

# Game Theory Applied: The Flow Channel

In today's post I would like to start a series of articles about **Theory of Game Design and how I applied (or tried to apply...) it to my projects**. Usually games are made by inspiration and intuition. And this is not a bad approach because, at the end of the day, game creation is a deeply creative activity.

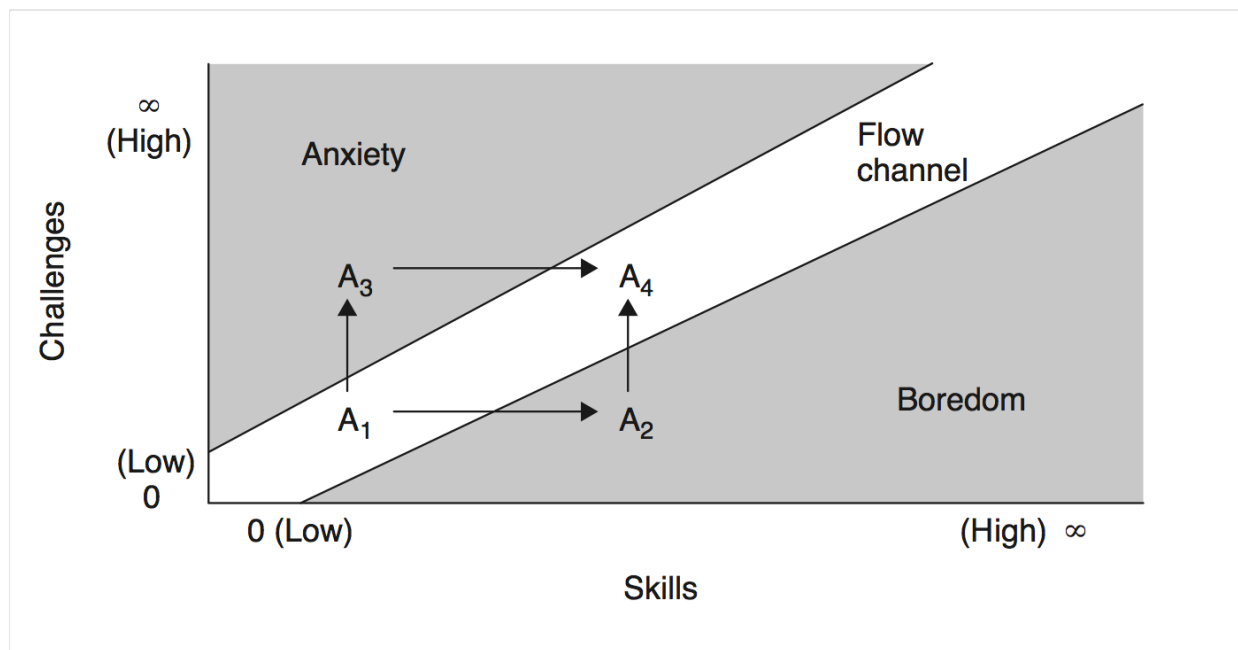
However, there are some game design aspects that have been theorized by experienced game designers that, despite sounding quite obvious, it is worth to keep them in mind while working on our games. I would like to start by one of the most interesting and effective concepts of game design: **The Flow Channel**. Applying this concept to [New Sokoban](#) had a very positive impact on the games experience. Despite it being an intuitive aspect of games that you could have learned while playing a lot of games during your live, the first time I read about it was in **Jesse Schell's** book [The Art of Game Design](#). By the way, this book is highly recommended for game designers out there and wanna be game designers like me 😊



## What's the Flow Channel?

**The Flow Channel is the state of mind that makes us to stay focused on an activity.** When we lose the flow, we switch to another activity. So obviously our aim as game designers is to keep our players in the flow channel for as long as possible 😊

This concept applies to any human activity and the factors that make a person stay in the flow are different depending on the activity itself. For games, we are going to consider five factors: **Challenges vs. Skills, Anxiety vs. Boredom and the one that balances them all: difficulty or difficulty balance.**



Flow Channel States (from "The Art of Game Design" book by Jesse Schell)

On the above picture you can see all the factors in action. "A" is our player. The desired state evolution is from A1 to A4. When in A1, our player has no skills in our game because he has just started playing. So he feels comfortable with a low level of challenge (low game difficulty) because his skills are also low.

If the challenges of the game rise too slow our player will switch to state A2, which is the Boredom realm. Here, the player feels that the game is not interesting and is likely to abandon it.

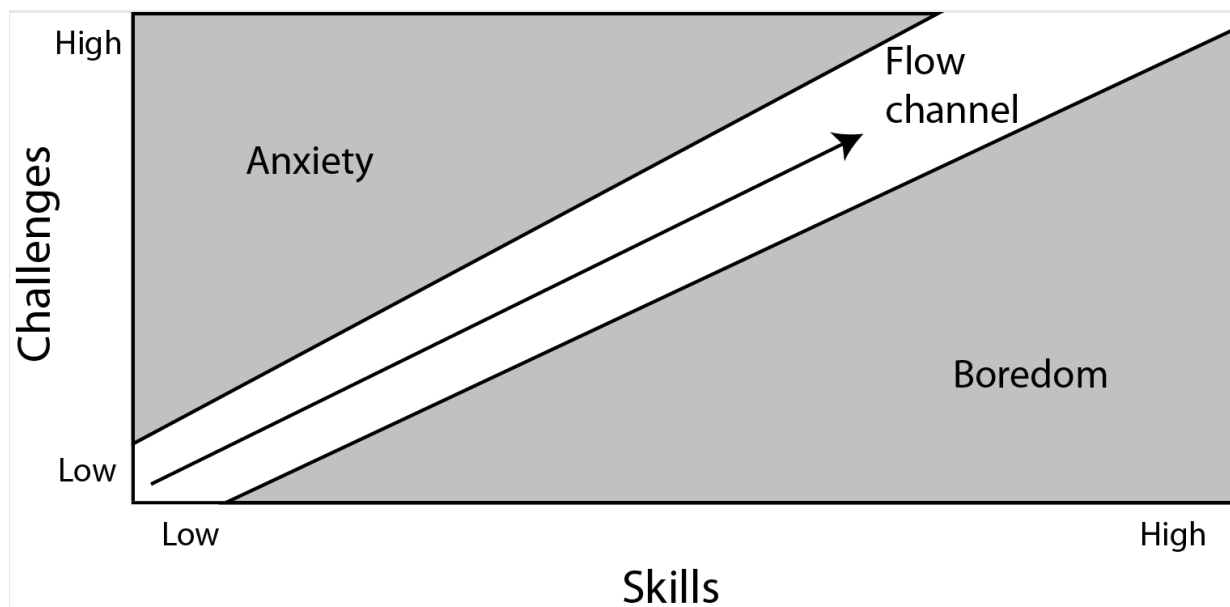
On the other hand, if the challenges of the game rise too fast our player will switch to A3 state, which is the Anxiety zone. Here, our player will feel that the game is too difficult (despite we may think that his skills are too low... just kidding :p ) and is also likely to go for another activity.

*Mental note: if a player feels that your game is too easy or too difficult it is always your fault as game designer. Player is always right, because he is an expert about what he likes and he doesn't and about his own flow channel. It is your task as game designer to fit the game into the flow channel of the maximum number of potential players.*

**Both anxiety and boredom drives the player to frustration**, and this is the worst word that a game designer can hear about his games. You need to avoid making the player to feel frustrated about

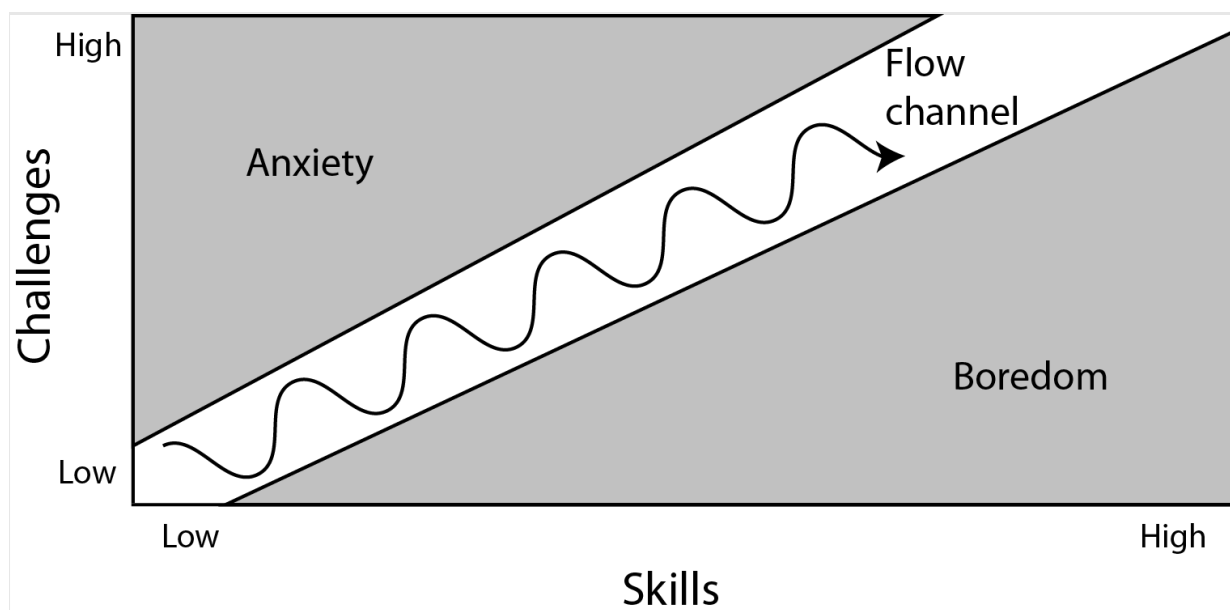
your game, no matter what. Frustration makes the player leave the game and probably never coming back.

So, our aim is to make the player stay on flow as showed in the picture below.



Flow Channel Line (from "The Art of Game Design" book by Jesse Schell)

However, Jesse Schell tells us in his book that this is the naive approach. No doubt that in the picture above the player is always in the flow. However, he suggests a better way of being in flow:



Flow Channel Wave (from "The Art of Game Design" book by Jesse Schell)

This is much more interesting. We are not only keeping the player in flow but also offering him a much better game experience. In this last picture, the overall game difficulty is always increasing at a right

pace keeping the player in the flow. However, we are slightly decreasing and increasing of difficulty in a fixed rate that makes the player feel both comfortable and pleased with our game.

It is better understood with an example: in a shooting game like Halo you start with a basic arsenal and the enemies you encounter are easy to defeat with your initial arsenal and your basic game skills. However, as you keep playing, you eventually will get a new weapon that will make you more powerful. The naive game design approach, according to Schell, would be to immediately increase the power of the enemies to offer new challenges according to the new state of the player.

However, according to the waved Flow Channel picture we should not increase the power of the enemies for a while. In doing so, the player will enjoy a short period of time feeling powerful and the feeling of progress will also be reinforced. However, after a while, we need to offer more challenges to the player to avoid him to enter the Boredom realm.

So, with the waved Flow Channel we are keeping the player in flow and, in addition, we are rewarding him simply for playing. And if just playing our game is rewarding for the player, he will keep playing for the eternity! Epic win for the game designer! :p

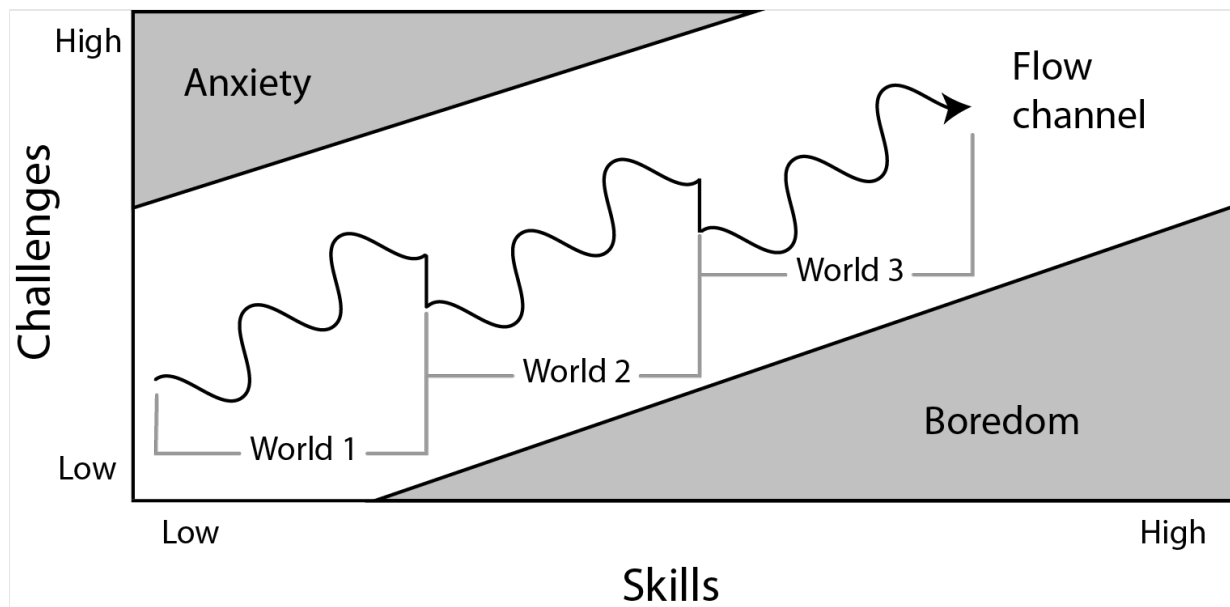
Obviously it is not that easy. Actually, keeping the player in a Waved Flow Channel is very very difficult. However, I have tried it for New Sokoban. And it was not that bad 😊

## New Sokoban Flow Channel

If I'm proud of one thing about New Sokoban, it is the puzzle design and the overall difficulty balance. You can read a little bit more about this on [this old post](#). I have spent tons of hours fixing the difficulty of each puzzle and balancing the overall difficulty curve.

And I also tried to apply the Waved Flow Channel concepts described in this article. The current version of the game has 50 puzzles organized into two worlds (two more worlds are planned). Every world introduces a new main feature that makes the player rearrange all the skills and mechanics that he has learned so far.

Obviously, the very first puzzle is much easier than the last one. However, for example, the puzzle number 22 is not necessary easier than the number 23. On the other hand, when a world is completed and the player moves to the next one, the difficulty is decreased a little bit because he needs to understand the new world rules. I repeat this pattern along the 25 puzzles of each world and also for the worlds. It is a kind of **fractal pattern for the difficulty curve**. If we zoom into the Waved Channel Flow for New Sokoban we would see something like the picture below:



### Fractal Flow Channel, extended from Waved Flow Channel

So, in some sense, I follow the Waved Flow Channel in each world. However, from world to world the difficulty curve is suddenly decreased during 2-4 puzzles that serve as tutorial for the new world and then immediately increased when the player gets it.

This kind of “Fractal Flow Channel” has worked very well for New Sokoban. The player easily catches and interiorizes it. So, when a puzzle introduces a new mechanic, the next one is slightly easier, just to make the player “feel the power” that the new mastered game mechanic has given to him. I also decrease the difficulty of a given puzzle arbitrarily, just to say to the player: “Hey! If you get stuck in a puzzle skip it. Maybe you will be able to solve the next one.” It is obviously a subliminal message, the player is not necessarily aware of that, but it just works fine 😊 Finally, this kind of “easier-puzzles” also make the players mind to take a rest 😊 Mind resting in puzzle games is important because if you feel tired you will probably leave this game session and loose the feeling of being “addicted” to the game.

## Conclusion

As you can see, the Flow Channel theory has been very important for me and for the development of New Sokoban. When I first read about it in Schell’s book I thought that it was an obvious concept that I had been practicing for my whole live while playing games from others. However, it is important to think deeply about it and understand it fully to be able to apply it correctly on your games.

So, here you have a very useful mental note:

*Mental note: The Flow Channel concept is a very powerful one. Try to use it in all of your games.*

*This post is part of [iDevBlogADay](#), a group of indie iPhone development blogs featuring two posts per day. You can keep up with iDevBlogADay through the [web site](#), [RSS feed](#), or [Twitter](#).*