Поток в играх

Диссертация Дженовы Чена

Аннотация

В диссертации изучается подход к дизайну игры с фокусом на игрока, реализуемый через динамическое изменение сложности (ДИС).

С помощью него игра подстраивается под различные типы игроков.

Вместо пассивного изменения сложности, зависящего от анализа игровых данных, подход основан на теории Потока Михая Чиксентмихайи. В итоге создается система подсознательных выборов, которая помогает игроку получить оптимальный игровой опыт. Также через призму теории Потока можно выяснить, почему одни игры более доступны игрокам, чем другие.

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Вступление

«Две тысячи лет назад Аристотель заключил: прежде всего мужчины и женщины ищут счастья…”
- Михай Чиксентмихайи, (1990)

Мотивация

За последние тридцать лет, будучи видом развлечений, видеоигры глубоко проникли в нашу жизнь и общество.

Как игрушки расширяют воображение ребёнка, современные видеоигры полагаются на активную вовлечённость игрока и открывают более широкие возможности, нежели живопись, кино, литература. [Райт, 2006]

Несмотря на это, игры до сих по рассматриваются не играющим большинством, как вредность, которая отвлекает, отупляет, провоцирует агрессию. Разница между наблюдением за чужой игрой и собственным опытом поразительна.

Пожалуй, самым эффективным способом побороть предрассудки не играющих является создание игр, в которые им захочется сыграть. Природа маркетинга и бизнеса такова, что создание видеоигр исключительно для не-игроков непрактично и слишком рискованно. Разработчики игр ищут способы увеличить доступность своих продуктов, используя лицензии книг или фильмов, но создание такой игры — тот ещё вызов.

Сегодня бюджет коммерческой игры может с легкостью насчитывать миллионы долларов. Иронично, что из-за перенасыщения таких игр контентом, большинство игроков не могут увидеть и половины всего вложенного в продукт. Подобные игры полностью удовлетворяют целевую аудиторию, но они являются крайне скучными или сложными для других людей. Миллионные бюджеты в этом случае не помогают.

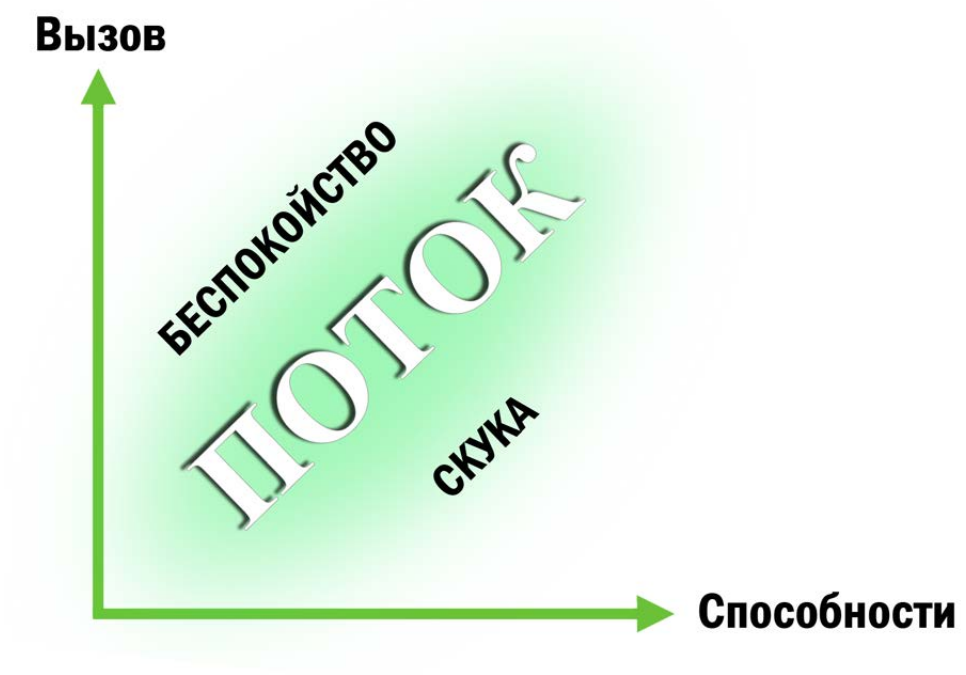
С ростом рынка игр, геймингу следующего поколения требуется подход, позволяющий приспосабливаться к разным типам игроков, поддерживая их погружение в игру.

Вдохновение

Двадцать лет назад Михай Чиксентмихайи сформулировал понятие, которое он обозначил как «поток» — ощущение полного, активного вовлечения в занятие, приносящее радость и удовлетворение. [Деболд, 2002]

Чиксентмихайи разработал несколько теорий, чтобы помочь людям войти в состояние потока — с тех пор эти теории применялись в спорте, образовании, и других отраслях. Известный тест GRE является хорошим примером проектирования, основанного на концепции области потока.

Одним из наиболее вдохновляющих достижений Чиксентмихайи является определение области потока:



Для погружения в поток необходимо соблюдать баланс между сложностью занятия и способностями участника. При высокой сложности занятие довлеет над игроком, и он разочаровывается. Если наоборот — начинает скучать. К счастью, людям свойственно приспособление, а потому существует расплывчатая, но безопасная область равновесия. [Чиксентмихайи, 1990]

Описание потока идентично ощущениям, которые переживает игрок, полностью погруженный в игру. В течение этого опыта, игрок игнорирует внешние факторы и не следит за временем. Можно предположить, что большинство игроков оценивают игры по возможности обеспечить опыт потока. [Хольт, 2000]

Занимательно - единственным способом достигнуть потока, является наличие вызова, соответствующего способностям каждого игрока. Это означает, что если работа радует нас, значит, мы создали себе сложные, но терпимые вызовы, которые позволяют человеку увлечься, отстраниться, работать упорнее или работать безопаснее. В таком случае радостность может быть определена как поток — равновесие между вызовом и способностью.

Всё же, существует крайне мало исследований на тему использования теории Потока в играх. Еще не разработана методология, которая помогла бы дизайнерам предоставлять игрокам необходимый опыт.

Обзор диссертации

Содержание диссертации можно разделить на четыре главы.

В Основах исследуется теория Потока Михайи Чиксентмихайи, подается концепция ДИС (динамическое изменение сложности), рассматриваются существующие подходы к регулировке сложности.

Создание Потока в играх – здесь мы обсудим более глубокий подход к внедрению Потока и ДИС с фокусом на игрока.

Внедрение Потока в игру – пример двух игр с внедренной системой ДИС, и результат их тестирования.

Выводы – общее заключение по методике, обзор дальнейшего движения в исследованиях, возможное применение теории Потока в других медиа.

Ценность исследования

Цель диссертации – исследование и развитие различных техник дизайна, задействующих Поток в играх. Оно включает в себя изучение теории Потока, анализ существующих игр, и способы внедрения Потока с помощью этих техник.

Польза от исследования:

- Рассмотрение теории Потока Михайи Чиксентмихайи с точки зрения геймдизайна
- Обзор существующих динамических систем регуляции
- Пересмотр этих систем с учетом фокуса на игрока
- Две новые игры, которые построены по предложенным принципам
- Обзор дальнейших путей развития методики

Основы

Поток как радость

Люди связывают с радостью многие вещи: безвременье, цельность, сосредоточенность, своевременность.

Существует общее соглашение – радость недостижима без динамического баланса между вызовом и способностью. Только точная пропорция позволяет войти в состояние Потока. Если работа радует, значит, мы создали комплексные, но достижимые вызовы, которые позволят действовать эффективней. [Дековен, DeepFun.com]

Так, радость может быть обозначена как Поток – баланс между вызовом и способностями.

Элементы Потока

Согласно детальному исследованию Чиксентмихайи, а также личным наблюдениям, для Потока необходимо восемь основных компонентов:

1. Занятие-вызов, требующее навыков.
2. Смесь действия и сознания.
3. Четкая цель.
4. Наглядная обратная связь
5. Концентрация на цели.
6. Чувство контроля.
7. Потеря самосознания.
8. Преображение времени.

Чтобы испытать поток, соблюдение всех пунктов не обязательно [Чиксентмихайи, 1990], а с точки зрения игрового дизайна, для создания потока необходимо всего три элемента:

1. Игра обладает внутренней мотивацией, игроку интересно.
2. Игра предлагает достаточное количество вызовов способностям игрока.
3. Игрок нуждается в чувстве контроля над происходящим в игре.

В итоге, игрок потеряет ощущение времени и даже перестанет осознавать себя. Чтобы сделать игру доступной для широкой аудитории, игра должна использовать указанные элементы - особенно подстраиваться под умения игрока.

Динамическое изменение сложности

Помимо Потока, необходимо обеспечить доступность игры для широкой аудитории. Ключ к доступности — вызовы, основанные на уровне способностей каждого игрока. Таким образом, сложность игры должна меняться с учетом его успешности.

Концепция ДИС очень подходит для геймдизайна – сложность игры должна изменяться динамически, в зависимости от проявленных навыков игрока. Впрочем, проектирование и внедрение ДИС (динамическое изменение сложности) — задача не из простых. Зачастую системы ДИС отбирают контроль у дизайнера, что вызывает больше проблем, чем в случае с линейной игрой. Очень немногие коммерческие студии пытаются внедрить системы ДИС в свои игры.

Также, ДИС как свойство игры не может обеспечить поток само по себе. А потому проектирование общей системы потока, основанной на всех элементах, будет для дизайнеров гораздо проще и эффективнее.

Every so often, gamers describe an engaging game experience as "Well tuned". Tuning represents the process of a game designer using playtesting to iterate the design and manually polish the game experience until it gets close to evoking Flow. However, as the video game market expands, game tuning based on playtesting cannot satisfy the mass audience any more.

Playtesting usually involves multiple testers to reveal the potential Flow entropies in the game. On one hand, these entropies can be obvious at a micro level e.g. crashes, typos, texture flaws and bad dialogs. On the other hand, from a macro level, flaws inside core mechanics, plot arrangement, level difficulties and overall game progression are hard to identify. Today's playtesting is also very discontinuous. Each tester is in charge of different segments of the game. Without a view of the big pictures, Flows at the macro level are never really tested.

Game tuning also indicates the rigidity and linearity of the final game experience. The experience is adjusted for the specific testers and designers who cannot represent the variety of the mass audience. Flows in these games are very static. They can’t adapt to different types of gamers.

In order to realize optimal experiences for a much wider audience, not only do we need to offer a wide Flow Zone coverage, we also need a highly adaptive system to weave the rich gameplay experiences together, adjusting Flow experiences based on the players.

Passive Flow Adjustment

The biggest dilemma on Flow adjustment is whether or not to create a system to adjust the gameplay for the player. Under this kind of passive system, players can enjoy the Flow experience fed by the system.

Much research centers around designing a system that adjusts the difficulty based on the player's performance. This kind of system-oriented DDA works under an iterative adjusting loop.

The loop consists of four fundamental elements:

1. Player - Create raw data inside the game through playing
2. Monitor System - Choose critical data reflecting player's Flow state and pass it over Analysis System.
3. Analysis System - Analyze player's Flow state and notify the Game System about what needs to be changed
4. Game System - Apply changes to the gameplay based on the request from Analysis System

Theoretically, this system should be able to maintain player's Flow by constantly reacting to the feedback collected from him. [Bailey & Katchabaw 2005] However, there are still several key unsolved problems , which makes this type of passive flow adjustment hard to implement.

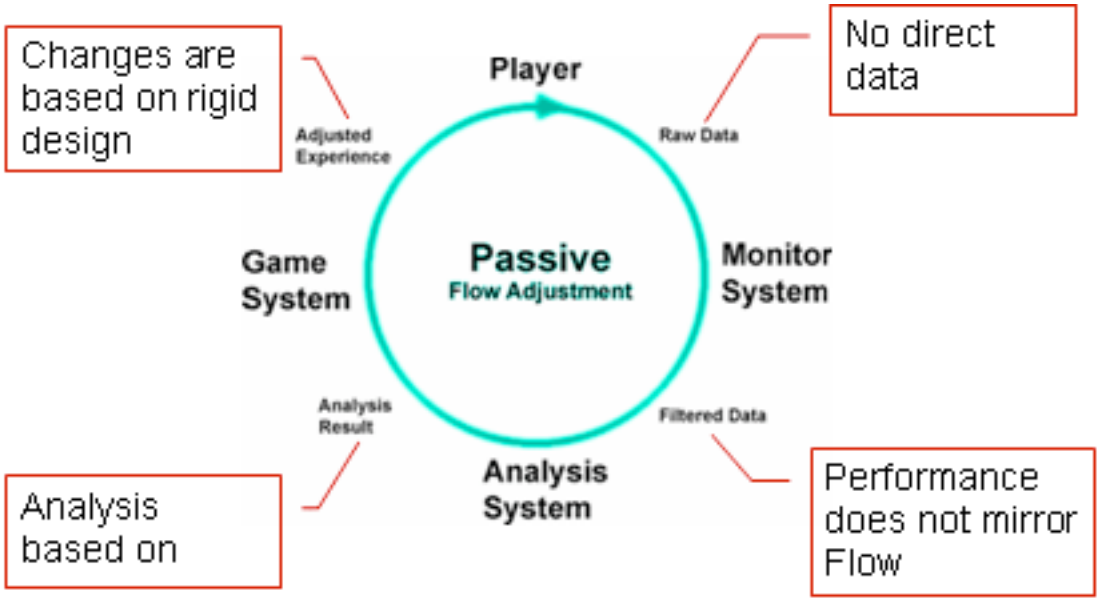


Figure 6 Issues inside System-oriented Flow DDA

No direct data - Video games do not read what player thinks yet. Up until today, the most common connections between players and video games are still going through game controllers. With limited inputs, the possibility to sense player's Flow state directly is very low. Although there are biofeedback devices on the market, people still lack the knowledge for imaging data into Flow and emotions. Most of the measurements are still based on assumptions and incomplete statistics.

Performance does not mirror Flow - Video game designers and researchers have figured out ways to estimate player's performance through sampling limited data like “Total Kill”, “Accuracy” and “Headshot”. However, performance is objective while Flow is subjective. When a player is in the Flow of just jumping around in Super Mario Bro but not finishing any level, the DDA system will have trouble to sense that.

Analysis based on assumptions - Assumptions never work for mass audience. When a player enjoys performing a suicidal stunt in Grand Theft Auto, it would be ridiculous for a DDA system to assume that the player's skill is too poor because of the death count.

Changes are based on rigid design – The way a system adjusts its difficulty is pre-determined by the designer. Different designers use their own preferences when deciding how many changes should be applied; however, the individual preferences of a designer will never represent the preferences of a mass audience. [Costikyan 2004]

Active Flow Adjustment

Considering the core elements of Flow, most of the system-oriented DDA designs were over focused on one aspect, balancing between challenge and ability. However, they ignored the other important core element, to make player feel a sense of control over the game activity.

Mihaly Csikszentmihalyi often describes Flow as driving a small boat in parallel to the current. Being able to drive freely gifts a sense of control over micro action, and being carried by the current offers a sense of control over the macro activity, therefore evokes Flow.

In traditional passive media, like the current, the sense of control comes from the sense of progression and positive feedback. [Adams 2002] In video games, not only can players gain control from the progression, they can also earn it through driving the boat, which is in fact making meaningful choices. So why don't we give the players choices in a video game and let them navigate their Flow experience?

In order to create a game like this, as we mentioned in 4.1 Expand the Flow Zone, the game needs to offer a pool with a wide spectrum of activities and difficulties for different types of players to swim inside. Based on players' tastes, each individual will choose different choices and work at a different pace to navigate through the game.

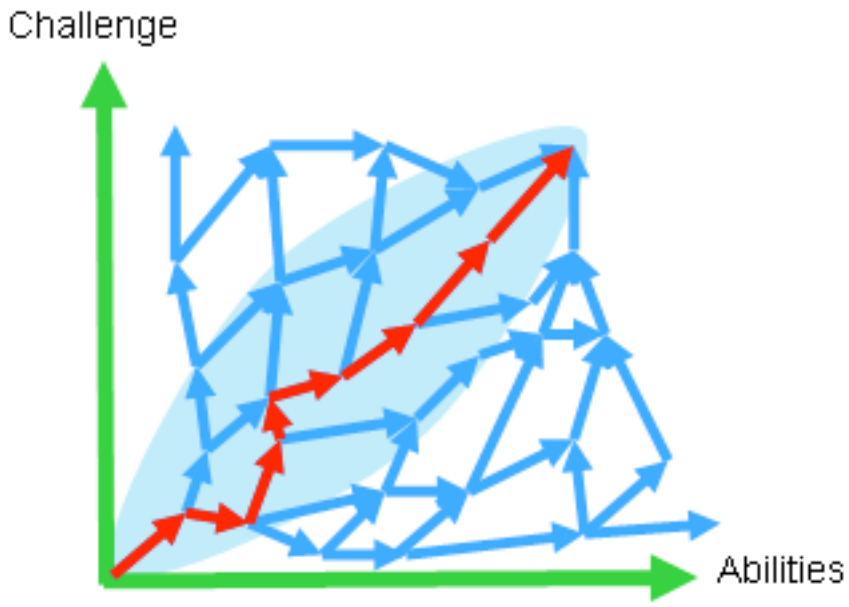


Figure 7 Active Flow Adjustment through Choices

Once a network of choices is applied, the Flow experience is very much customizable by the players. If they start feeling bored, they can choose to play harder, vice versa.

Embed Choices into Gameplay

Player-oriented DDA offers an active mechanic for players to control their in-game Flow experience. However, the implementation of these choices is not trivial.

In order to adjust Flow experiences dynamically and to reduce Flow noises, the choices have to appear in a relatively high frequency. These frequent choices might become potential interruptions for players who are in the Flow Zone.

The easy solution that might come to mind is to implement a monitor system to detect whether or not it is a good time to offer choices to the player. However, monitor systems are still not mature enough to be able to detect player's Flow. The only solution is to embed choices into the gameplay, let the player treat choices as part of the play and eventually ignore them. Thus their choices will become intuitive and reflecting their actual desires.

Conclusion

Designing game systems where a wide range of players can get into Flow is not difficult:

1. Expand your game's Flow coverage by including a wide spectrum of gameplay with different difficulties and flavors
2. Create an Player-oriented Active DDA system to allow different players to play in their own paces
3. Embed DDA choices into the core gameplay mechanics and let player make their choices through play

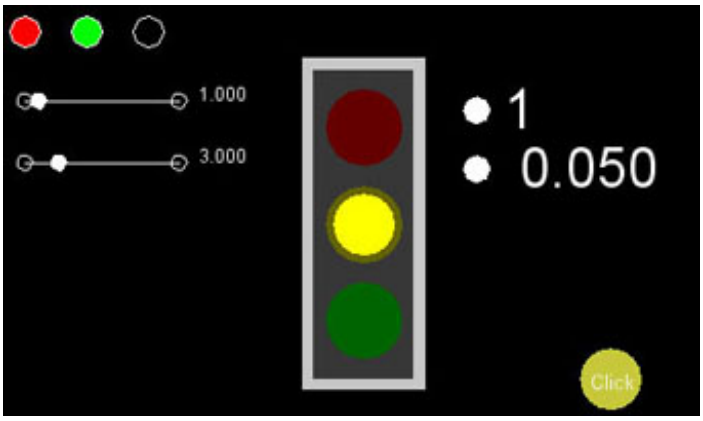
If a game designer can apply the above methodologies upon his own design, the game will become more dynamic and flexible, allowing more people to get into the Flow and finish it.

Implement Flow in Games

The best way to test out the player-oriented DDA system and methodologies is to create games designed around these methodologies and compare the result between using and not using the DDA

Traffic Light

Traffic Light is my first attempt to create a simple prototype and test whether or not player-oriented DDA helps the Flow experiences.



Overview

Traffic Light is designed to be a game with minimal interaction and a test bed for choices based DDA. The only thing a player needs to do in this game is to predict and click the button as late as they can before the red light goes on.

By default, the player has three times to try in each round. If the player won two out of the three, he can keep his total score and go to the next round. If the player failed in one round, he loses the total score.

Between each round the system will ask the player if they want to play faster or slower or stay as the current speed.

Interface

On the top left of the screen are lights representing the total times player can try in each round. If they failed it turns red, otherwise it is green. If they have not tried, it shows as black.

The two scrollbars allow players to change the speed and the total times in each round.

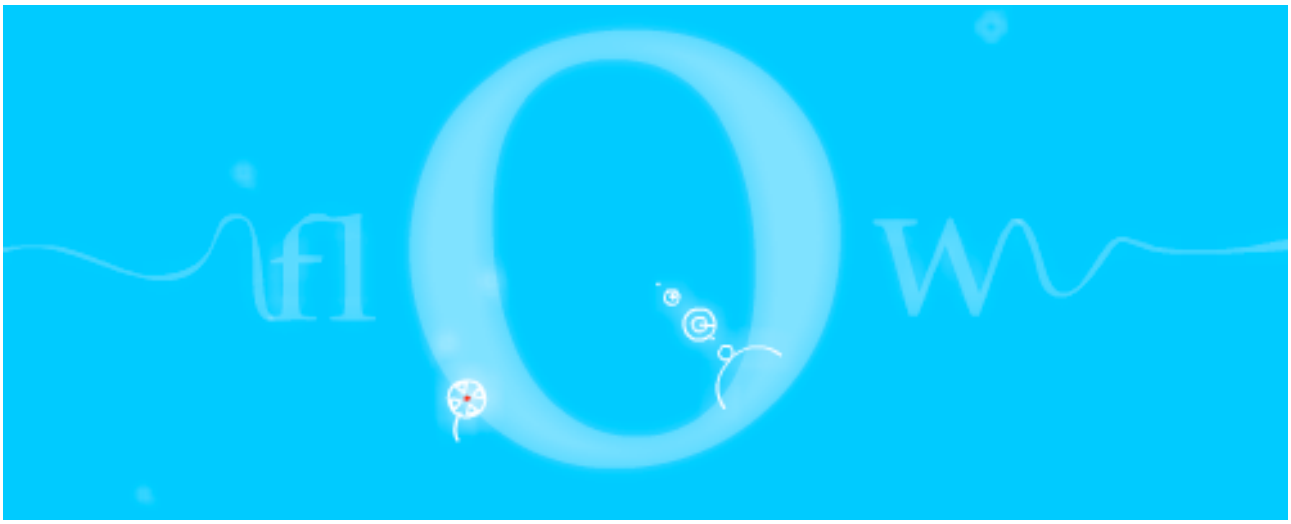
The two rows of numbers on the right represent the total score and how many seconds earlier the player clicked the button.

Test Result

Player-oriented DDA based on choices effectively extends the game Flow. It extends a simple timing game's lifespan from 1-2 minute to about 5 – 12 minutes.

However, the frequent DDA choices broke the player's Flow. It started offering the player a sense of control, but eventually reduces the player's control.

FlOw



Overview
FlOw is created to test player-oriented DDA with choices embedded inside the gameplay.

In flOw, the player uses the mouse cursor to navigate an organism through a surreal biosphere where it consumes other organisms, evolves, and advances into the abyss.

The gameplay is intentionally designed to be extremely minimal for easily evaluating the efficiency of the player-oriented DDA system. The only action players can perform is to swim around and eat other organisms in front of its mouth.

Expand Flow Coverage
FlOw uses minimal control to open the door for casual gamers and non-gamers, but still leaves space for hardcore gamers to master it. It offers a wide range of gameplay from simply swimming around and eating to strategically evolving and intensive fighting.

Adjust Flow
FlOw is divided into 20 levels. Each level introduces new creatures with new challenges. Different from traditional games in which players have to complete one level in order to progress to the next one, flOw offers player power to control their gameplay progress. By choosing different food to eat, players can advance to the more difficult level and return to the easier level at any time. The game features a minimal death penalty. If player died in one level, he will be pushed back to the previous level that is relatively easy. Player can also choose to avoid the challenge, skip the level, and come back later.

Embed DDA Choices into Gameplay
In flOw, players can customize their Flow experience naturally through the core gameplay, swimming and eating. By swimming closer to or farther away from other organisms, and eating different types of food, players subconsciously balanced their Flow experience.

Test Result
The current version of flOw is prototyped in Macromedia Flash 8. During the first two weeks after flOw was released online, it attracted more than 350,000 downloads.

“Addicting” is the most common word its fans use to describe it. FlOw was invited and presented at the annual Experimental Gameplay Workshop during the GDC 2006. It also won the Internet Game of the Month on EDGE magazine, May 2006.

To get a sense of how widely enjoyed flOw is on the Internet, here are some of the quotes from the online community:

“There must be something wrong in playing the whole morning with this evolution game… It has no guns, blood or explosions, but something kept me glued to my seat for a long, long time.
Fortunately, my critter ran out of food and I was forced to leave it there.
Look at my mutations and changes (the best I could get in 3 hours!)”
- rc.blog()

“Show some appreciation, then, by checking out the lovely, mindful Flow. Set in a clear blue monochrome sea inhabited by Euclidean cellular critters and your own slowly evolving Tinker toy paramecium, Flow sucks you in with its sinuously elegant physics and keeps you hooked on the ever so slightly yet increasingly challenging task of gobbling up your fellow sea bugs. A brick-simple, submarine Pac-Man, Flow pulls off the remarkable feat of feeling as meditative as it is addictive.”
- Zen and Art

“For some reason I can’t stop playing it. It doesn’t make much sense, since I can’t imagine why I would continue to play it, but it’s almost soothing to play. The graphics and sound are amazingly perfect. Try it out, you won’t be disappointed. Unless you think all flash games are wastes of your time.”
- Always Beta

“Beautiful, relaxing and confusing, Flow allows you to take over the evolutionary steering wheel for a scoop-equipped microbe in a shifting sea of predators and prey.
Pros:
Easy to play
Endless
Addicting and relaxing
Very atmospheric and attractive despite the extremely basic graphics

Cons:
It's addicting like the government putting something in the water supply: you're addicted but you don't know what you're addicted to.
Almost too esoteric for its own good”
- Something Awful

Conclusion

How to Realize Flow in Games

Based on Mihaly Csikszentmihalyi's positive psychology research, when a person totally focus into an activity and forget about time and pressure, he reaches the optimal experience, Flow. There are many conditions in order to reach Flow.

In the field of game design, there are three fundamental conditions:

1. As a premise, the game is intrinsically rewarding, and the player is up to play the game.
2. The game offers right amount of challenges to match with the player's ability, which allows him/her to delve deeply into the game.
3. The player needs to feel a sense of personal control over the game activity.

In order to enhance Flow experience, here are the methodologies game designers can pick up and apply to their own designs and make them enjoyable by a much broader audience.

1. Expand your game's Flow coverage by including a wide spectrum of gameplay with different difficulties and flavors
2. Create an Player-oriented Active DDA system to allow different players to play in their own paces
3. Embed DDA choices into the core gameplay mechanics and let player make their choices through play

With the proof of Traffic Light and flOw, as well as the other successful commercial games whose designs match the above methodologies, designing games enjoyable by both gamers and non-gamers is totally feasible and should be applied to help expanding video game market and essentially make video games a more mature media.

Application in Other Media

The concept of player-oriented DDA also known as active DDA is a powerful design tool applicable not only in video games.

It can be applied to nearly any fields where there are human interactions. For example, if active DDA is applied to GRE (Graduate Record Examination) test rather than its original passive DDA, here will be the changes.

1. There is no cap for the total score. Students can gain as much score as possible during the test period. Therefore, even top students can still challenge themselves every time they take test.
2. Students should be able to see scores gained through each questions and feel the joy of answering them correctly, which encourages them to do more.
3. The difficulty and the score of each question should be related. More challenge equals more reward.
4. Student should be able to sense the difficulty of each question and have the control to skip hard questions.

And you can imagine how the overall experience will change from a passive question after question based test into an active free roaming score collecting contest.

How do you use active DDA in advertising, negotiation or even in dating? Designers in any field should be able to apply these methodologies.

What's Next for Flow in Games

The Flow researches have been mainly focused on the relationship between challenge and ability, which naturally assume the interaction. However, Flow-like experiences also exist in passive media like movie, literature and music.

Games like Sims and Cloud has already proven that there are more interesting aspects in the field of Flow that are beyond challenge and ability. Thus, the soul of video games should also be able to leap far beyond challenges and conflicts.

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