, initial guidelines for an approach to design that will foster agential flow were established:

- Encourage player collaboration over player conflict.
- Systematically link player progress with social interaction.
- Allow social governance through flexible systems.

These guidelines were tested through the development of *It's Just Business*.

It's Just Business

The prototype game *It's Just Business* was developed to test the concept of agential flow.

During the final six months of research, the game underwent three physical iterations. Each new prototype was tested and refined based on observations and player feedback in order to optimise agential play.

Version 1

In its initial conception (Fig. 8), *It's Just Business* was a card game, developed to give players a high level of control over the entire game experience. The game was played with action cards and four arbitrary coloured resources – blue, green, yellow and red. There were no set methods for scoring points and only one initial, inefficient method for gaining resources. Through the course of the game, players were able to combine cards from their hand to create actions and objectives. Players were able to set prices for the actions they offered and were encouraged to offer prices that would be both profitable and competitive. Through player decisions alone, new and unique processes emerged that would allow players to progress in various ways.

To foster agential flow, *It's Just Business version 1* worked in several ways:

- The unique mechanic of determining prices allowed for a high level of direct control over the game's economy².
- All available options were explicitly chosen by players.
- A player limited their options by not interacting with other players.

This initial version of *It's Just Business* worked well in terms of its mechanics system. In most cases, however, due to a lack of theme and a high level of logical complexity, casual participants tended to not become engaged in the game due to the following factors:

² Over the course of this research, no game that implements a similar price-setting mechanic has been found.

- In order for a player to feel control over a situation, they had to be able to understand each option that was available to them. As such, when presented with too many options, it was often difficult for a player to analyse each option effectively; this was often the case when playing *It's Just Business version 1*. In these instances it, was common for a participant to experience analysis paralysis, a state in which one becomes overwhelmed by the number of possibilities and as a result, takes increased amounts of time to make decisions.
- The mechanic of charging prices for actions was at times confusing. It is theorised that this was due to this aspect being unique to the game, and therefore unfamiliar to players. To render the game more accessible, ideas needed to be distilled into a simpler, more intuitive form with a greater emphasis on a cohesive theme.

Version 2

The arbitrary, free-form nature of *It's Just Business version 1* meant that players were able to act largely on impulse. Observation of such actions helped to dictate the direction of *It's Just Business version 2* (Fig. 9). Common actions were emphasised, while less popular actions were reworked and omitted from the game. This process was adopted in the hope that gameplay would become more instinctive.

In the second iteration of *It's Just Business*, gameplay was simplified and distilled into a tile-based game, incorporating ideas from its precursor, *City Builders*. The underlying price-setting mechanic was retained, but many of the more complicated actions that made the game less accessible to casual gamers were removed. Rather than complex, combined actions, each tile allowed for only one possible action. A more comprehensive theme was applied to the game: each action tile became a different *building*, and the formerly arbitrary coloured resources became *money*, *style*, *knowledge* and *cuisine*. The simplification of the game system and reinforcement of the theme were undertaken to ensure that the game was fundamentally easy to understand.

Another consideration enacted through the development of the second iteration was players' modes of building action spaces. In the initial game, cards were simply played from one's hand. In the second iteration, a tile buying system was introduced. Similar to many Eurostyle games, four building tiles were drawn to become available for purchase. When one of the tiles was put into play, another was drawn in its place. *It's Just Business version 2* differed from other games in that it allowed players to use actions to bid for an available building. Players were able to place a worker to bid on a building that they want; however, other players could place workers on the same building to override the initial player's bid. Bids could also be raised by additional resources, which had to be matched by subsequent bids. This mechanic was introduced to add another layer of social intricacy to the building system. The intended implications of the system were that a player's opportunities for claiming buildings would be less restricted by systemic elements.

A problem that emerged through playtesting was that a player's ability to place subsequent bids on a building space was seldom used. Inexperienced players tended not to have a strong grasp of what each building would offer and as a result, player choices of buildings were dictated by convenience rather than strategy. As a result, once a player placed a bid on a building space, players decided that it was not worth wasting an additional action to place a further bid. This prompted the reconsideration of the mechanic in the final version of the game.

Version 3

In the third iteration of *It's Just Business* (Fig. 10), alterations were made to the tile bidding system, the resident cards and the layout; this was done to improve the comprehension and pacing of the game. The game board and building tiles were screen-printed and hand constructed, and high quality components were purchased to enhance the play experience (Fig. 11 & Fig. 12). Three solutions to the issue of the bidding mechanic were formulated and tested. The first solution was a complete omission of the bidding action in favour of a simple building mechanic. This option resulted in a simpler ruleset by replacing one of the more complicated mechanics with one that would be more familiar to Eurostyle gamers. It also improved the

progression of the game, allowing buildings to be constructed from the first turn, thereby increasing the number of available options. The second solution was a mechanic that would allow workers that were outbid to be “bumped” back to their player, meaning that making a frivolous bid would be less risky, as no actions would be wasted on unsuccessful bids. The third and final solution was the introduction of a new mechanic, which allowed players to pay additional resources to the action space in order to claim and build a building straight away (Fig. 13). If a player chose not to pay additional resources, they would be required to wait one turn before building, thereby allowing others, if they so desired, to pay the additional resources to claim the building instead. In these instances, the additional resources would be paid to the player who missed out on the building as a form of compensation. The theory behind adopting this mechanic is that play would advance quicker while still retaining an additional level of agential play.

The resident cards were also redesigned and reworked for the final version (Fig. 14). Auction cards, which added significant complications to the ruleset, were deemed unnecessary and were culled, and a new category of cards, employee cards, were developed. Employee cards provide permanent rewards to a player and can be used by other players at a cost.

Finally, variables such as the costs and actions outlined on building tiles were refined to ensure that the game was as balanced as possible, with the primary resources of cuisine, style and knowledge being equally weighted, and money, as a secondary resource, being worth slightly more.

Chapter 6: The Agential Play Framework

6.1 Basis

The ideas and concepts throughout this thesis that relate to the development of board games have been refined and compiled into one unifying framework. The agential play framework was developed for two reasons:

- To serve as a basis for future study of board game design
- To be an informative resource for contemporary board game designers

The framework was established through the consideration of how flow-related game design frameworks can be adapted to the area of contemporary board games, and builds on two years of personal practice and the development of over 12 different board game prototypes.

The overarching goal of the design process is to encourage engaging agential play. To achieve this goal, the agential play framework relies on the implementation of three design considerations:

- Flow and engagement fostered through *agential* design
- Social variability offset through *systemic* design
- Intrinsic motivation encouraged through *thematic* design

These three elements are supported by a number of game design guidelines. Some of these guidelines have been sourced and adapted from various game designers and theorists. Others have been devised as personal rules through reflective design and observation.

The key concerns throughout the design process were:

- Player comprehension – only when a player understands the system are they able to feel a sense of control over it. Flow theory dictates that for a player to experience flow, they must understand the key objectives.
- Player variability – when designing for social play, one must account for variation arising from player personalities. Playtesting is required with a wide range of players, as

is simulating various player mindsets and strategies to determine how certain approaches of play might affect the gameplay.

- Social conflict – a natural inclination when implementing social interaction into a game is to allow players to attack or negatively impact one another. Eurostyle games often avoid this type of conflict, to the point where play includes little social interaction. By instead focusing on positive social interaction, one can design games that both uphold typical Eurostyle values and allow for higher levels of agential play.

6.2 Designing for Agential Play

Working with the agential play framework, the primary goal was the facilitation of engaging, agential play. The primary method of doing so was to design mechanics that allowed flow to be channelled through social interaction.

Control and Challenge

The most fundamental design aspect that should be considered when designing using the agential play framework is the harmonious balance of control and challenge that players present to one another. Mechanics should be designed to encourage players to offer both aspects of challenge and control to their peers. For example, *7 Wonders* (Bauza, 2010) allows players access to resources by constructing buildings in their city. Each player is able to use their own resources to challenge other players through military force, scientific progress and point accumulation. These buildings, however, also allow other players the choice to pay to use them to their own advantage, meaning that the construction of a resource production building both challenges rival players and increases their strategic options.

Collaborative Interaction

In many Eurostyle game, social interaction arises from limiting the options of other players, such as claiming the particular action or resource they want. Interaction, however, can also be fostered through collaborative means. Systems can be designed that allow players to gain more

from cooperation than from competition, thereby encouraging players to work together (Woods, 2012, p. 159). For example, a game mechanic might allow players to earn more points through collaborative action than they each would have earned through individual actions. Alternatively, one player might be able to complete an objective with the help of another player, but may be obliged to compensate the player for their assistance³.

Progress through Collaboration

In order to encourage positive collaboration, one might consider taking the concept of balancing skill and control one step further by designing a game in which a player's progress is linked to the level at which they positively interact with other players. In such a game, players with a competitive or aggressive disposition will be encouraged to cooperate on a certain level in order to succeed. Thus, many problems that may arise as a result of player variation can be mitigated.

Social Governance

Where possible, design should be affected to encourage social governance. Rules should be pared back as far as possible without rendering the game unplayable; this should be done within defined boundaries, allowing players to determine how they want to play. Game designers discuss the implementation of negative feedback loops as an effective method for keeping players engaged. By designing systems that allow players to impact how they affect the progress of other players, social interaction itself becomes an effective form of negative feedback. Consider a game that implements a mechanic whereby a player must choose another player from which to take one resource. The game might specify, in the interest of creating negative feedback loops, that the player must take the resource to the player who at that point has the best chance of winning the game. However, if no such rule was in place, players

³ See *Munchkin* (Jackson, 2001).

would nonetheless tend to hamper the winning player, due to the perceived threat that they pose. Thus the desired outcome can be reached without introducing rules that restrict player agency (Jacklin, 2011).

Dynamic Values

By removing regulations that statically determine the value of actions and resources, a game can become more elegant in its design and players will be encouraged to collectively determine values through their own actions. For example, let us imagine that in a resource trading game, one player's strategy involves the collection of a particular type of resource in order to progress. This resource therefore gains added value due to its ability for being converted to points for this particular player. It also becomes more valuable to other players as a result of its value to the initial player. Other players might be able to stockpile this resource and trade it at high margins with the player who needs it, or for the resources that they require⁴.

6.3 Designing for Systemic Play

Though the focus of this framework is designing for agential play, clear boundaries need to be established in order to rein in player behaviour and to ensure that the game remains as straightforward as possible. This is achieved through systemic design, i.e., the design of how players interact with the system. There needs to be a strong underlying system in order to provide necessary structure to the game. Systemic design is a successful method for offsetting any variability that may result from agential play.

The Paradox of Choice

Though options are vital for allowing players control, it is important that the number of available options is not excessive, so that a player is able to understand all the available options present

⁴ See *Settlers of Catan* (Teuber, 1995).

at any given time. It is important that the options available to a player match the skill of the player and increase dynamically in number and complexity as the player's skill level increases.

Concise Rules

When considering the systemic structure of a game, it is important to be able to determine rules that are superfluous (Selinker, 2011, pp. 90-98). Any rule that does not enhance gameplay should be omitted to maintain a concise ruleset. Through playtesting, mechanics that are rarely used can be identified and removed or replaced. When establishing rules that are superfluous, it is important to consider the concepts of social governance and dynamic values that have previously been established; in the absence of a rule, will players be able to effectively govern themselves?

Play Variability

Replayability results from variation between games (Woods, 2012, pp. 152-153). While variation can stem from agential play, it cannot be relied on. If two players consistently play the same game together and exercise similar strategies each time they play, the game will soon lose its appeal. Through the introduction of systemic variability, players are required to constantly develop and adjust to new tactics. This can be introduced through elements of chance (Elias et al. 2012, p. 241), such as in *Settlers of Catan's* (Teuber, 1995) modular board or the randomised role cards of *Pandemic* (Leacock, 2007). Variability can also be introduced through player choice, thus allowing players to determine how they want to play the game, in turn fuelled by the natural desire for being challenged (Elias et al., 2012, p. 229). For example, in *7 Wonders* (Bauza, 2010), players are able to decide which city they want to play as at the start of the game, a decision that influences strategy.

6.4 Designing Theme

Thematic considerations are concerned with how a player perceives a game. Each element of a game's theme should enhance a player's comprehension and their intrinsic motivation for playing it.

Primary forms of thematic design are:

- Graphic design
- Illustration
- Packaging
- Components
- Presentation of ruleset
- Narrative theme
- Terminology

It should be noted that even when designing abstract games, the above considerations are still important, with the exception of narrative theme.

Ruleset

Ensure that new mechanics are framed in such a way that players can relate to pre-existing mechanics. This will allow for a level of instinctive understanding, which players can bring to the experience. When presenting rules, the fundamentals should be established first, such as the core objective of the game and the primary means for achieving this objective. This serves as the most important information for a player to have in order to experience flow. By starting with this information, any further information can be contextualised within the game as a whole.

Graphic Design

Graphic design is an important tool for conveying information to players (Daviau, 2011, pp. 46-47). Like rules, any graphic elements that are deemed superfluous should be culled in the interest of player comprehension. All graphic elements require understanding at a semiotic

level; how will pre-existing notions that a player brings to the game possibly affect how they read visual cues?

Narrative Theme and Terminology

Establishing a narrative theme can enhance players' understanding of a game by relating unfamiliar mechanics to familiar narrative tropes (Järvinen, 2008, pp. 77-82). The terminology of mechanics and components all need to fit within the chosen theme. Thematic applications should also reflect the actions and components that they describe in order to avoid confusion.

Conclusion

Through a practical examination of player engagement in board game experiences, the concept of agential flow was developed. This concept asserts that when flow prerequisites are specifically channelled through agential game elements, games can be developed that engage players on a social level.

The concept of agential flow was tested through the development of a number of prototype board games, the foremost of which is titled *It's Just Business*. *It's Just Business* explores methods of dynamic player collaboration through a number of unique core mechanics. These mechanics create meaningful, agential play by allowing flow conditions of control, challenge, feedback and clear goals, all of which are to be channelled through social interaction.

Sessions of user testing that were undertaken were sufficient to formulate basic understandings of player interactions and generate ideas, however, future research into the Agential Play Framework should ideally involve a more structured approach. Sessions conducted tended to be more exploratory, broadly examining player emotion during play experiences. It will be therefore important for future research to test Agential Flow using more quantitative and consistent methods.

It is hoped that this research into Agential Flow and the Agential Play Framework will allow future researchers and game designers to explore new game mechanics and systems, thereby not only expanding the concept of Agential Flow but also significantly advancing the field of board game design.

Board games remain an unexplored realm of academic study. The development of the agential play framework has established a foundation for future exploration. The framework builds on the concept of agential flow, reformatting ideas and incorporating relevant information from various sources into a concise set of practical guidelines for the design of contemporary board games.

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Appendix

The following appendix summarises each prototype game that was created and tested over the course of the research in chronological order, with the exception of *It's Just Business*, which was documented in detail in Chapter 3. A brief outline of each game will be followed by a short discussion of design choices that were made as they pertain to agential flow, as well as any relevant comments about observed successes or failures.

Harvest

In *Harvest* (Fig. 15), players compete to grow and harvest vegetables. One game of *Harvest* progresses once through the four seasons. In each turn, rolled dice determine weather conditions, which in turn determine the crops that grow and occasionally, those that die. When crops reach a certain level, they can be harvested and traded for items that make it easier to grow subsequent crops. Each harvested crop is also worth a number of points. At the end of the game, players total the number of points gained from their harvested crops and the player with the most points is declared the winner.

Harvest implemented a number of interesting mechanics; however, there were several flaws in the underlying game system. One of the problems was systematic predictability; since each game followed the same, simulated seasonal pattern, the game generally followed the same narrative each time it was played, reducing the game's replayability value. The fixed values of the various plants and items also meant that the game did not allow for a high level of variation.

Franchise

Players compete to collect resources that can be spent on building stores in six coloured city areas (Fig. 4). Points are allocated for opening stores in new areas, as well as for having the most stores in any given area.

Franchise was developed to test two new mechanics. The first mechanic was devised in an attempt to allow the players themselves to influence opportunities for gaining resources. Players each send their worker to a space that corresponds to the type of resource that they want. A dice is then rolled to determine one player that is able to gain resources. All other workers on the same space also receive a resource payout. In this way, players are able to influence the random selection of who gets to draw resources: if two people are gathered on a space, their chances of gaining resources double. To offset this mechanic, the number of resources drawn also declines as the number of successful players increases.

As a whole, the game did not allow players to formulate and carry out meaningful strategies. It was hoped that players' choices would be dictated by a consideration of risk versus reward; however, the game often left players without any perceivable choices to make. Typically, a player would need only one type of resource and any decisions made during the game would be dictated entirely by this.

Chromagon

Players are dealt three square tiles, each containing a unique pattern. Players take turns to randomly draw a coloured, octagonal tile and lay it on the table, adjacent and at right angles to an existing tile (Fig. 5). When four octagonal tiles create an enclosed square space, the square tile that has the corresponding colour sequence may be placed within the space. When a player has placed all three of their square tiles, they are declared the winner.

Chromagon was developed as an experiment in developing a game that allows for complex strategy to emerge through simple gameplay. By pushing this concept as far as possible, *Chromagon* was developed as a mechanically minimal yet strategically deep game.

Chromagon worked well from the initial prototype and as such, has remained almost largely unchanged since its first iteration. The primary concern throughout playtesting has been fluctuations in progress across games of varying numbers of players. The game has been played by groups of two through to groups of six. Future versions of *Chromagon* will experiment with additional colours, as well as the possibility of mixed colour tiles and tiles that are purely used for blocking other players.

Hunter-Gatherer

In *Hunter-Gatherer* (Fig. 6), players adopt the roles of members of a clan of early hunter-gatherer humans. Each turn, a player becomes the leader, gaining greater control over the outcomes of the round but forfeiting opportunities to score points.

The primary goal behind the development of *Hunter-Gatherer* was to create a game that fostered social interaction and self-governance, while retaining distinct and competitive gameplay. This was attempted through the development of a game system dictating that if, to some extent, players did not work together, an outcome might ensue where everyone stood to lose.

Hunter-Gatherer proved to be a more enjoyable experience than previous prototypes; the game and the presented puzzle encouraged significant dialogue among players. The primary issue was that players felt a lack of control, due to the fact that social pressures dictated many of their decisions. There were also instances throughout playtesting where players could take risky or selfish actions that would result in negative outcomes for all players.

City Builders

City Builders (Fig. 7) sees players managing four different resources that represent money, knowledge, public support and a workforce, in order to construct various buildings within a city block. Most buildings offer a specific exchange rate between resources, which can benefit both the owner of the building through profit, as well as the other players through efficiency.

Following the development of *Hunter-Gatherer*, design concepts continued to focus on agential gameplay. Further experimentation was conducted to explore ways for encouraging player interaction in a way that was fundamental to game progression. The idea of business became a core focus of game design (and remained so throughout the course of the research). Business was chosen as a fundamental idea, because success in business is determined by social means: one offers a service to others and social values determine if the service is worth paying for.

City Builders' primary downfall is that experienced players are able to build powerful game engines that give them a distinct advantage over other players (in a manner reminiscent of the real world corporate landscape). While players cited engine-building as one of the enjoyable elements of the game, a great deal of balancing is required to make sure that experienced players do not have such a large advantage that the game is not engaging for other players.

Factions

In *Factions* (Fig. 16), players send employees to work at five companies. Each business has a certain amount of work (represented by red cubes) that needs to be done and each employee is able to handle a specific amount of work (as outlined on each card). The success of a company is determined by the efficiency of their operation, i.e., by efficiently employing workers to closely match the work required and without any redundancies. The goal is to accumulate points by investing in efficient companies.

In *Factions*, player investment dictates the number of employees that a company can hire; thus, play restrictions are imposed collectively, with each player having an equal impact on how the game will progress. Player agency also dictates how work is dispersed amongst companies.

Glutton

Rather than being designed as a single game, *Glutton* (Fig. 17) was designed as a deck of cards with which a number of games could be played. Each of the games that were developed share a number of core concepts:

- The deck is split between customer cards and ingredient cards.
- Customer cards represent a meal wanted by a particular customer. Each customer card outlines a type of dish, as well as a range of desired flavours.
- Ingredient cards are used to build dishes. Eight base ingredients determine the base dishes for each recipe. Flavour ingredients each add either one or two flavour points to the recipe.

Games generally require the building of dishes in accordance to the desires of customers. The means of doing so, as well as levels of difficulty and chance vary between games.

The glutton deck has been a useful toolset that has allowed a number of new game concepts to be developed and tested without having to redesign components or basic systems. Four different game ideas have been tested using the *Glutton* deck.

Assembly Lines

In *Assembly Lines* (Fig. 18), points are scored by constructing items in a factory. Players take turns to either claim money and resources, or spend resources to take actions. Available actions are cycled along a conveyor belt, so that at any given time, four actions are available. The rate at which actions cycle is controlled by players, who are able to shift the conveyor belt when taking resources. Points are scored when constructed items are shipped and are allocated to each player who had a hand in the manufacturing process.

Ventures

In Ventures (Fig. 19), each player is given five coins and is dealt five cards, each representative of a specific type of business. Most cards have a build cost – the required resources for playing the card. All cards have icons that represent the resources that the card produces. On a turn, a player may either play cards or produce resources. When playing cards, they must place one coin on an empty resource icon for each required resource outlined by the card's build cost. Using resources from cards owned by other players is permitted and encouraged. When producing resources, a player takes all coins from the cards that they have in play, thereby freeing up all resource spaces and allowing future business to occur.

Ventures was developed in order to experiment with the concept of progress through collaboration, i.e., progress made by a player inherently increases options for fellow players. In the game, every card that is played can be beneficial to all players. A player cannot progress without increasing the number of options available to all players.

The game is also designed to efficiently represent nine different resources using a single currency; players can choose to use a coin to spend as any available resource. Inspired by a similar method of resource management in Antoine Bauza's *7 Wonders*, players simply pay for resources as needed, reducing the need for keeping track of nine different variables.