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Designing New Institutional Dynamics: Applying Game Mechanics for Social Good

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Current societal institutions - schools, governments, scientific associations and commercial entities - are founded on principals of information flows framed in a time where analogue communication technologies were prevalent and very local. Digital communication networks create rich opportunities in the dynamics of information sharing, collaboration and coordination that challenge many of the models for organising our institutions.

Change is difficult. Radical departure from long established means of interaction and organisation is hard. It is no surprise that, rather than embracing opportunities in instant global connectivity the Internet provides, many institutions seek to reassert their established practices. Shackled by artificial constrains, the effectiveness and responsiveness of these institutions is diminished.

If we are able to look past the old models of organisation and embrace the connectivity afforded by digital networks, new institutions and new means of collaboration could be created that advance social progress. A societies ability to cooperate and collaborate is an important determinate in achieving social progress. A prime motivator for a collaborative mindset is fun. Games have long been used as a fun way to both teach and encourage collaboration. Can Game Mechanics, the principals of game design, be applied at appropriate scales to achieve new ways in organising and progressing societies as well as solving societal problems?

This paper will argue that through the use of Game Mechanics, new Institutions can be implemented that improve social coordination and make daily life more enjoyable. An Institution is "the humanly devised constraints that shape [our] interaction." (North, 1993) and as such "[they] structure incentives in human exchange, whether political, social, or economic" (Acemoglu, Johnston, Robinsion, 2004). By investigating the properties of recent examples where Game Mechanics have been applied to everyday activities, the power of encouraging people to play can be assessed. In understanding what provides games their intrinsic value for engagement, principles can then be derived that help to create sustainable experiences that lead to better outcomes for societies. Applying Game Mechanics to larger scale institutional problems is critical if using fun as an intrinsic motivator for social change is to become a reality. In understanding what is meant by social good, we can understand how to implement game mechanics to best compliment human behaviours that seek to reinforce common good and reduce the effects of self-interest.

In 2009, an advertising initiative created by DDB Stockholm and funded by Volkswagen titled 'The Fun Theory,' experimented in the different ways people's behaviour could be changed for good using either fun or reward. Different real-world scenarios were created to experiment with the idea that fun does motivate people to change their behaviour. In one experiment, a Stockholm's subway exit stairs where augmented by turning the flight of stairs into an

electronic keyboard. Commuters who navigated to and from the surface of the subway primarily chose escalators as their exit path. Using fun as a motivator the experiment attempted to make the healthier option of using stairs to exit the subway more attractive for pedestrians. Using the keyboard, commuters could step on a key and a note would play. After integrating the 'Piano Stairs' into the subway and observing a day of use, The Fun Theory found that 66% more people chose the stairs over the escalator (2009). Through this social experiment it is easy to see that fun can change the way people interact with the everyday and influence decisions. In the case of the Piano Stairs making the mundane, slow and more tiring albeit healthier option more appealing. On this scale however, the fun exhibited in the piano stairs is driven by its novelty factor and is prone to fading as its immersion factor is stagnant. When commuters engage themselves with the keyboard, through play, they are entering a state of mind called 'flow.' For flow to occur, certain parameters and conditions must be maintained (Czikscentmihalyi, 1991, p. 71) which is where the Piano Stairs experiment falters.

To achieve flow in an activity, the rules of engagement must be designed in a way that they require a level of skill to master while at the same time are easily learned. The activity must also allow for the procurement of goals. Goals provide feedback to a participant and allows them complete control over the activity. Designed correctly, an activity can achieve the 'optimal experience'(Czikscentmihalyi, 1991, p. 71), known as Flow. Activities such as making music, rock climbing, dancing or sailing are all conductive of Flow because they are designed to make reaching the optimal experience easy to achieve. French psychological anthropologist Roger Caillois (1958) categorised all activities that promote a state of flow into four sections, each divided by the different ways flow is achieved as follows: agon games use competition as their main feature, activities classed as alea are games that incorporate chance, ilinx games are activities that alter the consciousness in some way for example, skydiving. Mimicry games are activities that create alternate realities of participation, usually found in the arts. All four classes of game share a common sense of discovery and a creative feeling of transporting ones consciousness to a new reality (Czikscentmihalyi, 1991, p. 73). Each activity pushes people to a higher level of performance, transforming the self by making it more complex, achieved only through flow. A diagram (fig 1.) visualising the conditions of flow can help to explain why this is the case.

The Fun Theory's Piano Stairs can be classed as a minimalist mimicry game that allows for people of all skills to interact. If this diagram represents a specific activity then it can be applied to the Piano Stairs experiment. The two most important dimensions of Flow are challenges and skills which are represented by both the Y and X axes respectively. P represents the participants at four different intervals in time. When commuters first encounter the stairs (P1), even if they have no prior musical skill set, they are able to explore the surface and the sounds made. Doing this is not very difficult to achieve as a result it appeals to commuters with rudimentary skills and at this point they are most likely in flow. The stairs are not designed to be a fully realised instrument and therefore as time progresses the allure of the stairs wears off. A commuter's skills are either too low or high to realise any true discovery. This

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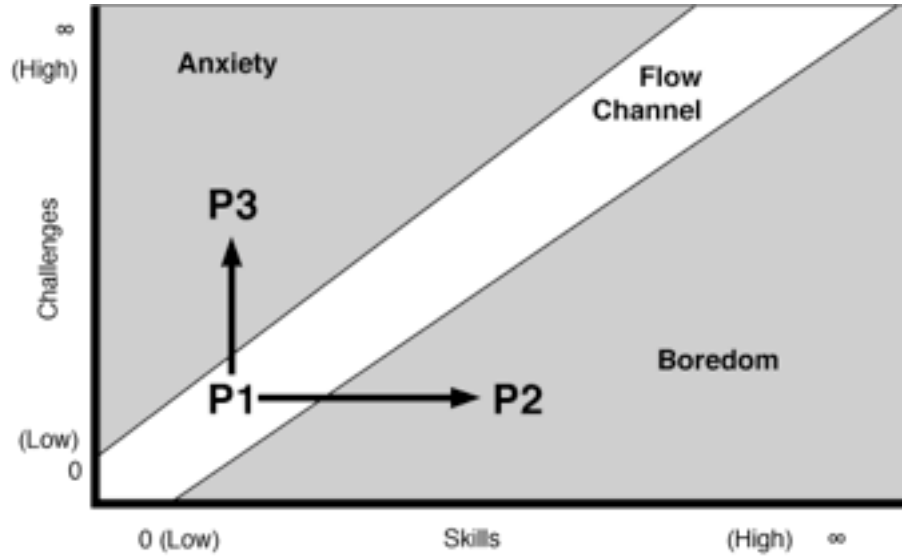
puts the participants into either a state of anxiety or boredom, none of which are positive experiences, causing the stairs to lose appeal.

Fig.1



When bored or frustrated we attempt to enjoy ourselves again, pushing ourselves to stretch our skills or discover new opportunities for their use (Czikscentmihalyi, 1991, p. 75). The appeal of the stairs as an alternative to the escalator may dissipate over the course of a few days. The initial experience may however inspire people to explore other options, like learning the piano, to rekindle the same feeling found when entering a state of flow.

The Piano Stairs provide insight into what allures people into changing their behaviour and Flow describes the conditions needed to satiate and sustain "a state of learning" or Fun (Koster, 2005, p. 46). Fun is the enjoyment found by expanding one's perceptual consciousness. Flow and Fun apply to a broad range of different types of activities. Flow's intrinsic value of motivation can be expanded to encompass a greater range of everyday ventures by incorporating a dimension of Fun.

The intrinsic value that Flow instills in people motivates them to complete a given task. Intrinsic motivation of participants is what Elinor Ostrom (1990) suggests is an important factor that is never considered in current Institutional practices and policies (p. 15). Ostrom (1990) proposes that the way current Institutions are organised compromises the common good especially where common resources are in question (p. 8). The current structural incentives in human exchange, or institutions (Acemoglu, 2004), that are currently in place are liable to be compromised because the rules largely ignore intrinsic motivation. Ostrom investigates questions concerning policy and management of Common Pool Resources, resources that are shared and consumed among a community. In particular Ostrom considers problems where resources can be unfairly and unsustainably consumed by individual participants to the

determent of the resource and the community. In this sense, especially in urban areas, a communities well-being can be considered a Common Pool Resource. Effective sustainable management of a community's well-being or social progress is what I term as a 'social good.' All Ostrom's eight design principles (Ostrom, 1990, p. 182) can be applied when designing new Institutions for the management of Social Good, in this analysis I primarily consider aspects of Intrinsic Motivation, that are principles of self-determination.

The primary reason for the structure of current Institutions can be attributed to the tragedy of the commons (Ostrom, 1990, p. 2), a theory which argues that Common Pool Resources, without management, are inevitably exploited (Hardin, 1968, p. 1244). This behaviour can be understood by comparing participants' actions with what is called the prisoner's dilemma game. In the prisoner's dilemma, any one prisoner's tendency is to maximising their outcome, that is to defect or confess and strike a deal rather than remain silent. The optimal outcome is for all prisoners to cooperate with each other and remain silent thereby avoiding a certain unfavourable outcome for all, if they followed their own self-interest.

In the case of Common Pool Resources, in the short-term it is more profitable for participants to exploit a shared resource than it is to cooperate with others they share the resource with. Most policy assumes a prisoner's dilemma and that intrinsic cooperation cannot be achieved. Therefore it is commonly thought necessary that an external, coercive force called the 'Leviathan,' is needed to motivate the participants to prevent ruin of the common resource (Hardin, 1978, p. 314). To assume that an external force can manage the activities of all participants involved is to assume that the Leviathan has limitless funding and is reliable enough to accurately identify defectors (Ostrom, 1990). In the case that the external coercive party is in the wrong, people who cooperate have the potential to be punished leaving defectors with the ample possibility of successfully exploiting the system, again allowing the situation to be categorised by the prisoner's dilemma.

Instead of the standard model where an extrinsic motivation is paramount to a working Institution, Ostrom (1990) proposes a new solution that advocates for intrinsic motivation among participants sharing a resource. Ostrom does however accept that intrinsic motivation is not always suited to the management of certain resource sharing situations (p. 15). For small scale common pool resources, situations where a resource encompass a singular context and manageable environment, she concludes that it is in all affected parties interests to enforce transparent rules and regulations that are monitored by the involved parties themselves.

If agreement among all participants can be established, intrinsic motivation is a factor among each participant's initiative to cooperate. Contracts between community members are not enforceable unless unanimously agreed to by all, therefore making any proposal for defection by any other party instantly vetoed by all others involved (Ostrom, 1990, p. 15). This way, no funding is needed to maintain an external coercive power and defectors are found and punished by the parties themselves to a greater degree of accuracy. The intrinsic value found in Ostrom's approach to new Institutions for managing Common Pool Resources focused on

small scale, local problems. Research revealed ideas that worked in closed environments but could not transition to larger, more connected schemes without the involvement of an external enforcer. However, in today's digital communication landscape, in a world of instant global connectivity, common pool resources have the potential to be monitored by a larger group of participants.

Examples of large communities that self manage through intrinsic motivation already exist today with services like Wikipedia or Yahoo! Answers. Intrinsic motivation in the development of these resources is determined by Flow, where contributors and recipients engage in activities that elicit a sense of both complexity and discovery respectively. There is often no, or limited, external coercive influence forcing people to contribute or monitor their contribution, they are completely voluntary and are successful because of this. Other experimental online collective communities use fun as an intrinsic motivator, as a conduit to engage people in collaborative efforts. One such example is the 2004 Internet based interactive narrative I Love Bees (ILB) (McGonigal, 2007, p. 6). ILB integrated an array of digital media such as audio files, images, emails and websites to create an immersive backstory for Bungie Studios' science fiction action video game Halo 2. It was designed so that the cooperation of thousands of fans of the Halo lore from around the world had to actively engage with each other in order to make sense of the narrative.

Jane McGonigal (2007), the lead community designer of ILB, used the interactive narrative as the basis of her case study which sought to investigate the maturation of collective intelligence (CI) Institutions. The basis of her study is the investigation of what she details is the three stages of gameplay that produce game based CIs. These stages are collective cognition, cooperation and coordination (p. 10).

Collective cognition is first step in creating a CI. ILB ensures this first step by organising the game in such a way that all players contribute and that no individual would be able to solve the game on their own; designed game elements such as the apparently random GPS data seeded throughout the game are an example of this. The second stage is cooperation. To drive the narrative of ILB and involve every participant of varying skill levels and knowledge backgrounds to solve problems. ILB game designers used ambiguity in the data to suggest issues and perspectives without imposing solutions. This allowed for a broad palette of problem solving techniques to be used empowering all participants to achieve success in such a way and on a scale only digital networking can allow. The third and final stage is coordination. The previously described ambiguity in the design of ILB left room for the players to seek many different ways of solving one problem. The diversity inspired the game designers to come up with future problems that played to the participants prior investigations. This way the players themselves felt as if they played a greater role in the game and created a relationship between the players and the designers that encourages and rewards both parties (McGonigal, 2007, p. 33).

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ILB is an early example of what can be achieved when an amalgamation between a game, a Common Pool Resource, and an intrinsically motivative collective is created. It shows that given the time compression and global scale of communication that the Internet provides, people are able to motivate themselves into organising effective Institutions able to solve complex problems. Participants in the game are able to successfully monitor, discover and dictate new direction through the most fundamental of intrinsic motivators: fun. Through fun, people can enter a state of Flow that they wish to maintain leading to an overall group complexity.

Our current Institutions prepare us from a young age for a hierarchal command and control structure reminiscent of the industrial era; this mindset is born out of a desire to extract maximum value from Common Pool Resources, resources that include community well-being. Hierarchal approaches to communication and knowledge sharing were established years before the advent of technologies such as the Internet and were created largely because of the difficulty of communication at large scale (Coarse, 1937). Now that we have the ability to communicate and share knowledge more effectively at an individual level the idea of a more cooperative environment rather than an extractive, self-interested one is possible. Fun is a motivator for change, the Fun Theory demonstrates this at its most fundamental level. It shows how even the smallest changes in everyday life can motivate people to change for the better. Understanding how play motivates people in the first place is key to discovering ways of creating new Institutions. The state of mind called Flow, the intrinsic factor that can be found within every person, can be used as a potential motivator for greater Social Good. Fun is a new way to define the social exchanges that can put communities on a sustainable path to improving well-being. Communications technology can be used today to integrate seamlessly, at scale, collective intelligences creating an opportunity to define completely new Institutions. Game mechanics and Ostrom's design principles for the management of common resources can be used to create new Institutional dynamics that engage people with new collaborative mindsets; progressing society to a more viable future.