Reward Systems

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The carrot or the stick?

While the answer to this age-old question depends on the situation, it is generally accepted that one is meaningless without the other. If carrots are the norm, they will not be seen as anything special, just a fact of life, no more special than other omnipresent elements. Alternatively, if the stick is the only thing available, it ceases to have any motivating power; it just offers abusive coercion and does not foster any innate motivation. Both examples are extremes that unfortunately do happen in real life and in most cases have been shown to be deficient. If you work somewhere where your boss only screams at you and never praises your achievements,[1] chances are that you will leave. If you are a runner and never lose a race, there is not much incentive to train to become even faster.

There is, however, a *third* way. If somebody who is holding all the carrots beats you with a stick, it would be very satisfying if you were to wrestle the stick away from your tormentor and make him give you all the carrots. I know which way I would prefer.

The following chapter will look at some fundamental principles of reward systems and positive or negative motivators. Some of these occur within an everyday context, while others are more specialized or unexpected. Eventually we will seek ways in which to use them in our levels in a manner that is effective and entertaining, rather than there being something as crude as being hit repeatedly with a stick over some measly carrots.

[1] Not unheard of in the game industry.

Concept

Reward Systems and Schools of Behaviorism

Like most mammals, human beings are fairly predictable in their reaction to rewards and punishments, insofar as that they have been studied extensively in this regard, and behavior tends to fall into a number of typical[2] responses. Without wanting to go into a detailed exploration of behaviorism and its many schools of thought, I would like to suggest that it covers a lot of ground that relates to level design. A key factor in level design is the use of rewards and punishments to enforce (or reinforce) or discourage certain behaviors. This is a massive subject, and one that is laced with controversy and difficulties. I suggest that readers find their own path through subjects such as operant conditioning, intermittent reinforcement, Pavlovian reactions, and other related subjects.[3]

For the purpose of this book, I think it is enough to look at a number of reward systems that apply directly to its subject matter. As a preamble to their uses in level design, I would like to shine a general light on the following reward systems.

Escapism and Wish Fulfillment

There are many reasons why we turn to art or entertainment: enlightenment, a need to expand boundaries, a quest for an alternative point of view, or other equally valid motivations. However, sometimes all we need is a certain amount of *wish fulfillment*, sometimes referred to as *escapism*. Generally these words are not used as terms of appreciation; indeed, they are often used as terms of ridicule. *"*That book is just an escapist fantasy*"* or *"*The movie has nothing to offer but flights of fancy and empty wish fulfillment.*"* It is a big mistake to do so. Critics who employ this kind of language may well be right about the artistic merit of the work they are reviewing, but they tend to make a grave error by mistaking the effectiveness of the artist with the method employed, or even the goal of the work. In other words, the problem is not that the work is *escapist* (one can insert

[2] Insofar as this is possible when it comes to the often *irrational* behavior of people.

[3] "Behaviorism," *Wikipedia*, http://en.wikipedia.org/wiki/Behaviorism, 2009.

other similar concepts); the problem is that the artist has not been successful in providing *enjoyable* (or artistic) escapism.

Nobody would criticize a person for going on a long walk in the countryside or reading a travelogue (clear escapism). There are no problems with somebody listening to music from another country and in the process being transported there (obvious wish fulfillment.) Who begrudges somebody reading Tolkien's *The Hobbit* (a flight of fancy)? Tolkien himself had the following to say on the exact same subject:

> I have claimed that Escape is one of the main functions of fairy-stories, and since I do not disapprove of them, it is plain that I do not accept the tone of scorn or pity with which "Escape" is now so often used: a tone for which the uses of the word outside literary criticism give no warrant at all. In what the misusers are fond of calling Real Life, Escape is evidently as a rule very practical, and may even be heroic. In real life it is difficult to blame it, unless it fails; in criticism it would seem to be the worse the better it succeeds. Evidently we are faced by a misuse of words, and also by a confusion of thought. Why should a man be scorned if, finding himself in prison, he tries to get out and go home? Or if, when he cannot do so, he thinks and talks about other topics than jailers and prison-walls?[4]

The fact of the matter is that sometimes the here and now is not a desirable place to be and can even be *punishing*, and that we can *reward* ourselves by engaging in creative expressions that recognize this and provide an alternative. This has been the motivation, and even the subject, of some of the most enduring pieces of art in the history of mankind and should not be sneered at. To do so risks inviting cynicism, closed-mindedness, and contempt for other people. Not only can escapism provide wish-fulfillment for the subject involved, it can also constitute a form of *rebellion*: as a way of taunting the world by saying: "You can't touch me while I am in here!"

Submission and Release

There are times when we decide that it is all right for us to relinquish control over a situation or even (mostly temporarily) our lives. This occurs when we decide that somebody is able to teach us or help us in some way and we are told that this can only occur if we follow the other's lead. Although human beings are naturally social creatures, this does not mean that they are naturally submissive.

[4] J.R.R. Tolkien, *Tree and Leaf*, Allen & Unwin, London, 1964, p. 53.

There are of course many times when people espouse a group mentality, but that is not what we are discussing right now. I am rather talking about those times when people willingly, in exchange for some kind of reward, submit to others, or at least take somebody else's lead.

There are countless examples, both humble and significant. We can see this principle at work in something as fanciful[5] as ballroom dancing. There can only be one person in that situation who leads. It also occurs in a very formal context, for example in education. This does not only apply to children, who are naturally much more submissive, but also to adults. For example, driving instructors or music teachers must be listened to, or they can't do their work.

Consensual (Temporary) Submission

In the case of most adult examples, the submission we are talking about is purely consensual. Nobody is forcing you to submit to some arbitrary figure of authority, yet it happens frequently and willingly. There are no punishments for not submitting in this manner, unlike (for example) in the case of submission to the law, which if refused, would lead to serious punitive consequences. Instead, these are moments of subordination or submission that we actively seek out, which is an interesting fact, considering that we would never behave like this in other circumstances. If your music teacher told you to do his or her shopping, you would laugh in that person's face. This is because it is a ridiculous request that yields no discernible reward to the person asked to submit to this "authority." It is ridiculous because there is no *agreement* in place to do so.

In almost all similar cases there is an agreement, written or otherwise, that exists between the parties involved. This agreement is essential and generally quite clear in scope. We don't need to see in a detailed contract that explains all the legal parameters that state that the person blowing the whistle in a soccer match is to be listened to.

You don't run away from your guide in the jungle because he or she gets cross with you for picking up some venomous lizard. We submit to this kind of authority on a regular basis because there is an agreed-upon reward. We learn how to play an instrument, enjoy a fair and enjoyable match of soccer, or enjoy a safe and fascinating trip through the jungle. After the activity ends, temporary submission is abandoned and authority is released.

Not only does this kind of system yield its own rewards, it can also be closely tied in to other systems, and can in fact be the reason why we would even engage

[5] Perhaps not the best word to describe it.

in them. A good example of this will follow later in this chapter and discusses *catharsis*.

Challenge and Empowerment

It is often asserted that hard work rewards itself, not just in a sense of achievement, but also in more practical ways. If we take off our cynical hat for a moment, we will realize that this is true in many situations.

There are positive challenges. If you go running for an hour every day, you will become very fit. If you study a language diligently for ten years, you will become fluid in its use. If your work is better than that of your colleagues, you will get that promotion. (Well, you *should*, anyway.)

And there are negative challenges. Stand up to that bully and he will stop harassing you. Deal with the tragedy of a loss for a long enough time and it will hurt less and less. Resist smoking for a year and your cravings will be gone.

The main point to recognize is that life is full of challenges, both positive and negative, and that meeting them, sometimes even just attempting to meet them, gives people a sense of control over their own life. This is a massively important principle, which is often referred to as *empowerment.* The word is overused at times, and it is often coated in sugary, feel-good language. But at the basic level, it is nothing more than finding the personal power to take control of your own life. This is a huge motivator for anybody, and many belief-systems, books, self help tapes, motivational speaker's careers, and other things have been based on it. The reward of empowerment is so strong that it can even lead people into unhealthy behavior patterns. For example, addiction is often, paradoxically, about control.[6] Some people try to feel empowered by trying to control other people's lives. But in general, it is widely understood that reacting to life's challenges positively, or seeking positive challenges to master to ultimately gain a level of control over life's experiences, is a very positive endeavor.

Fairness

This principle only works however when life treats people *fairly*. To put our cynical hat back on: *life isn't always fair*. The notion of fairness is a very interesting one, as it is a strictly human concept. The wind isn't fair, nor is gravity. Fire cares nothing for fairness. Yet within our own lives, we attribute huge importance to it. There are few things as annoying as someone jumping ahead of you in line, a

[6] For example, gambling is often said to give addicts a sense of control by letting the ritual control other aspects of their lives.

lazy millionaire underpaying hard-working employees, or losing your pension in some financial corporate debacle through no fault of your own. Unfairness is a form of *disempowerment,* and it should never be underestimated how much of a negative impact this can have.

Investment and Payoff

Related to the expectation of fairness is a reward system, which has its roots in financial principles. When we put our money in the bank, we expect to receive interest payments as a reward for letting the bank hold it. If we invest in a company through buying shares or in some other way, we expect a return on our investment in the form of a profitable payout. There are many other examples, but these should suffice to recognize the principle. We invest our money in such a way that we expect to receive some kind of reward at the end. This is a fairly basic principle of financial systems. It extends to further principles, for example to buying property in a country with a growing housing market, or starting a business in a country which is experiencing economic growth.

These examples are of a purely financial nature. But the principle is equally recognizable in other areas. For example, we can invest *time* into something and expect something in return. Or we can invest *effort* and expect some kind of result. This can overlap with the principle of empowerment, but it doesn't have to. For example, we can invest time and effort to solve a difficult cryptic puzzle, which yields a reward in providing a satisfying answer. Large investments offer the expectation of large rewards. A scientist may dedicate his or her entire life to finding a cure to a particular disease or other scientific problem. Although it might not necessarily be unfair, it would be unfortunate if these investments went without rewards.

Sometimes the rewards are immediate, (the activity itself is so enjoyable that it is a reward in itself), or sometimes the rewards arrive over time, or it is reached after sustained effort or investment. Sometimes both can occur within the same activity.

An Example: Treasure Hunting

Almost every culture on earth understands the concept of treasure hunting. This is clear from representations in books like *Treasure Island,*[7] films like *Pirates of the Caribbean,*[8] legends like the *Lost Gold of the Templars,* and the iconic image of

[7] Robert Louis Stevenson, 1883.

[8] Published by the Walt Disney Company.

the classical *Pirate*. Furthermore, in the real world there are thousands of people who engage in amateur treasure hunting with a metal detector, as well as professional treasure finders who organize well-researched expeditions in heavily funded commercial projects.

Investment in the context of the treasure hunt can contain examples like these:

- Treasure hunting investments:
  - financial investment in an expedition,
  - effort of researching a subject,
  - spending time waving a metal detector around,
  - hard physical work during an expedition.
- Immediate returns on investment:
  - enjoying the company of other expedition members,
  - gaining knowledge,
  - enjoying the outdoors,
  - feelings of excitement.
- Long-term returns on investment:
  - treasure, of course!

Romantic as this all sounds, there are real world treasure hunters who are very successful. A famous example is Mel Fisher and his company Salvors Inc., whose most famous expedition led to the discovery of the long-lost Spanish galleon Nuestra Señora de Atocha,[9]" whose wreck was the home of an enormous hoard of treasure:

> Among the items found on the wrecks are a fortune in gold, silver bars, and coins destined for the coffers of Spain; a solid gold belt and necklace set with gems; a gold chalice designed to prevent its user from being poisoned; an intricately-tooled gold plate; a gold chain that weighs more than seven pounds; a horde of contraband emeralds—including an impressive 77.76 carat uncut hexagonal crystal experts have traced to the Muzo mine in Colombia; religious and secular jewelry; and silverware.[10]

This shows that treasure hunting is an excellent example of an activity with a multi-layered inbuilt reward system. Although treasure hunting is in many ways an obscure example, everybody can understand the reasoning behind it. It is an activity that can act as a nearly perfect metaphor for the principle in general.

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[9] Our Lady of Atocha.

[10] "1622 Feet," *Mel Fisher Maritime Heritage Society and Museum in Key West*, http://www.melfisher.org/1622.htm, 2008.

Isolation and Social Reinforcement

People are social creatures. This may not always seem obvious, considering how badly people can treat each other, but nonetheless, almost nobody can enjoy extended periods of social isolation. We really do need some minimum amount of social contact to successfully experience our humanity. This principle is so strong that it is represented in fundamental instincts. Take, for example, human childbirth: it is well known that it is beneficial for child and mother to bond as soon as possible after birth. This process has been linked to the hormone oxytocine in women, which facilitates this bonding.[11] Regardless of the scientific explanation of any hormonal grounding, it is hard to argue that social reinforcement isn't one of the most important driving forces in our lives.

Social Reinforcement

The need for social systems does not stop with the child-mother bond. When we grow through life stages, we feel the need to be part of a family unit. The rewards are clear and easy to recognize. Through social bonds, we receive support or companionship and guidance. If this cannot be found in the family, people sometimes join another group to make sure they receive it nonetheless, like the army, or an ideological group of some sort. At times this need is so strong that people will join groups that are clearly abusive, like some cults. This shows how powerful the need for social reinforcement is.

In addition to these examples, we often join clubs, go to communal events, start our own families, and form complex social networks. And, most relevant to this book, we seek out enjoyable activities that are based on or reliant on social interaction. Have you ever been to a sci-fi convention? It is remarkable how sociable huge groups of people can become when they acknowledge that they have something in common. This can be seen in events where people just enjoy each other's company, when they share a common interest[12] or goal, or when they want to compete against each other in an enjoyable way, like at sporting events. It is hard to deny the existence and the plentiful awards that all of these social interactions can offer. It is therefore not surprising that they are all around us and we engage in them on a regular basis.

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[11] Catherine West, "Level of Oxytocin in Pregnant Women Predicts Mother-Child Bond," *Aps Observer* 20:10 (2007), available at http://www.psychologicalscience.org/observer/getArticle.cfm?id=2245.

[12] Perhaps I should start a level design appreciation society?

Temporary Isolation

This reward system can also work inversely, strange as that may sound. Who hasn't heard the grim saying, "Hell is other people"? Although not a very nice thing to say, it touches upon an important truth. Many of the advantages of a strong social network can also cause serious distress. Sometimes all the social elements in our lives can become oppressive. Too many opinions vying for dominance, attempts at peer pressure, social control instead of social support, or even just the fact that sometimes we don't get along with some other people.

At such moments, we may decide that the best way to improve our situation is to engage in activities that enforce *temporary*[13] *solitude*, or at least minimize the number of people we have to interact with.

When we need "peace and quiet" we may go on a long walk in the countryside. It allows us to focus on *our own* thoughts, without the din of others disturbing them. There are many other examples, like painting or writing a book. We may seek an activity that, in solitude, lets us focus on the voice or on the ideas of others. Listening to music or watching a film, and even doing a crossword puzzle, come to mind. As prevalent as social interaction can be, we enjoy a comparable number of solitary activities that produce their own vital awards.

Adversity and Catharsis

It is an unfortunate but nonetheless potent truth that some rewards can only come from dealing with negatives. This is complicated at best and covers a wide range of topics. I have dedicated a whole chapter to the principle of using negative emotions (Chapter 9),[14] which goes into some detail about using negative emotions in a positive way to strengthen level design. A number of specific techniques will be discussed and illustrated by clear examples. Within this chapter, however, I want to spend some time on the principle of *catharsis* as a reward system.

Catharsis

- *Noun* the release of pent-up emotions, for example through drama.
  - Derivatives *cathartic* adjective & noun.
  - Origin Greek katharsis, from kathairein 'cleanse'.[15]

[13] Almost nobody is interested in permanent solitude. That would be throwing out the baby with the bathwater.

[14] Chapter 9, "Negative Emotions."

[15] From the *Compact Oxford English Dictionary*. Available online at http://www.askoxford.com/concise_oed/catharsis?view=uk.

Catharsis is a special case reward system because it is often one that we wouldn't seek out intentionally, because it cannot be achieved without also experiencing negatives beforehand. The concept is almost always described as having something of a *purging* nature, all the way back to Aristotle's early use of the word in his famous *Poetics*, where he describes catharsis as being one of the main characteristics of tragedy, where it serves as a purgation of pity and fear.

Furthermore, there are definitions of catharsis that are just as valid but come from psychology, religion, or medicine. Whatever the interpretation, though, a defining feature of the principle of catharsis is that its reward can only come about after one suffers a serious amount of pain or adversity and feels the purging nature of the subsequent emotional release. This is why it is an interesting reward system, since it feels counterintuitive to seek out negative experiences to receive a positive reward. Indeed, in many cases we don't do this and in fact try all we can to avoid it. But on further inspection, we find that in most societies there is actually a deep-rooted respect for doing exactly that. In the English language, this can be seen in phrases or sayings like "character building" or in the slightly more testosterone-tinted observation that some kind of adversity "makes a man out of him."

All over the world, people engage in initiation ceremonies, or in ritualized rites of passage. An almost uncomfortable number of coming-of-age ceremonies are associated with painful or difficult tasks or quests. Ultimately we find that the basic principle of coming through a painful or difficult experience to learn or experience something positive pervades society on all levels. Uncomfortable as it may seem, negative experiences can provide rich rewards. This knowledge is formalized throughout all aspects of society. Catharsis is the basis for all kinds of reward mechanisms, some of them formalized and accepted, others only recognized after the fact or even coerced. Thank goodness that the latter is more and more frowned upon, although it still exists in practices like initiation ceremonies. Other examples can be found in activities that take serious sacrifices from the participant, sometimes in ways that seem extreme to others, but that give rewards that otherwise cannot be attained. People have spoken of life-changing experiences after extreme challenges like mountain climbing or spelunking[16] expeditions, extremely long periods of meditation, or extended fasting.

Plenty of other examples exist, but they all require a real extended effort from the participant. It is this *extended* aspect of *enduring hardship* that in most cases is linked to the positive outcome, the sense of catharsis. It can only occur, however, if the participant is tested in such a way that failure to endure is a possibility. And therein lies the danger. Paradoxically, catharsis as a basis for a reward

[16] Cave exploration.

system can only work well if there is this element of danger of failure or at least of real challenge. Otherwise, the emotions released at a positive or negative[17] outcome will not be strong enough to trigger a real sense of catharsis.

Concept Summary

What most of the reward systems and structures described above have in common is that they demand a certain amount of work, sacrifice or investment from the subject. *Something is given and something is received*. It is not necessarily true that more effort equals a larger reward (although that is often the case). It is more a matter of making a task worthwhile and meaningful because seeing one's efforts rewarded is fulfilling and enjoyable. This sometimes means that a very small amount of effort can reap a large reward, or a grueling task may end in a small symbolic victory, *yet the feeling of fulfillment can be equally strong*. Often the joy simply comes from what amounts to solving a life puzzle or conundrum, or it revolves about learning and applying the right skills for a task.

Unfortunately, there is a flip side to all this, insofar as unfulfilled reward systems provide negative emotional feedback. At times this can be of comparable impact to the expected positive outcome. It can also demotivate people to engage in important aspects in their lives, if through thwarted reward systems they have been taught not to do so. What use is love if it is likely to end in tears? Why work a hard job if the promotions only go to people who cheat? Why play a game when any effort can be instantly wiped out by the level design?

One of the many things a level designer has to understand is the dynamics of all these reward systems, as well as being able to effectively use them in practical situations, in a fair and even-handed way, if possible. The following chapter will attempt to take these concepts of diverse reward systems and examine them in the light of level design theory.

Theory

> If somebody holding carrots beats you with a stick it would be very satisfying if you were to wrestle the stick away from your tormentor and make him give you all the carrots.

[17] Catharsis can still occur even if the participant fails at the attempted task. It is the final release of emotions that shapes the sense of catharsis.

The previous chapter discusses many of the possible ways in which reward systems and structures can work, and, as importantly, what expectations people have from life. In this chapter we will examine some of them again, but within the context of level design theory. We will derive or construct some game-specific principles, as well.

I would like to make an important initial point before we do this, however, What has to be clear from the outset is that as authors of a level's content, and therefore of much of the player's game experience, we are completely within our rights to manipulate the player's reward expectations in ways that are unexpected, but that are ultimately more rewarding to the player. Even though it falls squarely within our responsibilities to do so, this is often forgotten, or worse, ignored. As long as we don't violate other important principles of level design, we have the power to give the player the opportunity to finally take away the big stick from the universal tormentor and run away with all the carrots, *and feel really good about it.*

Escapism and Wish Fulfillment

Level designers are lucky that they work in a medium that has an audience that is already willing and able to submit itself to feelings of escapism and wish fulfillment. It is perfectly acceptable for a gamer to crave these things; it is even (erroneously) at times expected that a gamer will *exclusively* crave them. This makes us lucky, because it gives us an audience made up of people who are willing to travel with us and gives us a whole range of techniques that we can use to get them there.

We can do this by taking them somewhere that doesn't exist in this world and then delight them with amazing new sight and sounds. *Fantabulate!*[18]

Or, we can take them into our interpretation of an enjoyable activity based in real world concepts. *Simulate!*

Both have many areas where they overlap, as covered in many chapters elsewhere in this book. But they also have important differences that need to be examined. (There is also a third option that will be examined later.)

Fantabulate!

A level is a virtual construct. It may have its own set of rules, logic, physics system, ecology, and other internal systems, but they all take place in a *virtual* setting. The disadvantage of this virtuality is that somebody needs to design and

[18] If this is not a real word, it should be; and I am claiming it now.

implement all of these things. The advantage for level designers is that in this need, or put to put it differently, in this *license* to do so, lies a huge amount of freedom and power. In game levels with a non-realistic setting, the level designer has the license to fantabulate.

New rules

Within a fantastic virtual construct, we are free to create many things or situations that simply would not work in the real world, all with the approval of our audience. Not only may we invent these new rules; we are positively *encouraged* to do so. We have already concluded in Chapter 2, "Teaching Mechanisms," that part of our responsibility lies in teaching the player the rules of the available gameplay activities. In a fantastic setting this is especially important, as the rules may be unknown in real life.

For example, we may have to teach players that summoning a fire elemental is an extremely effective way of deterring packs of ice wolves from attacking[19].)

The real fun lies in the fact that players who enjoy these kinds of things, and there are many, many millions of them, also really enjoy learning about this new world they find themselves in. Within an escapist mindset, experiencing new fantastic concepts is an attraction in its own right. If we go back to our earlier example of Tolkien, we see a work of fantasy that partly excels because of its sheer scope of invention. The book creates a very deep *sense of wonder*, partly because it consistently and thoroughly showcases a new world with an extremely detailed and well-thought-out set of rules. This applies to almost anything in the world, including its history, its ecology, and its magic system. Reading about all of these things is a large reason for the success of the book.

Level designers have to do the same thing. They need to interpret the new rules of the world and teach them to players in such a way that it creates a great *sense of wonder*, as well as teaching them *how to play* the game.

New environments

Hand in hand with new world rules come new environments; and once again, a great amount of work and a great amount of freedom for the level designer. A great amount of *work* because within this virtual construct somebody has to do the constructing. This does not mean that the level designer has to create all the environments solely by himself or herself, although at times this is feasible or necessary. In most cases, this work must be done in partnership with the art department. But the level designer does need to design all the *gameplay space*, and the way it is used. This gives level designers a great amount of *freedom* because

[19] Yes, I picked this cliché on purpose, for illustrative clarity.

they are the authors of a new gameplay environment, and to a large degree, of a whole new gameplay world. This is one of the reasons why level design is such an enormously fulfilling profession; it literally gives a designer the power to create worlds.[20]

So far, so good. In fact, this is no different from most other forms of level design.

Where level design featuring themes of escapism and wish fulfillment in a fantastic setting differs from more reality-based design is in some of the intrinsic goals. A big reason for the existence of the levels is to present a gameplay environment, and a virtual environment that appeals enough in its own right that the player wishes to engage with it and spend time sampling its content. This means that it is reasonable to include enjoyable areas that don't feature much gameplay (but aid in escapism), or to go further and assert that exploring these areas is part of the gameplay appropriate to the goals of such a level. A big mistake that many people in game development make is to assume that all gameplay spaces must feature active challenges and encounters. It is actually important to also include gameplay space that celebrates escapism through the medium of *exploration*, or other ways that the player can just enjoy the world. These are some of the reasons that so many games feature a fantasy, sci-fi, surreal, or otherwise fantastic setting. For many reasons, these genres are especially suited for this kind of design.

Providing the player with many level design scenarios to achieve these goals is an important way to allow for deep and interesting elements of wish fulfillment and escapism. Level designers should always ask fundamental questions about the scenarios they create. In the case of a fantastic setting, these questions can include:

- Can I reach that strange but beautiful area?
- How do I study that new dangerous creature?
- What else can I use this artifact for?
- Who built this structure?
- How do I reach that floating fortress?

These are just a few random examples, but each one shows that interesting level design scenarios are just around the corner. And answering questions like these goes very far in providing the player with what he or she wishes for, and constitutes an effective use of a powerful reward mechanism.

[20] If you are interested in level design and that doesn't appeal at a very basic level, you may ask yourself some questions.

Simulate!

A completely different approach to escapism and wish fulfillment is found in *simulations*, and before we discuss level design theory and simulations, we should actually look at what is meant by the word.

Simulation and imitation

Normally, when we speak of simulation, we are talking about modeling a real-world system or situation in order to learn something new. This could be for scientific reasons; for example, a simulation and study of hunter predator cycles could be used to warn when a particular species becomes overhunted and may become endangered. It could also be for financial reasons; a simulation of a particular economic system may predict which factors contribute to inflation. In any of the examples we can find of simulations, it is generally the case that there is a need for accuracy in order to correctly extrapolate from the data that the simulation produces:

> [A] simulation results when the equations of the underlying dynamic model are solved. This model is designed to imitate the time-evolution of a *real system*.[21] (*Emphasis mine.*)

Most games are not like that at all. (The exceptions will be noted shortly.) Games are all about *enjoyment*. When we play games, we play them for all kinds of enjoyable reasons: to have fun, to exercise our brains, to have a meaningful artistic experience, and so forth. Simulation games are no different and exist to provide an enjoyable experience, in most cases by providing players with a chance to engage in a real-life activity they normally would not be able to enjoy. A game can offer a player a chance to be a soccer manager or a train conductor or a theme park operator.

These are great examples of games based upon wish fulfillment as a reward system. If we look closer, we find that they aren't games of simulation at all, but games of illusion and *imitation*. The game *imitates* real-world activities only to the degree that their fun aspects are replicated for the enjoyment of the player. This kind of imitation is, unlike practical simulations, not concerned with accuracy at all, but with the *appearance* of accuracy. The games would quickly become extremely tedious if they tried to accurately simulate all aspects of the activity in question.

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[21] Stephan Hartmann, "The World as a Process: Simulations in the Natural and Social Sciences," http://philsci-archive.pitt.edu/archive/00002412/, 2005.

Accuracy only needs to be observed as long as it supports enjoyable gameplay. An actual racing game *simulator* (SIM) would be far too difficult for most gamers to enjoy. And what is the point of playing a grand prix SIM if the player cannot win? It would be accurate and realistic, but not much fun, especially because it fails at the first hurdle and doesn't provide the wish fulfillment element of the game's reward system.

Strangely, although the use of the word *simulation* is suspect, I still advise that we adhere to its usage in games. It is simply too confusing to do otherwise, because as a description of genre, it is too widespread to change. It is essential, however, that level designers know what simulation games are really about: enjoyable *imitation*.

This is not semantic nitpicking, but a fundamentally profound difference that causes much debate and conflict. Almost every level designer, on a regular basis, will have to argue this point against somebody who insists on making gameplay decisions that fail this test of enjoyable imitation, solely based on the argument that the game needs to correctly simulate a real world event. There are times when simulation and imitation go hand in hand, perhaps when a particular sport's league is implemented, or when the correct dimensions of a vehicle need to be followed. But even in those circumstances, it needs to be clear that these implementations still serve *an enjoyable imitation of a real world activity*.

This has tremendous impact for the level design of these games. Instead of being at the mercy of real-life rules and physics, the level designer now has the role of illusionist. The tracks in a realistic racing SIM now only have to *feel* like they are correct; as long as they are fun, the job is well done. The lack of accuracy in a wildlife photography game's terrain means nothing as long as it produces expected results that don't break immersion. It is all smoke and mirrors.

"Serious games"

There are only few exceptions to this rule, mainly in the area of so-called *serious* games and educational games. They are noteworthy because although they can display many of the characteristics of other video games, they are fundamentally different. There is no formal definition of what exactly constitutes "serious games", but it is fair to say that their main focus is that of teaching some real-world application or education. This can be a commercial focus, for example a driving game for a driving school, or a scientific one, for example a game that lets students identify certain plants as part of a biology lesson.[22] As already noted in Chapter 2, games are extremely suitable as a teaching tool, since we are already trained at a very young age to engage in gameplay in to learn all kinds of diverse

[22] Serious games are nearly always educational games.

skills. This and the ever-improving technological sophistication of commercial video games have led to a proliferation of serious and educational games that recognize this principle.

For example, see the Serious Games Initiative, which has done much work in this arena:

> The Serious Games Initiative is focused on uses for games in exploring management and leadership challenges facing the public sector. Part of its overall charter is to help forge productive links between the electronic game industry and projects involving the use of games in education, training, health, and public policy.[23]

Because the defining aspect of these games is that of real-world application, they are always expected to produce tangible results, or they will have failed in their basic function. And this result has to be realistic or accurate at all times, or its real-world application will be ruined. Because of this, the player has to be able to trust the game to produce teaching material that is trustworthy and cannot just be an imitation or an illusion. A serious game teaching somebody how to fly an airplane in real life has some serious responsibilities in real life to live up to.

Fantastic Simulation

On rare occasions, a hybrid game form appears that tries to provide fun gameplay through "realistically" simulating an activity in a fantastic setting, or even a *fantastic activity* in *any* setting.[24] This is a strange beast indeed and initially is not easy to quantify, but some clear examples exist. Take for instance *Startopia*,[25] a game that expects the player to successfully run a spaceship colony, balancing the needs of all the diverse onboard species. Another example can be found in the famous *Tamagotchi* brand, where the player is expected to take care of a fantastical creature in a realistic manner.

These games still contain the key elements of a rewards system based on escapism and wish fulfillment, but it is up to the level designer to decide where to fantabulate and where to simulate. However, the question can be asked: how can a game simultaneously be both fantastic and realistic?

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[23] "The Serious Games Initiative," *The Serious Games Initiative*, www.seriousgames.org/newswire/.

[24] Typically a fantastic setting, however.

[25] Mucky Foot Productions, 2001; published by Eidos.

Staying "in character"

The answer to this question lies in the assumption that a level should stay *in character*. Like an actor, the game cannot acknowledge the world outside of its own fiction. If this happened, it might not be strange for a player to take slow incremental lessons in hover board control to perfectly learn the nuances needed to enter the *Martian Circular Race*.[26] The level designer needs to be aware that although there is room for imitation and illusion, the levels cannot cheat the in-game rules at any time. I will leave this topic for now, before it all becomes too metaphysical, but I would like to advise any level designer working on such a game to treat the fake rules of the game as if they were real.

Some Further Notes on Wish Fulfillment

In most of the examples and cases discussed so far, wish fulfillment has been linked to giving players the freedom to engage in activities they probably can't in real life. This can be to shine in a career as a formula one racing driver or to captain a star ship. The activity itself is the wish being fulfilled. The principle goes much further, however, sometimes in unexpected ways. The player may be confronted with a fast vehicle, leading to a wish to drive it, or the player may spot a castle on the horizon, leading to a wish to reach it. Many of these kinds of scenarios are actually in the hands of the level designer. In wish fulfillment, we have an immensely powerful tool to entertain the player through our level designs. In this context, wish fulfillment means adding gameplay scenarios that create a desire and eventually give the player the means to satisfy it.

Avoiding clichés

A well-known criticism of wish fulfillment is that it panders to simplistic desires and that is "too easy," leading to cheap entertainment that doesn't challenge or engage the audience enough. This danger certainly exists, but it is no more a result of wish fulfillment than elevator music is a result of making music accessible. If used well, wish fulfillment is a powerful technique that can be used to reward gameplay, deepen immersion, and to challenge the player's conception of what a desired outcome is. It is up to the level designer to decide how to implement these principles, and what clichés to avoid. There are no hard and fast rules and what constitutes a cliché can be entirely dependent on the game's genre or expected audience.

[26] I made that up.

Investment and Payoff

Players of *massively multiplayer online role playing games* (MMORPGs) know all about this one. In fact, they have a rather negative term for when a game becomes too much of a chore — *"grinding."* The *grind* describes a painful and boring slog where players perform repetitive gameplay tasks[27] that very slowly increase their experience points, eventually allowing them to *level up,*[28] which gives them more and more of the power needed to make a real impact in the world.

Sounds terribly boring, doesn't it? Yet millions of people do this day after day without fail, simply because there is a payoff for all this investment. They may hate doing it, but they do it anyway if they perceive the payoff to be worthwhile. However, we can do much to reduce the tedium of this kind of gameplay with smart level design. I will focus more on avoiding the grind later. But first, let's look at the principle of investment and payoff in level design.

The Agreement between Designer and Player

Throughout this chapter, and indeed throughout this book, I have made it a recurring theme that artist and audience strike a deal. *The player of a video game is happy to face the challenges the game offers — if there are rewards for doing so*. It is tempting to leave it at that; but because it is such an important principle, let me try to illustrate the concept in a little more depth. As in most other level design techniques, it is important to get the balance right. In the dynamics of investment and payoff, the two sides of his bargain need to be balanced. If the reward is not high enough in relation to the investment, the player will feel cheated. If the reward is too high, the player will become spoiled and will expect too much throughout the game afterwards. If the challenges are too hard, the player will become frustrated; if they are too easy; the player will become bored. So, a few principles need to be respected:

Proportional rewards

Rewards need to be proportionate to the effort expended in obtaining them. Or at least, the player needs to know that the *potential* awards can be proportionate to the effort needed to obtain them. There are exceptions, but they *are* exceptions to the rule. If we ask players to abide by certain rules, they need to be able to trust the contract and the fact that they will receive a reasonable reward for

[27] Like vanquishing small furry creatures or picking berries for days of in-game time on end.

[28] Attain higher levels for their character.

their efforts. Even when there is an element of chance in play, this principle stays intact, as the potential award needs to be high enough to compensate for those instances when the player receives a lesser reward, or none. But in that case, the player needs to know that chance is a factor.

Avoid boredom if possible

Try to avoid situations where the player ends up repeating the same boring task over and over for small incremental awards. I have already mentioned "the *grind* earlier in the chapter, but it can occur in other ways as well. A good example can be found in enemy placement. For example, in a first person shooter, if the same enemy guards every pickup, the task of dispatching that enemy to gain the pickup becomes very boring, very quickly. Constantly repeating the same task for the same gain is a sure-fire recipe for boring the player witless. Instead variation needs to added, by diversifying the challenge, even if the basic components stay *the same*. The challenge can be repeated but possibly with variations in

- enemy numbers,
- enemy arms,
- strategic positioning,
- player arms,
- pickup location,
- time limit.

And so it goes. There are uncounted ways of adding variation of this kind. Doing so allows the level designer to scale content and difficulty level to a large degree. This can go quite far and can allow the player to be taught different ways of approaching the same problem. (How to get the award.) This makes it possible to stave off player boredom with a repetitive task, while at the same time teaching new gameplay mechanics.

Avoid frustration

Don't promise the player a fat juicy carrot and then just end up repeatedly bashing that player with a stick. This is another instance where rewards need to be balanced against the effort needed to obtain them. It is frustrating if it is too hard to get a gameplay award. And there is a point where any reward is too little for the enormous effort needed to obtain it. It is worth noting that many level designers, especially those just beginning, err badly in this department. Challenge levels don't scale indefinitely; in fact, quite early on, difficulty starts to become a turn-off, unless skill keeps pace with it. If your level design is based upon a concept of elite Yoda-master level skills, you have effectively turned off the majority of your players. These are players who will probably *never play your game again*, and

they will tell others not to buy it. It is simply not in the contract between level designer and audience that the audience can only enjoy the game after unbelievable skill levels have been reached. Or at least this is the case in most games. There are exceptions, like certain types of shoot-em-ups where this difficulty is part of the core gameplay. And even in these games, there is still an acceptable[29] level of difficulty and an unacceptable one. Generally, it is better to think of *interesting* challenges, rather than of difficult ones. Difficulty is just one of many ways to keep a challenge interesting.

Submission and Release in Level Design

Earlier in this chapter, we saw that at times people are happy to submit to an authority they normally would not recognize.

Application

So far so good, but does this have anything to do with level design? Well, surprisingly, it does. This agreement between parties to temporarily allow a reward system of submission and release is clearly recognizable in the contract between artist and audience. Don't we submit to the whim of the writer or the wishes of the movie director? Even in the non-passive context of a video game, we still submit to the same principle, because there is the promise of a reward on the other end. Sometimes we can be held or a long time, without complaining, in a state in which we normally would not find ourselves, because the artist is assured and strong in his or her craft. I will return to this principle of an agreement, or contract between artist and audience, several times in this book, as it can lead to useful applications in creative expression, and particularly in level design.

Trust in the Machine

The most important aspect of this dynamic is the fact that players are happy to be led by the level designer if they trust the design not to betray them. This can be *overt* — players know and acknowledge that they are submitting. Or it can be *covert* — players are not aware that a direct effort in this regard is being made.[30]

[29] Chapter 8, "Immersion," will explore in greater detail the required balance between difficulty and skill levels through an examination of "Flow Theory."

[30] Other than the fact that they are aware that they are playing a game.

Overt submission

In the case of *overt submission*, trust is lost if the situation does not result in some tangible bonus or reward. (The mission needs to end in some form of success, or at the least in an honest chance to succeed. A tutorial needs to teach, rather than punish; and collecting all 100 gems of infinity needs to really pay off.[31] In many ways this is the same principle as discussed earlier in the area of *investment and payoff*, but it is still a useful alternative way of looking at reward systems. In this particular case, the player is aware that the game offers specific awards for specific behavior, and related gameplay tasks are actually represented as such. It would be a huge mistake to allow a situation where the player thinks that a certain outcome is guaranteed, only to find out that this no longer holds true. From this point on, trust is lost, and the player will not be able to make informed gameplay decisions.

Covert submission

Covert submission to authority is more widespread than most players realize. A lot of it is planned out early in the level design stage, since it is intended for certain things to occur, *no matter what the player decides*.[32] If players do not realize this, or if they agree not to acknowledge the fact that they are forcibly led to certain conclusions, chances are they won't resent it.

For example, a level designer may wish to teach the player how to use a certain play mechanic and therefore have devised a number of artificial encounters that act as a tutorial. Players may think they are following the request of a villager in need, while in actual terms they are gaining enough experience points to be able to wield the sword they will receive at the end of the mission. In order to present formal gameplay challenges like this in such an informal way, the challenges have to be presented through the voice of the game itself, without acknowledging the formal real-world goal of gaining X experience points or something similar. It is generally a good idea if the game "stays in character" and does not tell the player what the real reason for the task is.

Covert submission is less direct than overt submission, and therefore it is less easy to define what a betrayal of trust means. There are some definite danger areas, however. It is often a bad idea to present the player with any of the following situations:

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[31] Perhaps by providing a nice porcelain dog? (I am kidding.)

[32] This is why, although it sounds paradoxical, it makes sense to classify this as submission. Chapter 10, which covers topics like immersion and suspension of disbelief, goes into great detail on how this works.

- Don't repeat the same covert task too many times. The player is sure to catch on sooner rather than later.
- Don't arbitrarily use this technique. It is much easier to pull off when there is a good in-game reason for doing so.
- On completion of the task, don't inform the player that it was all just a ruse. The player will feel manipulated and resent it.

These are just some general examples. There are many others, all of which depend on genre and conventions.

Empowering the Player

Unlike real life, games provide us with an opportunity to face challenges without penalties that go beyond the limits of the game itself. This is a real advantage, since it allows the player of a game to experiment with different strategies for overcoming challenges, or repeating attempts at solving the same problem. It is entirely possible for a player to face initial impossible odds, yet through repetition or experimentation, manage to finally overcome them. As level designers we are uniquely placed to provide the player with interesting challenges, as well as the tools and means to successfully overcome them. In other words, we can design levels that are geared towards player *empowerment*.

As a reward mechanism in real life, this is hard to beat, and it is no different within the virtual setting of a game. The difference in a game setting is that as level designers we can shape the actual world and the contained gameplay scenarios. We can lend a helping hand by rigging the game in favor of the player, eliminate much of the fairness inherent to real life, and provide players with multiple chances to overcome the same challenge. And we can determine much of the final reward offered to the player, sometimes including the type of empowerment that the experience rewards. To be able to wield these godlike powers wisely, we should examine these advantages a bit farther.

Shaping the World

One of the most fundamental acts that a level designer undertakes is that of *creating the environment*. It is literally a matter of *world building* and is therefore an area that has far-reaching consequences for gameplay. Crucial to this act of creation is the design of the player's *role* in the world. How does the player *interact* with the world's dynamic systems? How much control is given to the player to affect the environment? How *effective* are the powers that the player wields? The answers to these questions paint a unique gameplay experience for every indi-

vidual game, from *Tetris* to *Half Life*, and what they all have in common is that they can empower or disempower the player in a variety of ways.

Rigging the game

Life's challenges tend to be fairly random. They just pop up, and we have to cope with them, regardless of our ability to do so. As level designers, however, we can tailor the players' challenges, and we can have much to say over their ability to deal with them. In most cases, we can and should make sure that the fix is in, and that the game is slightly rigged in favor of the player. The player finds just the right keys to open just the right doors. The player has just enough training to be able to just win the tennis tournament. The ambush area features just enough cover for the player to make a fighting escape. Often, we can engineer these moments in such a way that the player makes the key decisions, or is tricked into thinking so,[33] thus deepening the sense of empowerment.

Keeping it fair

Most people are painfully aware of the fact that life is not inherently fair. We want it to be, and sometimes the outcomes of our life's challenges are pleasingly positive, but just as often they simply aren't. This is why we often seek out challenges that can guarantee a fair outcome. Video game challenges fall in that category. As designers, we can facilitate players in this wish by making sure that we keep the challenges they face firmly in the realm of fairness. We have the power to create a world where taking action *does* mean taking control of one's destiny.

Allowing the player to cheat

Although we can add a sense of fairness to gameplay, on the other hand, there is nothing wrong with us *allowing the player to cheat*. I don't mean cheating in the sense of breaking existing rules, and we can't let the player rewrite code. But we can present situations, such that the player can approach them in ways that the real world doesn't allow. For example, say we create a jumping puzzle where failure means that players will fall a long way down, normally to their death. However, nothing prevents us from placing a trampoline at the bottom of the drop, which bounces the player back to the start of the jumping sequence. We might engineer a fight sequence to take place in a location where the player is less vulnerable and can approach the fight from a position of strength that is normally absent, perhaps by giving the player access to a shielded vehicle. We can even engineer situations where the player can attempt to do something like stealing

[33] I will return to this theme of *benign deceit* several times throughout the book.

an item from a museum and make the price of failure much lower than in reality. In this case, tripping an alarm can be temporary, and the museum security would reset after five minutes, no matter how many times the player trips the alarm.

The final reward

The sense of empowerment after overcoming an interesting challenge is rewarding in and of itself. This alone is sufficient grounding to make it a useful reward mechanism. Additionally however, we can reward the player with enhanced means to *exercise* power, or with an environment that itself is easier to control, as a form of *literal empowerment*. These kinds of awards can be quite literal. The player may receive an upgraded weapon or gain access to a level's security systems. Subtler methods may be employed as well. For example, the player's relationship with non-player characters (NPCs) can change for the better, or some player skill can be enhanced from now on, making it easier to deal with future challenges. Whatever the reward may be, in this particular reward system, it is important that the player ends up feeling empowered in some way that matters.

Social Dynamics in Level Design

In the earlier section on isolation and social reinforcement, we have seen that these social principles can both reward and punish, depending on the context in which they are used. As in real life, in level design this is something that is not always clear to the player. Sometimes these principles can be quit subtle, but that does not necessarily take away from their impact. In other circumstances this principle can be the central one of the design and may be clear to anybody involved. Either way, social dynamics can be of the utmost importance to level designers and can be used as strong and important reward systems.

Multiplayer Aspects

In multiplayer games, the social dynamics we have discussed cannot help but come to the fore. By their very nature, multiplayer games need to be conducive to social reward systems. Therefore, the level design has to incorporate this where it can, to support the game's design. This can be done in diverse ways and on many levels of sophistication. The question, as always, has to be "what are my level design *goals*?" In this case, some of the answers may lie in areas dealing with issues as diverse as *spatial considerations*, *fostering group interactions*, or conversely, by enforcing *social bottlenecks*. (The latter case shows that even in multiplayer games, temporary isolation can be a positive factor.) All of these examples are

elements that can occur in real life and are easily adopted or translated into level design theory. Let's take a closer look.

Spatial considerations

Have you ever seen a group of school children enter one of those mazes made of hedges, which are often built in the garden of some castle or ancient mansion? It is hardly a coordinated and cohesive affair. In fact, if the children are too young, it may lead to some rather distraught scenes. What only moments ago was a nice group affair is now a disjointed and confused scene, filled with individual accounts of fear and dismay.[34] The maze, while conducive to individual exploration, or at least to use by small numbers of people, ceases to be enjoyable if the group becomes too large and is expected to stay together. Imagine what would happen if the group consisted of hundreds of people!

If we translate this scenario into a typical gameplay one, we get a similar need for spatial consideration. Depending on the size of the game, it is likely that the gameplay space itself needs to take special steps to support the game' social dynamics. For example, a game that requires large groups of people to explore old ruins can be made much more enjoyable if the ruins themselves allow for this by providing wide and high corridors and large rooms. This means groups can travel together and intermittently take stock of the situation by being able to gather en masse in a single room, without anybody being left behind or outside.

Fostering group interaction

A classic way of strengthening communities is by involving them in some kind of group task that benefits the whole. This is especially true if the group can perform a task much more effectively than a collection of individuals. Take for instance a support group for parents with children who suffer from diabetes. All the individual parents may have much knowledge of some of the issues and have developed coping mechanisms that are helpful to them some of the time. Task them to improve things collectively, and it becomes clear that the support group however allows them to pool the information and knowledge and make it available to all other parents. They can set up a network that can cover for parents with specific needs, set up an information network, lobby the government as a pressure group, and so forth. Not only is this group much more effective than a collection of individuals; it can also forge real bonds of social reinforcement because others in the group understand the individual needs and problems and can react to them.

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[34] Ok, perhaps it is not quite *that* bad, but it could have been!

If social reinforcement is a desired result of the level design, it makes sense to foster similar types of situations, where the whole can be more effective than the individual parts. Since we can author specific challenges and scenarios within the level design, it is within our power to create challenges that require group solutions or at least are more effectively handled by people working together. Furthermore, this can be done in such a way that it strengthens an online community.[35] This can happen in multiplayer games ranging from team-based first person shooters like *Counter Strike,*[36] which is best played on levels where a well-trained clan can cover big parts of the map strategically by communicating well and assigning supporting duties, or in games like *Gears of War,*[37] where the level design is geared towards a separation of tasks that are vital in order to achieve a common goal. In both cases the level design is crucial in fostering positive social reinforcement by providing gameplay scenarios that require or encourage this.

Social bottlenecks

Sometimes in a busy multiplayer environment, the constant human interaction, or worse, constant attacks or abuse, can become too much. Sometimes it is fun to be a loner, to save the girl as a unique hero, or to just collect one's thoughts. Or sometimes it *is* better to serve the group through individual actions. This makes the act of breaking away from the group or the masses a positive and can be seen as a reward in its own right.

This does not mean that it cannot be done while in the service of the greater communal good. The level designer can use *social bottlenecks*, for lack of a better term, that provide gameplay opportunities for individuals. A sniper may be able to find a lone perch on top of a building and hold off an advancing group of enemies while his friends make an escape. The sniper is sure to enjoy a great deal of social reward when he or she rejoins the group later on when they are safe. A scout can forge ahead unseen by the enemy and report on the best route forward. Plenty of other examples exist, but the main point is that it helps to think about these principles early on, as they can be just as rewarding as group interactions.

Single-Player Aspects

It may seem a bit odd to talk about social dynamics and single-player games. Aren't these games played in solitude, i.e. the opposite from a social dynamic?

[35] However, this tends to happen as a consequence anyway.

[36] Developed by Valve Software.

[37] Developed by Epic Games.

This is true to a degree; the player is not with any other *people* while playing the game. Nonetheless, this does not mean that social dynamics and social reward systems cannot have an impact in *the absence* of people. Two important topics present themselves: the player can still be exposed to non-player characters (NPCs) and the player can still be rewarded by, or subjected to, rewarding situations *derived from solitude.*[38]

NPCs

Just because the other people in the game are digital doesn't mean that they cannot have an impact, or more to the point, that they cannot be subject to the systems we described in multiplayer games. This means that spatial considerations, fostering group interaction, and social bottlenecks are still techniques and areas that can be explored. NPCs may not be as intelligent or many-layered as real people, but that is in many ways beside the point. What matters is that they still need space to maneuver, can work more effectively as a group, and can be subject to social bottlenecks.

Where NPCs differ from human characters is that the level designer can control them. While in a multiplayer situation the level designer needs to create an environment that is conducive to the people themselves creating socially rewarding interactions, in a single-player game, the game the designer is able to determine or predict many of the actions of the NPCs. The designer therefore can design specific gameplay scenarios that are socially rewarding. This is an important advantage to have as a designer, as it means the design is not dependent on the fickle nature of real people.

The player can even form relationships with NPCs. It is possible for a level designer to foster player bonding with non-player characters, in the absence of real people to bond with. NPCs can at times provide a similar function to real players, sometimes with surprisingly strong results. One of the best ways to do so is by letting the player invest emotionally in the non-player character, as well as giving the NPC a direct gameplay function. Giving the player the proverbial puppy to care for can provide direct gameplay gains when the puppy grows up to be a fiercely loyal guard dog.

Solitude and isolation in single-player games

Sometimes the absence of a thing makes it more powerful in the mind of a person. Think of becoming homesick or missing a loved one while at work. Or in a slightly more ominous scenario, imagine being locked up and awaiting an inter-

[38] Often presented as a contrast to social interaction.

rogator. Imagine traveling through the ruins of an ancient culture, or through a city mysteriously devoid of any occupants, even though there are signs of recent habitation everywhere. These are all examples of social dynamics being in play in situations of complete solitude, a paradoxical but real situation.

Even in single-player games that are normally filled with NPCs, there are very direct advantages to providing opportunities for solo gameplay. Solitude can provide breathing space that allows the player to form new social strategies. Eventually it can even engineer a situation where the player misses the company of others, thus creating a mechanism that reinforces bonding the next time the player meets an NPC.

Catharsis and Level Design

We have discussed earlier when people come out of extended periods of enduring some kind of hardship, or engaging in an extreme challenge, this can lead to a very strong release or purging of emotions. Together with the resulting positive feelings, for example a sense of renewed purpose, empowerment, and revitalization is often referred to as *catharsis*. This cathartic effect is a recognized outcome in many situations and can even form the basis of formal reward systems. This makes it an interesting subject for level designers, since we may be able to use some of these principles to create emotional feedback mechanisms for our levels.

Before we continue examining how this can work, I would like to show an example of how the principle has been successfully used in filmmaking and see if the use in another art form can give us knowledge applicable to our own craft. The best example I can think of is found in the film language developed by Alfred Hitchcock throughout his career. Hitchcock is famous for many reasons, but chief among them is his particular use of *suspense*.

Alfred Hitchcock and Suspense

Hitchcock was a past master at manipulating an audience's experience, and his influence also reaches other chapters in this book, including Chapter 13[39] with regard to set pieces. But in this chapter, we are going to look at the rather nuanced fashion in which he used tension and release in a way that was revolutionary in its time.

A key aspect to the success and effectiveness of a Hitchcock movie is the use of *suspense* to captivate the audience. Suspense in filmic terms is the technique whereby the director creates a large amount of tension in the audience, but then

[39] In the section on "Making Your World Memorable."

waits a certain amount of time before allowing the tension to be resolved. This state in which the audience is waiting for a resolution is what we call suspense. While in this state of suspense, the audience will be highly focused and receptive to onscreen actions.

Compare these two scenes:

> **Scene 1:**
>
> A train is racing across the tracks. We can see that it is filled with passengers. The camera *zooms* in on a family scene, two parents and a child sitting around a table in a carriage. The parents are talking while the child is playing with a toy train, making it crash and providing the appropriate sound effects himself. The couple now seem content to look at their son playing with the toy, they smile at each other. Clearly, they are happy. Suddenly, the carriage lurches, people scream loudly, and mayhem ensues. All of a sudden there is quiet, the camera zooms out, and we see that the train has stopped on a bridge that seems partially collapsed. It is hanging over the edge of the broken bridge, precariously balanced!

This scene may be effective[40] as it stands and cause fright out of a sense of surprise. I even included a small amount of foreshadowing through the child's play with the toy train. Let's see what happens if we introduce the element of suspense:

> **Scene 1 v.2:**
>
> A grim-faced man is connecting wires to a small box and sweating profusely. It slowly becomes clear that he is setting up a timer, one that is linked to a large amount of explosives. *Cut to:* a family scene, two parents and a child sitting around a table. The parents are talking while the child is playing with a toy train, making it crash and providing the appropriate sound effects himself. *Cut back to:* the man with the bomb. We can see more of the environment around the man. He is attaching the timer and the charge to a large pillar. We can now see that there are many other charges connected to the same timer, attached to other pillars. *Cut to:* the family we have seen earlier. The boy is still playing his train crash game. The camera reveals that the family is seated within a train carriage. *Cut back to:* the man with the explosives. We see he is ready with his work. He checks his watch and looks at the timer.
>
> The camera zooms out to show that the explosive charges and timer have been attached to a very high and large train bridge. Furthermore,

[40] Although perhaps not a masterful piece of script writing.

> we can see the plume of a train appearing further down the tracks. A train is approaching. *Cut to:* the family in the train. It is now clear that the family is heading for disaster, together with everybody else on the train! *Cut back to:* the man with the explosives, who is now hiding behind some rocks with the timer, watching the approaching train. A figure approaches slowly from behind (a policeman) and suddenly lunges for the timer, trying to wrestle it from the bomber. A struggle ensues. *Crosscut several times between the fighting men and the approaching train.* The policeman is losing the struggle and the bomber is nearly able to retrieve the timer. *Cut to:* a large explosion; debris flies through the air. *Cut to:* the approaching train.
>
> Suddenly, the carriage lurches, people scream loudly, and mayhem ensues. All of a sudden there is quiet. The camera zooms out, showing that the train has stopped on a bridge that seems partially collapsed. It is hanging over the edge of the broken bridge, precariously balanced! The bomb exploded early and the train was able to stop just before plummeting down the now-broken bridge. *Cut to:* the family in the carriage, clearly shaken but unhurt. The boy is still clutching his toy train.

Despite the laughably clichéd content of the second scene, it illustrates clearly how much extra tension, depth, and meaning can be added through the use of suspense. For a long period, the film is able to heighten the tension in the audience, drawing its complete focus onto the onscreen action. This audience is finally rewarded for enduring the suspense by a strong and enjoyable resolution to the tension. This is a clear example of a practical reward system employed to achieve greater artistic impact.

Including the audience

This was by no means a new technique, even when Hitchcock was making his films. But what made much of Hitchcock's work special was that he added an extra dimension to the use of suspense by giving the audience more information than the protagonist onscreen, and extending the duration of suspense. Since the audience cannot alter the events onscreen, this allowed for a large amount of tension to be created, leading to a subsequent powerful resolution.[41]

Hitchcock was very aware of the power of this technique and made it a vital part of his filmmaking. He was notably successful in incorporating audience

[41] This resolution does not have to be a positive one. If it is rewarding for the audience, it may well be a disturbing or frightening one, or whatever the artist finds appropriate.

knowledge into a scene, meaning that the audience knows more about the on-screen situation than the protagonist, which creates even more tension and suspense. A typical Hitchcock classic where this occurs is *Rear Window*,[42] where at a key moment the viewer is allowed to see things unfold while the protagonist is asleep.

This principle has become so well known that scenes or entire films are now is referred to as being *Hitchcockian*, and many famous directors have taken the old master's lessons and incorporated them into their own style. Brian de Palma is a director who comes to mind who has often used Hitchcockian suspense in his own movies.[43]

What this kind of suspense shows us is that it is possible to use the principle of catharsis, the release of emotions after enduring a lengthy and serious challenge, to create sophisticated artistic techniques. If it can be done in film, it may well be possible in level design.

Suspense, Catharsis and Level Design

Suspense works as a technique of a cathartic reward system by using a key aspect of it, namely the endurance of a challenge over time. It actively sets out an exceptionally challenging[44] situation and artificially extends its duration, *suspending* the outcome until the director feels that maximum emotional impact can be reached in the moment of release. The other main components are *challenge* and *release*. Let's examine these three in level-design terms.

Exceptional challenge

Catharsis works differently from other reward mechanisms in level design because of the nature of the challenge necessary to produce the desired emotional release at the end. The challenge has to be one that goes beyond the expected and actually tests the player's ability, and his or her will to cope with something on a deeper level than regular game mechanics. This is an extremely difficult thing to pull off well and one of the more dangerous techniques in level design. The problem is that is easy to create something that is extremely challenging, but not so easy to make that challenge one that players are willing to finish. Get the balance wrong, and the player will just stop playing in disgust and never come back to the game. Why would players have to put up with fighting some unbe-

[42] Paramount, 1956.

[43] His film *Body Double* comes to mind, and in fact it can be seen as an ode to Hitchcock.

[44] To the audience.

lievably strong opponent that just kills them when even one small mistake is made? Whatever the level designer's plan is for challenge, a number of considerations have to be taken into account. It helps if the player *is motivated* to take on the challenge, the challenge itself *makes sense*, and it looks at the beginning of the challenge like there is a *chance of success*.

Motivation. Why cross a desert if it is known that it will be a gruesomely hard experience? Why single-handedly take on a whole gang of dangerous criminals? Why decide to go into the awful dungeons that are clearly haunted? If all of these challenges deliver on the seriousness of the challenge that they imply, a good answer to these questions is needed. The level designer can answer them by providing a good *motivation* for the player to adopt. The stronger the motivation, the more willing the player becomes to accept an exceptional challenge. A player may not want to put up with a long and extremely dangerous trek through a miserable wasteland, but will become totally committed to doing so if it is to stealthily follow a group of thugs who have kidnapped the player's favorite in-game companion.

Nonarbitrary and focused gameplay. Once a degree of focus is attained through providing the right motivation, the player still needs to be confronted with actual challenging gameplay. To keep that focus in place, it helps if the gameplay is immediately linked to the motivation of the challenge itself. It helps if the actions required are somehow logically linked to the main task at hand and not blatant arbitrary hoops to jump through, put in place by the designer.

Viable strategies. Although moments of despair and futility can be allowed to creep into the challenge, it is vital that at the start of the challenge the player is not overcome with a sense of hopelessness. The aim of the exercise is to lead players to catharsis, not to immediately put them off. This means that it is important to make sure that the player thinks it is worth proceeding. To do that, the level designer has to provide the player with viable strategies for progress. This doesn't have to be a strategy for success; in fact, it can be as humble as allowing the player to follow an overwhelmingly strong foe and ponder what can be done.

Suspended resolution

Now that an exceptional challenge has been created and the player is committed to taking it on, the level designer needs to make sure that the challenge plays out over a sufficient amount of time. It is of no use creating a difficult situation that can be resolved in ten seconds, as this does not provide enough of a test. The player will either feel lucky or simply not challenged after all. Instead, just

as in Hitchcockian suspense, the challenge grows in meaning and impact if extended through time. Feelings of panic and doubt can come into play during this ordeal, but they can be taken away again by a sense of progress, the addition of new viable strategies, and small successes. This resulting extended gameplay works as a pressure cooker where the player's need for a resolution starts building up and provides the energy for a sufficient emotional response at the time of release.

Release (Catharsis)

Finally, now that the player has been guided to a moment where a release of tension can occur, it is very easy to forget that it has to be a *rewarding* release of tension. This can be done in several ways, but it is vital that it is done, or the whole exercise would end up feeling futile and depressing to the player.[45] Rather than risking this, the level designer needs to make sure that the rewards and the accompanying feelings of catharsis are strong enough. This can be done by making the method of release really satisfying, for example by providing a particularly enjoyable gameplay scenario that allows the player to overcome the challenge. It can also be helped by providing an extremely positive outcome, for example by giving the player a long-coveted item, or restoring an emotional bond with a previously lost companion. There are countless ways of rewarding the player, but each level designer must make sure that this indeed happens. If chosen correctly, the resulting emotional release will create a game moment that the player will cherish for a long time to come.

Associated Dangers

Catharsis is a dangerous technique to use in level design, yet it is a tempting one because the potential reward is so high. What the level designer needs to understand is that the technique easily breaks one of the level design fundamentals, namely making sure that the skill level and challenge are in balance. Frustrate players long enough with difficult gameplay and they will leave the game for good. And the nature of the extended challenges we are discussing here is by definition frustrating, as the resolution desired by the player is purposefully suspended by the level designer. Tread carefully!

Furthermore, as in all art forms, the artist has a certain amount of responsibility to the audience. In this case the responsibility is not trivial, as we are talking about highly manipulative techniques used to elicit an emotionally strong response. This does not invalidate the technique, but it should at least prompt

[45] Another chance to lose a player forever.

the artist to check to make sure that no ethical lines are crossed. It is not up to me to suggest where these lines lie, but I do think that the question should be asked by level designers who find themselves in this situation

Practice

Example 7.1: Investment and Payoff—Awarding Exploration

Summary

A basic reward mechanism that all levels should feature is one of investment and payoff. The player should not only be rewarded for their efforts, but the rewards should be proportional to the amount of effort required to do something. This applies to many aspects of gameplay, including exploration.

Game Genre

Most games where the player can explore an environment.

Goals to Achieve

- Encourage explorative gameplay.
- Provide subtle direction.
- Provide proportionate rewards.

Description

(Example type: Original)

Abandoned house. When choosing a setting that rewards exploration gameplay, it is worth taking a moment to think of something that really speaks to the imagination of the player. This is a nice general goal to maintain, but it is essential in the case of exploration gameplay, as we have to create an environment in which the player's imagination leads them to explore.

An example of such an environment can be a grand abandoned old house. The concept immediately puts certain images and desires in the mind of the player: images that can be incorporated into the level design, based on exploration gameplay principles.

House areas. We can list areas in the level that are subsequently more and more off the beaten track, but can yield bigger rewards, both in terms of in-game items that can be found and of new interesting areas that the player can discover (the latter can function as a reward in its own right):

- corridors,
- main rooms,
- secondary rooms,
- locked rooms,
- hidden cupboard,
- out of reach attic (pull down ladder),
- locked basement,
- secret passageway,
- secret garden.

These are all easily incorporated into subtle and imaginative level design scenarios. Faint footsteps on a dusty floor can lead to a hidden cupboard. Locked rooms are a clear invitation to explore and find a master key. A locked basement demands to be accessed one way or another. A secret garden in the middle of a folly maze can yield real revelations.

Each of these examples can reward the player in one way or another, but they are all subject to explorative gameplay. If the player is willing to put in the effort, then he or she can uncover deeper and more exciting secrets and be rewarded in the process.

Further Notes

It is always useful when thinking of a setting for this kind of gameplay to take this into account. Is it easy to provide deeper and deeper layers of exploration? If the answer is yes than the level design process should be significantly easier.

Example 7.2: Escapism—Safe Haven

Summary

Providing escapism can operate as a strong reward system in its own right, and can appeal to people at a very pure level. Few things are as human as the occasional wish to get away from things, to escape from the troubles of our lives. Although games are often wrongly derided for this, we should celebrate the fact that game levels can be a fantastic vehicle for achieving this escape.

Game Genre

The technique is suitable for use within specific levels or a dedicated level that functions as a hub for all other levels.

Goals to Achieve

- Provide a reward mechanism that uses escapist desires to be effective.
- Incorporate this directly into the level design.
- Tie this into other uses, like providing a practice space for the player.
- Incorporating exploratory or other rewards into the general setup.

Description

(Example type: General)

The extendable safe haven. If a level can feature a safe house or an otherwise safe area (for example, one that can function as a hub), the level designer has a good opportunity to create an area that fulfills the desire for escapism. This is done by creating an area the player returns to regularly, at will or otherwise, in which no harm can befall the player. Instead, it is a safe place in which the player can indulge in exploration, strategize, practice skills, store loot, and enjoy a rewarding environment. Other uses can be added as well.

The safe haven—let's take a fenced off forgotten industrial area as an example—can be made into an *extendable* safe haven by treating it as a playground and a home base that features rewards that get slowly unlocked. In this example, the player can start in a single building at ground level where they can store loot and decide what to do next. Subsequently, throughout progressing through the level (or through a hub for all levels), the player will acquire additional skills, abilities and equipment, which can be used to extend the safe haven. New athletic abilities can make the player reach high places that were previously out of reach, including a new building with new secrets to discover. New equipment, like a blow torch or a fence cutter, can open up previously locked areas. The more the player progresses, the more environmental rewards they may achieve, like great panoramic views, finding new creatures to interact with and other rewards. As long as the whole area provides an entirely safe playground for these principles, the chances are that it will feel like an escapist retreat or playground.

Further Notes

This is a setup that has been used in a number of games, but is especially well implemented in the *Tomb Raider*[46] games, where the safe house is actually Lara Croft's in-game house.

[46] Published by Eidos Interactive.

Example 7.3: Giving the Player What Whey Want—Wish-Fulfillment

Summary

Similar to escapism, wish-fulfillment identifies a desire in the player and fulfils it. This desire can be created, however, which makes it a viable technique to use in level design.

Game Genre

This technique is suitable for most games.

Goals to Achieve

- Create a desire in the player.
- Build the desire up to a degree that it can become a real reward if fulfilled.

Description

(Example type: Existing game)

The most effective way of providing wish-fulfillment in a level is by creating and then building up a desire or by strengthening an existing one. In this example we do this by confronting the player with something desirable all the way through a level, and making sure that that desire is granted only when this has the greatest impact.

"Wouldn't It be cool if?" Every gamer has moments when they wish they could do something, or experience something in a level, that they can't for one reason or another. This technique is based on the idea that the player is *led* to think this, only to be extremely pleasantly surprised when they can do it after all.

So, the object of this technique is to create a desire that may seem out of reach but can be fulfilled after all. The exact subject of the desire is completely fluid and depends on the game and the specific level.

Some great examples are found in a few very famous games (no coincidence, in my opinion). In *Half Life 2: Episode 2*[47] the player is confronted with an extremely powerful AI companion, a robotic sidekick named Dog. Dog is shown early on in the game to be extremely strong. (This goes back to a previous installment of the game.) The creature helps the player out on a few occasions, show-

[47] Published by Buka Entertainment, developed by Valve Corporation, released October 10, 2007.

ing prodigious strength and ability. The player slowly starts to wish for DOG to be able to do more than provide sporadic help, and a subtle wish enters the player's mind that it would be really cool if DOG were pitched against one of the game's super powered opponents. This never happens, however, and it stays a wish in the player's head every time they see DOG. Until suddenly, this *does* happen when the AI creature suddenly reappears when the player really needs him and gets into a fight with an enormous robotic tripod creature, known as a Strider. The resulting fight is pure wish fulfillment.[48]

Further Notes

Including moments like this can be combined with the need for set pieces and memorable moments in a game. Get a few of these right, and players will fondly remember the game.

Example 7.4: Social Reinforcement through Codependency

Summary

Cooperative multiplayer games rely on groups of players enjoying a game together. Some of this can occur naturally, but there is much we can do to make our levels foster social interactions. A strong example of this comes out of engineering a level environment where codependency leads to positive social reinforcement.

Game Genre

This technique is suitable for cooperative multiplayer games.

Goals to Achieve

- Reward cooperative play.
- Provide a level design set piece based on cooperative principles.
- Teach the player the value of communication.

[48] This moment was so successful that it has been turned into a poster available from Valve's online store: http://store.valvesoftware.com/productpages/prints/product_HL2DogvStriderPoster.html.

Description

(Example type: Original)

A cooperative multiplayer game's core game design should be such that social interaction is rewarded, and in most cases this goal is met in basic gameplay decisions. Players may share resources, commands can be given to a whole group, or group attacks can be subject to damage multipliers.

This is all valid and on its own can do much to reach the game's desired goals, but the level design needs to provide a context for the cooperative actions and enhance them or instigate them when possible. This can be done by providing the players with challenges that are only solvable, or are better solvable, by players working together in concert. The idea is to create a sense of codependency where players need to be aware of each other and fulfill roles that support the group as a whole.

Codependent group defense. In this scenario the players need to defend a specific area—let's say a base—against an attack or invasion of sorts that is coming in waves from all directions. Codependency is guaranteed if the base cannot physically be defended by a collection of isolated individuals, but requires a group working together, in constant communication with each other.

Imagine that the players can defend their base through the use of turrets, which are mounted with the only weapons strong enough to stop the invaders. There is, however, only a limited number of turrets available, too few to cover the entire base, and they are very slow to be redeployed. The only way that the defending players can position the turrets in time to repel the waves of attack is by receiving advance notification of the directions from which the attacks are coming. To do so, a number of players will have to leave the base, scout out advancing enemies, and report their locations back to the base.

To create an even deeper sense of codependency, we can make the scouting job too dangerous for one player, and instead require a guard to go along and protect the player while he do his scouting work.

When all the waves of attack have been stopped, all players involved will have individual stories on how they helped the group as a whole, which in turn will yield a large sense of accomplishment both on an individual level and on a group level.

Further Notes

This is a specific set piece that requires the level designer to plan and orchestrate the gameplay to a certain degree and make sure that players understand what their roles are. Easier implementations can be construed that employ the

same principles but are less dependent on polish and extra level design work: for example, a t-junction where two players need to cover each other's backs, or a bottleneck where players need to perform various diverse tasks simultaneously in order to progress.