

Welcome, everyone, to the fifth episode of the Supper Mario Broth Supper Show podcast.

In this episode, I will discuss the level design of Donkey Kong Country 3, a title whose gameplay aspects are not discussed very often relative to the rest of the Donkey Kong Country series, and propose the idea that it is a very fitting target to study from and try to imitate for beginner platforming game designers due to its strict adherence to a design paradigm resulting in very focused levels.

First, let me address the question that some of you may have about whether Donkey Kong Country 3 belongs under the purview of the content Supper Mario Broth covers. Of course, I focus predominantly on games where Mario is playable; however, many years ago when I had to choose exactly what the blog would cover, I decided to use the same classification as the Super Mario Wiki, at [mariowiki.com](http://mariowiki.com).

Under the Super Mario Wiki definition of the Mario franchise, the Donkey Kong, Wario, Yoshi and other minor franchises like Luigi's Mansion, Captain Toad, Super Princess Peach etc. that do not feature Mario as a playable character are regarded as subfranchises of what I call the "greater Mario franchise". Most of them pose no issue due to it being clear that the main characters originate from the Mario franchise; Wario was the villain in Super Mario Land 2, Yoshi was Mario's friend in Super Mario World and so on.

The one classification that at times causes disagreement is that of the Donkey Kong franchise. As Mario and Donkey Kong debuted in the Donkey Kong arcade in 1981 simultaneously, is it difficult to clearly categorize one as a spin-off of the other. Especially due to the game being named after Donkey Kong, some have taken this as evidence to consider Mario a spin-off of Donkey Kong, which certainly is an idea not without its merits. To solve this, the Super Mario Wiki and I choose to consult Nintendo's own stance on this, particularly in regards to merchandise. Many items of officially licensed merchandise exist with the Mario label that contain Donkey Kong characters; sometimes characters that appear majorly within the Donkey Kong franchise without being featured in many Mario games, such as Dixie Kong.

However, there are no examples of the opposite being true; that is, Donkey Kong-branded merchandise featuring Mario or any other character not directly from a Donkey Kong game. Thus, we can conclude that Nintendo themselves consider Donkey Kong a subfranchise of Mario. Still, I must point out that reader and listener feedback is extremely important to me. If you are in any way negatively surprised or disappointed at a Donkey Kong game being the focus of a podcast, or if you believe I should not make them the focus of further podcasts in the future, please let me know by contacting me on Patreon or on any of the social networks Supper Mario Broth is present on, and I will consider your feedback for future podcasts.

With this, let us begin.

The mainline Mario platforming games have, for decades, been the target of study both by amateur writers on the Internet and by academic sources working to provide a body of theory for the game design field. Many such endeavors include what is perhaps the most deeply analyzed level in video game history: World 1-1 from Super Mario Bros.

Write-ups of this kind focus on the efficient, and at the time, novel and inventive methods the level goes about presenting the enemies and obstacles, teaching the player the interactions

between Mario and the game world, and in general, serving as a tutorial without making use of instructional text or images, relying instead only on cues from the environment to signal to the player what to do. The praise that the level has received since the game's release is immense and well-deserved.

On the 30th anniversary of the game, Shigeru Miyamoto and assistant director and designer Takashi Tezuka even shared their own thoughts on the design process of the level. Among other things they discussed, they mentioned that the level should progress in difficulty by offering harder versions of the same challenges after easier versions. This can be seen very plainly in World 1-1 with the small staircase structures near the end of the level. They are nearly identical - a four-block tall staircase leading up, a two-block gap, and the same staircase leading down, reversed, on the other side. This appears twice, one instance immediately after the other.

However, there is a key difference between the two. In the first set of staircases, the gap is not bottomless. When Mario falls, he falls onto safe ground between the two staircases, with the only challenge being to have to press the jump button and hold it so that Mario can muster up the 4 block jump height to climb out of the gap. The second staircase set has an actual bottomless gap between them; if Mario falls in, he loses a life. Thus, the first set and the second build up what is arguably the most famous example of the same challenge being presented in a platforming level in two different difficulties one after the other.

It is this concept, which I will in this podcast call progressive iteration of a challenge, that over time evolved into not only the central tenet upon which Mario platformer levels are designed, but also a leading guideline for all platforming video games, whether by Nintendo or by any other publisher. It has become an unspoken expectation that a level will at some point present an easy version of an obstacle before following it up with a harder one, or multiple - if not entirely consist of this type of iteration.

In a 2012 interview, Super Mario Galaxy 2, Super Mario 3D Land and Super Mario 3D World director Koichi Hayashida explained that the guideline used to create Mario levels was a four-part structure: first introduce a concept, then develop on it, then add a "twist", then finish with a conclusion. These are all rather vague descriptions, so I will provide more practical explanations.

The introduction phase is where a new element, or the main gameplay-relevant concern of the level is introduced in a safe environment - or in the case of more difficult levels, an environment more safe than the rest of the level. The first staircase from World 1-1 is such an introduction, due to Mario not being able to die. The second phase, the development, is where the element is iterated on, each time with an increased challenge, however, without the addition of any new element. This would be the second staircase.

The third and fourth phase were not present when the original Super Mario Bros. was made, however, we can easily imagine them in that context. The third phase is the "twist", which is the addition of a new mechanic that interacts with the main mechanic. New does not necessarily mean "new to the player"; it can be a mechanic from another level previously seen - however, it must be new to the level, and add to the challenge in a way that the development phase did not.

In the Super Mario Bros. example, let us imagine the staircases were developed further, with wider gaps and more challenging jumps. However, no amount of increasing the precision of the jump required would add an actual twist - a twist would be a new mechanic interacting with Mario's attempts to jump over the gap. For example, the other side of the staircase could have a Bullet Bill Blaster shooting Bullet Bills every few seconds in such a way that the jump would make Mario touch one of them if he jumped at the wrong time. Thus, in addition to the challenge of making Mario take the correct amount of steps to build up speed before jumping, the player would also need to make Mario start moving at the right time so the jump avoids a Bullet Bill, adding a new layer to the situation that the player must consider. This would truly be a twist in line with Hayashida's concept.

Finally, the fourth step is the conclusion. Depending on the level, the conclusion could be a challenge incorporating everything seen in the level, or a boss battle, or even an optional challenge that only exists to enable Mario to touch the top of the flagpole and could be skipped. What connects all of these is the feeling of culmination; the player must feel that this part is the pinnacle of what the mechanic is capable of and a sense of satisfaction upon finishing the level, left with the idea that the mechanic was well utilized and neither presented wasted potential nor lingered on for too long.

While Hayashida stated in his interview that he put the level design philosophy down in this structure himself, the core ideas of it have been present in Mario games since the beginning, although after being laid out as rules in this manner, they have been followed more strictly. Of course, designing Mario platformers is not as simple as following a simple guideline. Other design patterns emerge when analyzing enough levels, such as a prevalence of "downtime areas" that provide a break in the action and give the player an activity that results in a reward if completed but does not punish them if failed; such as a Koopa Troopa near a ledge where throwing its shell would collect coins. If the player throws the shell, there is a reward; but if the player misses, Mario does not take damage or lose a life, and the level can continue.

As anyone who has played the Super Mario Maker games knows, designing good levels is very difficult. Only a small minority of the courses uploaded to the servers can be reasonably compared to official Nintendo levels in quality, length, amount of testing to avoid skips and softlocks, and design philosophy. For those who seek to become better level designers, and perhaps eventually move on to a career in game design either as an indie developer or in a large company like Nintendo, the amount of resources is not particularly large.

Most articles and books that purport to teach level design do what I have been doing up until now in this podcast, and present highly acclaimed work of famous designers in an attempt to learn from the masters.

However, I maintain that attempting to learn from the masters can often be less useful than one may expect. After all, there are many steps of skill between a beginner and a master; someone new to painting can look at famous Renaissance portraits all day, but that will not make their work look any better if they are not at a high enough level of mastery themselves to recognize the actual logic and reasoning behind the artists' decisions to paint some aspect of the work in a certain way. For a beginner to level design to try to copy the greats without going through the intermediate steps of understanding would be akin to trying to copy the skill that went into creating the Mona Lisa by starting from a corner of the painting and replicating every brush stroke.

On paper, concepts like "introduction, development, twist, and conclusion" seem simple and inspiring. One can easily imagine that armed with these guidelines, a good level design will manifest with ease purely from a single idea for the level's main mechanic. Of course, as Super Mario Maker shows, this is merely the first step.

I propose that in order to understand level design better, it may be more practical to consult not the well-accepted masters of the craft, but examples of level design that conform to more focused, less freeform design philosophy like - the topic of this podcast - Donkey Kong Country 3. With levels that are built entirely on progressive iteration, it is much simpler to see the thoughts that went into designing the mechanics and obstacles rather than with the multifaceted philosophy of Mario games.

Before we finally begin analyzing Donkey Kong Country 3, I would like to provide one example of level design in a Mario game that, although effective, does not seem to apply to any obvious guideline and is thus difficult to learn from as a beginner. In the final area of Super Mario 64, Bowser in the Sky, there is an irregularly-shaped platform near the beginning of the level that tilts along a front-to-back axis. While tilting platforms are common in the game, there are only two examples of platforms tilting along that axis in the game: this one, and two in the middle of the Bowser in the Lava Sea level.

There are also no other tilting platforms in Bowser in the Sky. Now, the question is, what design philosophy resulted in that platform being added to the level? It is not an iterated challenge, nor is it a twist on a previous mechanic, nor is it the conclusion to something that built up for the entire game (due to that type of platform being so rare). It could be constructed as a callback to another Bowser stage, if not for the fact that many other elements in Bowser in the Sky did not appear in previous Bowser stages, or at all. For every type of reasoning we can put forward, there are counterarguments; in the end, the platform seems to be there without any particular reason. However, it does not detract from the level; in fact, it enhances it with its presence despite not fitting any specific rule.

My question is: can a mere beginner hope to learn from such mastery of level design, where a seemingly random element creates a better whole? Or should they examine something more formulaic instead until they, too, develop a feeling for what works and what does not?

Donkey Kong Country 3, also known by its full name, Donkey Kong Country 3: Dixie Kong's Double Trouble, was developed by Rareware, now known as Rare, for the SNES and published in 1996, two months after the launch of the Nintendo 64. This is actually referenced in-game by Wrinkly Kong playing the Nintendo 64, with one of the music tracks even being called "Wrinkly 64" and consisting of a remix of the Princess Peach's Castle theme from Super Mario 64.

The game followed the widely acclaimed Donkey Kong Country 2, which received near universal praise for its dark, yet colorful artstyle due to being set on the pirate-themed Crocodile Isle and music by David Wise. Since Donkey Kong Country 3 was set in the more peaceful neutral territory of the Northern Kremisphere, and the main composer was Eveline Novakovic (then known as Eveline Fischer), the players who expected the same type of atmosphere from the graphics and music as in Donkey Kong Country 2 were disappointed.

However, those were only minor issues compared to what most would say is Donkey Kong

Country 3's major problem: the character of Kiddy Kong. While I personally have never had an issue with the design of Kiddy Kong, it is easy to see how many of the players at the time did: Kiddy Kong has Donkey Kong's body type, but is also a baby, or toddler, who wears light blue full-body pajamas and a pacifier. While the previous three playable characters in the series, Donkey Kong, Diddy Kong and Dixie Kong, were autonomous and able to take care of their own affairs, Kiddy Kong required to be babysat by Dixie Kong. The contrast between the bulky exterior and the childish behavior, as well as the difference to the other Kongs, turned many players off the character immediately, which did not help a game where he is playable half of the time and on-screen roughly 75% of the time.

I personally believe that the atmosphere of the game, including both the graphics and music, are on the same excellent level of quality as those of Donkey Kong Country 2, and for that matter, Donkey Kong Country, and that Kiddy Kong is just as charming as the rest of the Kong cast; however, I do respect those who subscribe to the majority opinion that Donkey Kong Country 2 is superior. Still, I hope that by showcasing Donkey Kong Country 3's level design today, I can do at least some justice to this game that may slightly redeem this game's qualities in the eyes of some listeners.

The game is presented without any cutscenes at the beginning. All that happens is that Dixie Kong appears on the world map, representing a country called the Northern Kremisphere, and approaches Wrinkly's Save Cave, one of a set of recurring locations that let the player save the game at any time (this is as opposed to the system in Donkey Kong Country that only allowed saving after a certain number of levels were beaten in a world, or Donkey Kong Country 2 that demanded a small payment for each save). Wrinkly Kong, who runs the Save Cave, briefly explains the save system before Dixie Kong can leave. To progress, Dixie must go right and enter Funky's Rentals, a boat rental shop run by Funky Kong. He, also very briefly, explains his shop and introduces Kiddy Kong, who joins Dixie. Then, Dixie is free to rent a boat and start the adventure.

Now, note that during all of this, there is not a single mention of any kind of story or conflict. Donkey Kong Country 3 chooses to deliver the story entirely through the game's manual, and have the in-game text not concern itself with it at all until the final boss battle. While this may certainly be confusing for people renting or borrowing the game, people who bought the cartridge second-hand without the manual, and people who do not read manuals on principle, it is also very refreshing on repeated playthroughs due to a lack of cutscenes and an immediate segue into action.

The story itself revolves around a mechanical being called Kaos being the new leader of the Kremlings after their home base, Crocodile Isle, was destroyed at the end of Donkey Kong Country 2. In actuality, Kaos is merely a robot designed by K. Rool under his new persona, Baron K. Roolenstein, a Dr. Frankenstein parody. The robot is also powered by Donkey Kong and Diddy Kong being imprisoned inside it; their disappearance is what causes Dixie to investigate the Northern Kremisphere in the first place. However, none of this is truly important to the gameplay and many players likely beat the entirety of the game without ever knowing the story due to the aforementioned reliance on the manual to tell most of it.

Now, on to the gameplay. The game contains 8 worlds, of which 7 are main-game worlds and one is the secret world unlocked by collecting optional tokens in each stage. To complete the game fully, every single optional item must be collected across all levels, however, to merely

fight the regular final boss and see the regular ending, none of them are needed; instead, the only requirement is to finish the levels and beat the bosses in the first 7 worlds.

This is a good place to mention that the game also received a remake on the Game Boy Advance in 2005, nine years after the original release. The remake added another world with six extra levels and one new boss, however, this podcast will concern itself entirely with the original SNES version, as the differences between the versions, specifically in terms of aesthetics, make them so distinct from each other that the mere discussion of the changes would merit another podcast.

Each of the eight worlds contains 5 levels and a boss. Nearly each of the levels (except for two in the secret world) contains three collectibles: a DK Coin, obtained by defeating a special enemy called a Koin, and two Bonus Coins, earned by finding Bonus Barrels that transport the Kongs to timed bonus rooms. If the challenges inside the rooms are completed within the time limit, the Bonus Coin is awarded. If the challenge is failed, the level must be reloaded, either by dying or restarting, for the challenge to be able to be attempted again. Each boss must be beaten once for the next world to be unlocked.

One thing that emerges from this is a very strong sense of regularity. There are no worlds with more or fewer than 5 levels; with zero or two bosses, or with any other anomalies that would differentiate them from the other worlds. Other elements of the world also adhere to this regularity: the Northern Kremisphere is inhabited by a large family of bears, called the Brothers Bear, and one brother appears per world (with the exception of one world that houses identical twins). Each of the regular worlds also contains one Wrinkly's Save Cave, one Swanky's Sideshow, which is a completely optional ball-throwing minigame, and one hidden Banana Bird cave, which must be unlocked either by approaching it or by fulfilling some quest for the bears, and contains a Simon Says-style minigame that must be won to free a Banana Bird. These are then required to unlock the final ending.

This sense of stability that helps tie the worlds together is a theme that is present in the level design as well. Unlike the Koichi Hayashida model discussed earlier, there are no "twists" in the level design; instead, the pattern is laid out clearly: the beginning of each level introduces a type of challenge and the rest of the level is iterating on that challenge, gradually making it harder until the end. The bonus rooms in each level provide timed variations on the same challenge. This is why I believe the design of this game deserves to be studied as it provides very clear examples of how to iterate on a challenge that are not obscured by additional details that may be part of the scheme, or may just be there due to reasons only experienced level designers could conceptualize.

After this introduction, I hopefully was able to explain why this type of level design needs to be examined more closely, and we may begin doing just that.

The very first level of World 1, Lake Orangatanga, is called Lakeside Limbo. It serves more as an introduction to the game's mechanics and is thus very short; still, even here we can see a clear progression of how the enemies are positioned to provide increasing challenge every time. This level includes only two types of enemies, the small rat-like Sneek and the larger Kremling Kobble, before ending with a very brief segment of riding Ellie the Elephant, an Animal Buddy debuting in this game, to showcase that Animal Buddies exist to players who may not have played the previous games in the series.

Both Sneeks and Kobbles die to any attack, throwable item, or being jumped on, but Kobbles are clearly more dangerous due to being larger. The level walks the player through the following enemy formations:

1. A single Sneek is slightly downhill from the player, easy to jump over.
2. A single Sneek is slightly uphill from the player, harder to jump over.
3. Two Sneeks approach in a row on flat ground.
4. A Kobble approaches on flat ground.
5. Two Kobbles walk back and forth under a rope, the rope may be used to skip them.
6. A Sneek approaches while the player character is under a low roof, making it harder to jump over it as they would bump into the roof.

and finally,

7. A Kobble paces on a platform that is above water. The player must jump out of the water when the Kobble is not near the edge due to being unable to jump high enough to defeat it with a jump directly from the surface of the water. Instead, they must first jump onto the platform, and then defeat the Kobble.

As you can see, the formations each very gradually increase in difficulty. Sometimes the increases take such deliberate steps that one may imagine literally all formations of enemies being listed in a row in order from least to most threatening on a sheet used by the designer, and them being struck off the list one by one. This is what I mean by focused and formulaic level design; by examining these gradual iterations it is much easier to understand how challenges are constructed than if those same challenges are surrounded by seemingly unrelated elements as in classic Mario titles.

The second level of the first world, Doorstop Dash, in my eyes truly exemplifies this design paradigm. It is set inside of a grain mill. Although the path winds back and forth and up and down through 2D space, it is actually linear, with the only two forks being choices between the path forward and a brief dead end leading to a Bonus Barrel for those aiming to complete the game 100%. The concept introduced here is as simple as it is versatile: there are pull levers hanging from the ceiling, and shutter doors blocking the way. Touching a lever with a Kong will make the Kong hang from it, and the door opens as the lever descends. Jumping off the lever will make it slowly ascend as the shutter slowly closes, providing a time limit to get to the door.

The very first lever is right next to the shutter, providing zero challenge and serving to illustrate the mechanics. After this, the level is divided into rooms naturally through the shuttered doors, with each room being an iteration on the challenge.

Room 1: There is now about 1 screen of distance between the lever and the door, with four Sneeks approaching the player in a row. These can be dispatched with a single attack or jumped over.

Room 2: There are three jumps that must be taken between the lever and the door, with the last jump changing direction.

Room 3: Three Buzzes are between the lever and the door, going up and down. A Buzz is a bee enemy, similar to the Zingers from the first two Donkey Kong Country games, that is invulnerable to the Kongs under normal circumstances and damages them on contact, although it can be beaten using items or certain Animal Buddies. Due to the Buzzes not being able to be defeated in this scenario, the player must time walking underneath them.

Room 4: Six Buzzes are between the lever and the door, in two groups of three.

Room 5: A moving platform is between the level and the door. The player must wait for it to

descend, jump on it, wait for it to ascend, and jump off near the door.

Room 6: A spinning Barrel Cannon is between the lever and the door. It spins through eight different directions, with a short window of time to activate to pick the correct one. First, it must shoot the Kongs upwards to the lever; here, there is no time limit to try again. However, after pulling the lever, now there is a time limit to use the Barrel Cannon to shoot left, to the door.

Room 7: Here there are two segments. Before the lever, there is a vertical rope with a Buzz going back and forth horizontally across the middle of it, which must be avoided. After the lever, the same exact segment repeats, but now obviously there is a time limit.

Room 8: Now, there are two Barrel Cannons in a row between the lever and the door.

Room 9: Another Buzz crosses a vertical rope, but this one has a shorter turnaround time, making the timing more difficult.

Room 10: Finally, a Buzz flies back and forth under the lever horizontally. Due to the lever descending not being instant, the player must time hanging on to it between the Buzz passing under it.

After this, it is a straight drop to the end of the level. I have left out the optional challenges for simplicity, although those also follow roughly the same patterns.

Note how not only does each room provide a marginally more difficult challenge, but that these build on top of each other. Room 3 has three Buzzes, room 4 has six. Room 2 has platforming with a stationary platform, room 5 has the same with a moving platform. Room 6 has a Barrel Cannon, room 8 has two. Room 7 has a Buzz and a rope, room 9 has a harder-to-avoid Buzz and a rope.

The lack of an identifiable twist in the mechanic does not result in less variety; the variety is still there, but it results from slightly different setups on the same theme rather than the introduction of anything completely new. Consider how few new elements are actually introduced in this level besides the main mechanic: there is the Buzz enemy, the vertical rope which is merely a variation on the first level's horizontal rope, and the Barrel Cannon. If you had played either Donkey Kong Country or Donkey Kong Country 2, then none of those would be new at all, as they are returning from those two games. Still, the game manages to use the few elements it had introduced to create these iterative challenges.

Since there are 40 levels in the game, examining them in the same level of detail would take entirely too long and also be in some cases impossible without visuals, as explaining more complex enemy setups in a purely audio format would be too confusing, we are going to take an abridged look at some select other levels to show other examples of how this streamlined approach is implemented.

The third level, Tidal Trouble, is focused on swimming and both entering and exiting water. Amazingly, it is able to create a completely new set of challenges by introducing only two new elements: the Knocka, a Kremling in a barrel that merely pushes the Kongs instead of damaging them, and the Koco, a basic small fish enemy that can be either stationary or move horizontally back and forth. The water itself, as well as jumping in and out of it, were already featured briefly in the first level.

The challenges here are roughly in order: swim through a safe area; swim under a stationary Koco; cross an island with Knockas but no damaging enemies the Knockas can knock you into; go under a Koco, over another, and jump out of water over two more; jump out of water



over a wall while avoiding a Buzz above the wall; avoid moving Kocos; avoid moving Kocos while maneuvering around stationary Kocos; and finally, avoid a Knocka on an island that can knock you into a Koco that would damage you. This is all intertwined with optional segments that can be reached by performing more advanced platforming, and small rewards like Bear Coins, which are used for minor story-related purposes when aiming for 100% completion, by performing dangerous jumps close to Buzzes.

Unfortunately, one piece of the gameplay that does not always fit neatly into this paradigm is the DK Coin found in every level. These coins must be collected to view the final 100% ending of the game, and are held by enemies called Koins. The inventive part of this is that Koins are unable to harm the Kongs, merely pushing them away slightly. This makes it trivial to ignore them for players who are not interested in 100% completion, as they can be jumped over without posing a threat. To defeat them, a small puzzle must be solved: the Koin always turns towards the player, but it can only be defeated by a steel keg striking it from the back. Thus, the keg - which is always found near the Koin, most of the times infinitely respawning - must be thrown in such a way that it can hit the Koin from one side while the Kongs are on the other side, distracting it.

This is accomplished most often by tossing the keg over the Koin's head and letting it deflect off a wall behind the Koin, or, in a few cases, tossing it and then very quickly getting to the other side of the Koin to make it turn around. The puzzle has a surprising amount of variation; sometimes, the keg is in a hard-to-reach place while the Koin is out in the open while other times it is the other way around; sometimes the keg must be produced by solving some other puzzle; sometimes the only wall the keg can bounce off is further away and the keg must be followed along to make sure it does not despawn; and so on. However, it was not always possible for the designers to tie the puzzle into the main mechanic of the level due to not all mechanics even being compatible with throwing to begin with (such as levels that are completely underwater). In such cases, the puzzle is sadly divorced from the rest of the level by being the only element of it not tied to the main mechanic; however, even then the puzzles do get harder as the game progresses, building their own, unrelated iterations. Thus, this can be said to be a "perpendicular" challenge to the main ones; while each of them begins, grows and ends in the same level, the DK Coin challenge threads through the entire game, one iteration at a time.

The fourth level, an ice stage called Skidda's Row, introduces the Skidda enemy, a purple Kremling that skids left and right within a predefined area. The skidding is not actually physics-based; instead, every Skidda simply has a symmetrical path that it follows, appearing to skid one way in one half and another way in the other half. The difficulty in the Skidda is that it is a large and relatively quickly moving enemy, so the level builds up the challenge by first placing a Skidda above the actual path so its movements can be observed; then downhill from the player - just like the first Sneek in the first level - then uphill, and this culminates in a simple, but clever twist: while before, the way to defeat a Skidda would be to wait until it is skidding in the other direction, jump onto its platform, and then jump on it, the later platforms have two Skiddas at once with mirrored cycles. This means that when one of them skids right, the other one skids left, and vice versa, leaving no safe spot on the platform. This forces the player to jump directly onto one of the Skiddas instead of being able to land on the platform first.

This level also illustrates how the bonus rooms fit into the challenge, by providing a contained,

time-limited version of it that due to its optional nature, is more difficult than the main level. The first bonus room in the level gives you 10 seconds to defeat four Skiddas, each paired up in the way previously described in two small valleys. To do this by jumping on them is very difficult; the player must realize the Skiddas can actually be defeated with Dixie's hair twirl or Kiddy's roll attack as well. This is only possible due to them being inside valleys, though; the regular level usually has them on platforms surrounded by pits, which cannot be crossed while performing one of the Kongs' attacks under normal circumstances.

The second bonus room presents a condensed mini-version of the level. Inside 15 seconds, the player must get to the end of a section that has four small platforms above a bottomless pit, with three of them having Skiddas on them. The final one is particularly small, making it nearly impossible to land on without being hit unless the Kong lands on the Skidda's head. If this challenge is beaten, the player can be said to have truly mastered the level's mechanics.

The final level of World 1, Murky Mill, centers around a situational mechanic, i.e. a mechanic that only ever appears in this level and not in any others. These types of mechanics are often derided by critics using the word "gimmick". I will not go into what the definition of "gimmick" is, or whether gimmicks should be considered a negative to begin with, due to this discussion being a permanent part of video game discourse that seems to have arguments and counter-arguments for every point. All I can say is that for nearly every definition of that word, one could likely find many Mario series levels that use something similar; thus, if Mario games can use it and be on the whole, well-received, then a moderate amount of them is not a point that should count against a game like Donkey Kong Country 3.

The "gimmick" in question is the following: at the beginning of the level, the Kongs transform into an Animal Buddy, Ellie the Elephant. This by itself is not new for the series; Donkey Kong Country 2 had several levels that were also played this way. What makes this stage special is Ellie's interaction with the Sneeks that populate it. As an elephant, Ellie is afraid of rats, as per common cartoon animal stereotypes. However, her eyesight is not very good. The level is dark, and Ellie cannot see much in the darkness. The player can see the topology just fine, but Ellie can be face to face with a Sneek and not realize that it is a rat. However, this changes when parts of the room are lit. At specific points in the level, there is a light coming from the ceiling. If Ellie approaches the light and there are Sneeks under it, she will see them and run away, preventing her from continuing.

Thus, the challenge consists of defeating the Sneeks under the lights from afar, as Ellie cannot stomp them. It is a unique concept where the player character is creating a problem out of nothing for the player - if the Kongs were the ones controlled, there would be no challenge; neither would there be if Ellie (in-universe) could simply close her eyes or somehow briefly overcome her fear of rats. The way this is resolved is also unique - Ellie can carry barrels with her trunk. There are many spots in the level that endlessly respawn barrels, however, these spots get farther and farther away from the Sneeks under the lights as the level continues. Thus, the iteration here is the increasing distance and challenge of carrying the barrels to the Sneeks so they can be defeated. Ellie can also suck barrels that are a certain distance away closer to herself with her trunk, however, this is used sparingly here; mostly to access the optional bonus rooms, as a way to slightly familiarize the player with the concept for its eventual real usage in World 2.

Speaking of World 2, although there is a boss in each world, we will be skipping those in

today's discussion, as bosses are neither strictly platforming nor need to conform to the standards for level design, and will be discussing them some other time. Instead, we will continue to World 2, Kremwood Forest. Starting with this world, I will no longer be talking about every level, as I believe the basic point of my showcase here has been made clear, but rather only mention the times where the iterative challenge was presented in a particularly remarkable manner.

The first level of World 2, Barrel Shield Bust-Up, has a very strong central theme. It takes place inside two hollowed-out redwood trees, basically two towers with platforms between them, being the trees' branches. Inside each of the trees, most of the space is traversed not by jumping, but by climbing very long - several screens in many cases - ropes. As the Kongs are climbing the ropes, they are assaulted by Minkey enemies, small evil monkeys throwing acorns in a fixed rhythm. They appear first alone, then in groups positioned in such a way that there is not enough space between the acorns of successive Minkeys to dodge them this way; thus, if the group is synchronized, the Kongs must climb the rope in the pause between the throws.

There are exactly three variables with the Minkeys: how many there are, whether they are synchronized or throw acorns in order bottom to top, allowing the Kongs to slowly make their way up between "waves" of projectiles, and finally, the eponymous Barrel Shields, which are situated between the ropes and the Minkeys and stop all acorns that hit them. The Barrel Shields that appear first are stationary, meaning the Minkey behind them is effectively useless due to never being able to hit the Kongs, but later ones move up and down and need to be followed up and down the rope - think the penguin shielding Mario from the snowman's icy breath in Snowman's Land in Super Mario 64. The entire level consists of these three variables being slowly made more challenging; the variety comes from not being able to predict what the next segment will look like: will it have more Minkeys? A faster-moving shield? Will the Minkeys be synchronized? In my opinion, this level is a prime example of how a satisfying evolution of a mechanic can be created with only the simplest tools.

The third level in this world, Squeals on Wheels, also has a remarkably straightforward idea behind it. The aim is to defeat all the Sneeks in hamster wheels. There are meters on the walls of the level showing how many Sneeks are left; however, the Sneeks can only be defeated by having steel kegs thrown at them. Luckily, the steel keg locations have them respawn infinitely; however, the challenge consists first of throwing the barrel in the right trajectory to hit the Sneeks - first from a static platform, then from a moving one. Later, the most defining element is introduced, the red Buzzes. Normal Buzzes can be defeated with kegs; however, the red ones cannot. In fact, the keg will fall off the screen if it touches one, making it unable to hit a Sneek. The red Buzzes are circling the wheels, making it a question of timing the keg throws - but the, in my opinion brilliant part of this, is that they serve a dual purpose. After taking out the Sneeks, the Kongs must proceed further in the level by having to step on those same wheels which are being circled by the Buzzes. Thus, not only do the Buzzes add to the challenge of taking out the Sneeks, they make platforming after this harder, as well. This continues with more Buzzes and further-away wheels until the level ends.

Bobbing Barrel Brawl, the fifth level of this world, is the definitive Ellie the Elephant level, making use not only of her ability to suck barrels closer as previewed in World 1, but also of a new one: using the L button near water to suck in up to 7 drops, which then can be spit out with the R button. The level consists of challenges to cross small ponds. Each pond contains

a quickly-moving piranha fish-like Nibbla enemy. If Ellie falls into the water and does not immediately jump out, or falls in at an inopportune time, the Nibbla will bite her, so the water can be treated as a slightly more forgiving version of spikes or poison. To cross the water, Ellie must stand on barrels floating in it; however, most of the ponds do not have any barrels and Ellie must throw the barrels in herself. Then, the ability to suck in and spit out water is introduced, very elegantly, by putting the letters "L" and "R" spelled out with bananas over a challenge that must be overcome by pressing L, and then R. Spitting water kills Buzzes and other enemies, which then sometimes drop barrels that land in the water and can be jumped on. At certain points, the suction ability must be used to suck barrels on land from underneath red Buzzes. This culminates in a section where water has to be stored from one section, carried for several screens, then spat at an enemy from midair while aiming upwards, combining all the aspects of the water-shooting mechanic.

World 3, Cotton-Top Cove, is primarily water-themed. The first level, Bazza's Blockade, may just be the one level in the game that makes the most use out of one single element. Bazzas are barracuda-like fish that spawn from holes in coral reefs, travel in a straight horizontal line, and disappear into another hole in the opposite wall. With this simple behavior, the only variables are the speed at which they swim, the frequency at which they emerge, and how many of the Bazza lines are placed next to each other. The level starts with a line that does not need to be crossed, then one that does need to be crossed, then a shorter line, then a faster line, then two lines in a row, then several lines in a row, then a line taking up the entire vertical space so the Kongs need to fit between the Bazzas, and finally a gauntlet of short fast lines moving in different directions. With one asset and minimal tweaking of the code, an entire level's worth of challenges were able to be constructed.

Levels 2 and 4, Rocket Barrel Ride and Tracker Barrel Trek, are both set in a waterfall environment, which means that the level is narrow and vertical, and feature two types of Barrel Cannons unique to those levels. Rocket Barrels, or Booster Barrels elevate themselves a certain distance from their starting spot before shooting the Kongs directly upwards, then descending back to the starting spot; meanwhile, the Kongs can maneuver left or right to land on a nearby ledge. Tracker Barrels automatically shoot the Kongs high into the air, but follow them laterally across some set area. In both levels, the first challenges are simply to learn the controls of the respective barrels, but then slowly Buzzes are introduced in both cases and the Kongs must be carefully steered in mid-air to not activate the barrels in such a way that they shoot the Kongs directly into the Buzzes. Despite the concepts being so similar, the two levels have a different feel from each other due to Rocket Barrels transporting Kongs primarily vertically while Tracker Barrels being primarily horizontal, resulting in completely different layouts.

Level 3, Kleeping Klasps, is a textbook example of simply using every single permutation of two elements to progressively build up challenge. Klasps are enemies that can move along a section of horizontal rope and will attempt to get as close to the Kongs as possible within that section, while exploding if touched. The level consists almost entirely of ropes that are divided between "safe" sections - ones without Klasps - and "dangerous" sections with Klasps. The segments go like this: safe; safe-Klasp-safe (so there is a buffer on both sides); Klasp-safe (so the player must jump directly onto a section with a Klasp); Klasp-safe-Klasp-Klasp-safe-Klasp (more sections and two Klasps in a row); and so on. At the end of the level, there are also Buzzes flying in the air between sections, meaning that the Kongs need to choose another spot to jump between Klasps. For every combination of safe and unsafe section, it

happens somewhere in the level, and yet due to them being chosen in strictly ascending order of difficulty, it does not appear dull since the tension is always rising.

The next world, Mekanos, an industrial area, starts off with a level called Fireball Frenzy. Set inside a factory full of molten steel that acts like lava, the enemies here are Karbines, owls that carry cannons. They fly in one spot in the background, shooting fireballs into the foreground in a rhythm. What makes Karbines unique is that they change elevation with the Kongs. The first part of the level is simply dodging an increasing number of Karbines in a row; however, at a certain point, a Karbine is in a vertical shaft. Climbing the shaft, the Karbine does not get left behind, but instead follows the Kongs, making it so the fireballs continue needing to be dodged the entire way. After this, you dodge more groups of Karbines before hanging on to a rope above that area and turning around - but the Karbines from before rise to the level of the rope, providing a slightly more difficult version of the same challenge since mobility on a rope is more limited compared to the ground. This is merely one example of how dedicated the designers were to getting every bit of gradual increase in challenge out of the mechanics.

Low-G Labyrinth, the fifth level of this world, contains another mechanic often described as a gimmick: low gravity. I believe that the addition of an effect that makes basic platforming more challenging - since the jumps are greatly increased and need to be adjusted in mid-air - offers insight into how to best design levels in the Donkey Kong Country 3 style for pure platforming. Due to the gravity carrying the challenge, the actual level elements are very minimalistic. One can easily imagine this being a beginner-friendly early-game level if the low gravity was removed. It starts off with a jump to a higher platform, then a jump over a Buzz, then three jumps to higher platforms past horizontally-moving Buzzes, then a jump to a higher platform past two vertically-moving Buzzes. Jump over three Buzzes stacked on top of each other, then jump over one Buzz while another is on the ceiling next to it so you need to not bump into it. Then jump down platforms past Buzzes, and so on. The gimmick being the challenge frees up the level design to be as pure as possible, using only one element.

The next world is K3, a snow-capped mountain whose name is a reference to K2, the real-world second-highest mountain in the world, located on the border between China and Pakistan. Interestingly, despite there being two mountain-based worlds in the game, K3 and Razor Ridge, the peaks of either of them are not only never visited, but never seen - not even on the map screen, where they are cropped out. This lends a sense of mystery to the mountains since it is unclear just how tall they could be - at least for me.

The first level of this world, Krevise Kreepers, is the level that inspired me to write this podcast in the first place. This is what I believe to be the pinnacle of iteration-focused level design that is streamlined to provide a steadily increasing challenge as smoothly and quickly as possible. The level is a spiritual successor to Kreeping Klasps from the third world, again featuring only one mechanic: safe ropes without Klasps and unsafe ropes with Klasps. However, this one adds a twist that is both simple and innovative: instead of the ropes being connected horizontally, one after the other, these are arranged vertically, one above the other. By doing what is essentially taking a pre-existing level idea and turning it 90 degrees, the entire dynamic is changed.

In Kreeping Klasps, the player needs to traverse the entire horizontal span of the level, including the entirety of the safe ropes. Even though it is less than a second per rope

segment when moving at maximum speed, it adds up over the course of the level to a significant amount of time spent traveling safely without any challenge. Krevice Kreepers gives the player the ability to decide just how long they want to hang on to a given safe rope; as the next rope is always directly above them, this can be as little as a few frames - the only deciding factor is if they believe they will be able to avoid the Klasps. This means that novice players can take their time moving back and forth to maximize the distance to the Klasps while experts can move as quickly as possible between the ropes by mashing the jump button.

The level again uses the same types of permutations of safe and unsafe ropes as Kreeping Klasps, meaning the challenge unfolds in the same way, but putting the decision about the speed in the player's hands creates what is in my opinion a truly masterful platforming experience that anyone, including the designers of 2D Mario games, could learn from.

Later on in this world is a level called Krack-Shot Kroc. It is set inside a factory - quick aside: the game never lets a single level theme dominate a world. Despite K3 being a mountain world, it has one cliffside level, two ice levels, one factory level and one waterfall level. In general, no world has more than two levels of any single type, which means that due to having five of them, at least 3 types are always represented. Still, the types are never an unrelated collection either as they are in some modern Mario games like Super Mario 3D World; for example, Cotton-Top Cove, the water world, has two underwater levels, two waterfall levels and one lake level, which all have the water theme in common.

In Krack-Shot Kroc, the player takes control of Squitter, an Animal Buddy introduced in Donkey Kong Country 2. Squitter is a spider who cannot jump on enemies; however, he has two types of web he can shoot. One is a projectile that defeats most enemies, another unfolds into a temporary platform in mid-air. Being able to make his own platforms makes Squitter a very powerful character, and he is pitted against a perpetual foe, the Krack-Shot Kroc whose presence manifests as a crosshair on the screen. Every few seconds, the crosshair will lock on Squitter's current position before a fireball is shot at that spot. The key is the time between the locking-on and the shot; it is this period that must be used to get away from the crosshair. The level is a straightforward platforming challenge where the challenge is being interrupted by the shots every few seconds; the iteration comes from the fact that it is filled with shafts with no platforms, forcing Squitter to make his own.

As Squitter's platforms are both small and temporary, he cannot dodge the shot in any other way except by jumping at the exact time it is fired when he is on one of them; he cannot go left or right because the platform is smaller than he is. However, due to the platform also being temporary, he cannot just wait until the next shot; he must create the platform at such a time that it does not run out while he is dodging. Thus, the entire challenge comes from the mechanics of Squitter and Krack-Shot Kroc, while the level simply gradually provides less and less actual ground to stand on as it continues.

Of course, I cannot talk only about the things I consider to be great level design. In the next world, Razor Ridge, there is a level called Buzzer Barrage. It is set inside a cave, and the player controls Quawks, a purple parrot. While the green variant of that parrot, Squawks, has been a recurring character since Donkey Kong Country, Quawks is differentiated from Squawks by being completely defenseless. Squawks can spit projectiles at enemies, but Quawks can only fly and carry objects. The level revolves around defeating enemies with

Quawks to progress, and the problem becomes apparent. This means that all the enemies need to be taken out by carrying an object to them - however, the iterative challenge in this level is that the spawning points of the barrels and kegs are set further and further away from the enemies in question as the level progresses. This would by itself not be too aggravating, however, the aspect in which I think the level goes slightly too far is where there is more than one enemy to be defeated using the same object spawning point, which requires backtracking. Backtracking, in a vacuum, is not a mechanic that needs to be a negative experience; in fact, an entire genre, that of the Metroidvania, is based around backtracking in a platformer.

However, if you consider that this is the first instance of backtracking in the game, and that it involves a character who - while capable of flight - moves slower than the Kongs, it is the sheer difference from the regular gameplay that may sour the experience. Every level prior to this can be beaten by moving linearly towards the goal; to introduce a paradigm shift like this just for one level is the one example of a gimmick that I would consider truly unnecessary.

This same world also contains another questionable mechanic in the level Floodlit Fish. It is a straightforward underwater level where the goal is to descend down narrow passages between corals using Enguarde the Swordfish, one of the Donkey Kong Country series's most prominent Animal Buddies. The challenge is escalated simply by placing more enemies in more narrow areas, as well as using enemies that have an invulnerability period; but what is peculiar about this stage is the main mechanic: the yellow Gleamin' Bream fish enemies. Hitting them does not defeat them; instead, this results in the normally very dark level brightening for a limited time so the path forward becomes clearer.

Note that "very dark" does not mean completely dark. It is actually rather trivial to navigate through the level in the darkness, as the graphics are simply less bright than usual instead of being blacked out. If you are playing the game in a dark room, or on a display with a high brightness, the effect is little more than atmospheric. However, playing it in a brightly lit room does make it very difficult to see, necessitating the use of the mechanic. Thus, the game is - depending on your viewpoint - either rewarding being played in a dark room or punishing being played in a bright room, which can cause some players to become aggravated as the brightness of the room is often beyond one's control. It is not exactly possible to turn off daylight in a room that is not equipped with blinds or heavy curtains.

However, these complaints are mostly limited to this singular area of the game. World 7, Kaos Kore, is the final regular world of the game and serves up more original ideas. The level Lightning Lookout takes place during a thunderstorm on a river bank and has very inventive uses of lightning strikes. Every few seconds, lightning will "peek" from the top of the screen, announcing where it will strike before actually coming down a split second later. This was later used in Donkey Kong Country: Tropical Freeze's Frantic Fields level, one of that game's few clear references to Donkey Kong Country 3.

What makes this unique is the lightning's interaction with enemies. While the level starts with green Buzzes hovering in mid-air and it becomes clear they are vulnerable to lightning, as it continues, red Buzzes are introduced that, due to their invulnerability, serve as shelters from the bolts. While this is a small detail, I admire how instead of needing to create a new asset for something to shield the Kongs from lightning, red Buzzes are reused and are immediately recognized as working this way due to their previously established invulnerability.

There is also the fact that Dixie Kong and Kiddy Kong have different ways of carrying items. Dixie carries them over her head, while Kiddy carries them in front of himself in his arms. This becomes relevant in this level due to lightning stopping when hitting items. Thus, Dixie is safe from at least one lightning strike by picking up a barrel, while Kiddy is not. This is a completely natural consequence of the respective mechanics and I am willing to bet was not even intentionally designed to promote that interaction, an example of what is called "emergence" in game design.

Finally, due to taking place next to a river, the water portions reveal a final interaction: if the Kongs are in water as the lightning strikes, they will get hurt regardless of their location due to electricity traveling through water (or at least the cartoon stereotype of it traveling through water; real-life water does not conduct electricity as efficiently as it does in cartoons). All of this comes together to create a truly memorable level.

Another level from the same world uses a design for an enemy the player has seen throughout the entire game in a completely new way. The Koin, which is usually harmless and is merely part of a puzzle where it needs to be defeated to obtain the DK Coin, returns with a vengeance in Koindozer Klamber. As I said before, all the Koin does is push the Kongs away slightly when they are next to it. However, this is converted from a benign behavior to the level's main challenge here with two small tweaks: the Koindozer (variants of Koin that are not carrying DK Coins) are situated next to ledges leading to bottomless pits, and some of them also move around on platforms. This transforms them into dangerous foes, where the behavior of pushing the Kongs will now result in instant death due to being pushed off a cliff.

As the level progresses, first the Koindozer simply need to be avoided by jumping over them. However, later the player comes across a series of small platforms that are completely taken up by Koindozer, meaning there is no place to jump but on top of them. Unlike enemies that push the player in many other platforming games, such as Bumpties in Yoshi's Island, Koin has a unique behavior for being jumped on. They will not push the Kongs if the Kongs are completely centered over a Koin's head. However, should the Kong move even slightly to either side, he or she will be pushed off, usually to their deaths. Thus, this mechanic introduces precision platforming to a degree not seen in other levels. Instead of needing to land on an enemy, now the Kongs need to land precisely in the middle of the enemy and not allow themselves to skid, meaning usually another jump is required to cancel the momentum from the first jump. The equivalent in a Mario game would be a platform that is fewer than a single block wide, which happens very rarely.

Finally, I will mention one of the levels of the secret eighth world, Krematoa. Criss Cross Cliffs is another mountain level where the main mechanic is rather involved but illustrates how iterations can be created by changing a very small detail. The bottom of the level shows a Bazuka, a Kremling holding a cannon, shooting Steel Kegs upwards. This is merely a visual trick; the Bazuka itself unloads as soon as the Kongs leave the screen, but the kegs continue being shot up. The level consists of a narrow vertical shaft where the kegs are being shot up, and side areas. To ascend, the Kongs simply bounce off the kegs. However, from time to time, a red Buzz blocks the way of both the Kongs and the kegs - cleverly, even trying to damage-boost through the Buzz does not work precisely because it also blocks the kegs that need to be bounced off.

To proceed, the Kongs must enter a side area with a small platforming challenge and find a



Switch Barrel. This will cause the steel kegs to become TNT Barrels, which will take out the red Buzzes - however, the Kongs cannot touch them, so they must turn the TNT Barrels back into steel kegs by activating the Switch Barrel again. For the first part of the level, this appears to be simply an involved version of a lock and key system; however, after a certain point, the shaft in the middle of the level becomes a hazard as the Kongs need to cross it while it is shooting TNT Barrels instead of steel kegs. Suddenly, a mechanic that may as well be a replacement for doors and switches is made painfully relevant by utilizing its constituent parts in a new, but in hindsight, extremely obvious way. This is the closest this game comes to having a "twist" in the Koichi Hayashida sense; though the way I understand it, the Mario idea of a twist is to add a new mechanic or interaction midway through the level, which may not be the same thing.

There are many more levels in the game that I did not mention or discuss due to this being a podcast and not an entire book, although I do not rule out the possibility of revisiting this topic in the future and analyzing the entire game. Now, I would like to summarize what I believe to be the main tenets of the Donkey Kong Country 3 level design paradigm:

- Every level has one main mechanic. It is introduced immediately, iterated on throughout the level, and in the majority of cases, explored to its logical limit before being retired at the end of the level.
- The iteration is kept as simple as possible. Often, all it takes is to string together permutations of the same 2 or 3 elements; as long as the difficulty is increasing linearly, there will be no feeling of tedium.
- Often, all it takes to carry a level is a strong focus on one element. While more involved setups can be used, it is sometimes equally as effective to have one type of enemy, or one specific interaction, to make a level memorable.

In conclusion, I hope that I was able to make a case for the design of Donkey Kong Country 3's levels and I cannot recommend enough that all aspiring platform game designers either play the game, or at least explore the maps of it that can be found at the DKC Atlas at [dkc-atlas.com](http://dkc-atlas.com) to get a feeling for the iterative challenge-based paradigm the game excels at.

Thank you very much for listening.