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With the September issue of RTM comes the end of summer. The pool parties and BBQs will all be coming to an end very soon. To combat this we have a good issue for you this month. When it came time to decide which article to spotlight this time, there was one that stood out due to how thorough it was, and that would be the SegaTastic column on VirtuaRacing. If you are interested in getting a good in- depth look into a classic game, be sure to check this one out. Also this month is the conclusion to the 6-part Des Gamer Fanboyism series on the 16-Bit console wars, so a lot of goodies to keep you busy through September.

After you are done with this issue, you'll then have our popular Halloween edition to look forward to on October 1st. So the goodies just keep on coming!



## Fanboyism, And The 16-Bit Console Wars Part 6: Turbogرافx16

Good morning, RTM'ers! (...it's morning somewhere.)

Okay, so over the past five installments of our series, "Fanboyism, and the 16-bit Console Wars", we've tackled the SNES and the Genesis. Here are the links to these past installments: Part 1: The "Preamble Ramble", Part 2: SNES vs. Genesis: Graphics, Part 3: SNES vs. Genesis: Sound, Part 4: SNES vs. Genesis: Hardware, Performance, and Design, and Part 5: SNES vs. Genesis: Software.



I feel like we have pretty much talked out the SNES vs. Genesis at this point...but I wanted to mix things up a bit by bringing the TG16 into it. I will admit that my knowledge of TG16 hardware is not as robust as the other two, but I think I know enough that I can draw some parallels. However, my reduced confidence level in my grasp of the TG16 has led me to do something in this installment that I have not done in the previous ones...and that's call for backup. :-) I sent a rough draft of this to a fellow who goes by the name "Kamah!" on the Sega-16 forums. Though I'm very glad that there were only a few points where he told me to make changes, his help, both in correcting where I was wrong, in confirming where I was right (and in affirming that I was mostly right) was immensely beneficial, and I am hugely grateful! So, a huge thanks to him!

Anyway, time to press Run! Here we go!

I know that as a software platform, this system is well loved by many, with even greater passion than myself (and I think it's great). But as an actual piece of hardware, I think that it doesn't get nearly enough credit from gamerdom at large. I'll start my case by saying I do not at all view the TG16 as the transitional form between 8 and 16-bit that it has often been touted to be. I know that from a purely technical standpoint, it is indeed a hybrid of 8-bit and 16-bit technologies, with an 8-bit core processor (meaning that if we're going to be crazy precise, it technically IS an 8-bit system, but once again...hold that thought) And I realize that due particularly to memory restrictions in the hu-card format (aka turbo chip), - 20Mbit per the spec sheet, and perhaps even some good old fashioned lazy programming on top of it all, not every hu-card game, or early CDRom2 game took worthwhile advantage of the system's 16-bit capabilities. But it is unfair, in my estimation, to view the system as therefore incapable of producing content equivalent to its more technically pure 16-bit rivals, when it can be demonstrated that in several key rubrics, it is actually capable of outperforming them.

**A quick aside about CD-Rom formats, system memory, and their implications for our purposes:**



There are three TG16 CD formats, CDRom2 (pronounced CD Rom Rom), Super CDRom2, and Arcade CDRom2 (ACDR2 was Japan only, while the other two were multi-region). The differentiating element is how much memory is in their respective system cards. The CDR2 card has 64k for sound, 64k for everything else (though the 64k for sound was not always used for sound, making the "everything else" load storage capacity, potentially, a de facto 128k instead). The SCDR2 card adds an additional 192k to the 64k "everything else" pool, and can also pull from the 64k earmarked for audio. And the ACDR2 adds a whopping 2MB to the 192k+64k "everything else" pool (and of course, can rob the audio store as well.) Thanks to Kamahl for the specifics on the memory figures, as well as for clarifying how they work. At first, I thought they increased the main working RAM of the system, which they do not. Instead, the system card serves as a place to dump load data. Once the load data is dumped to the card, the system interacts with it the same way as it would interact with an ordinary HuCard game (the Turbo Duo, for all accounts and purposes, basically has the SCDR2 system card built-in, which is why you don't need a system card when playing CDR2 and SCDR2 games, but do still need one when playing ACDR2). The reason the CDRom2 games don't tend to look better than the Hu-Card games, despite being free from the limitations of the HuCard is because 128k, and especially 64k is not enough load data to store good graphics (actually, as I understand it, your average CDR2 game looks even worse than your average HuCard game). Our focus here will not be on the CD-Rom formats, though, just the Hu-Cards. However, the CD-Rom formats will still be useful to us as they will demonstrate what is and is not the fault of the actual system hardware, and what is the fault of the mediums it uses for its games.

Also, while all three systems had the same amount of dedicated video RAM (64k), the amount of main system RAM (aka working RAM) in the TG16 is far less than the other two. The working RAM in the SNES is 128k, the working RAM in the Genesis is 64k from the 16-bit 68000 main CPU, plus an additional 8k from the 8-bit Z80 co-processor. The working RAM in the TG16....8kb! That is an incredibly small amount compared to the other two! But there's an interesting reason why this is not the problem you'd think it is. SNES and Genesis have to "load" data from ROM to RAM, read from RAM, and when they're done with it, do it all over again. TG16 instead can read straight from ROM. So rather than receiving a big mass of data to use, then replace when it's done, you can almost think that the ROM is just more RAM that it can't write to. (Thanks Kamahl!). Don't get me wrong, 8k is still very small, even for this. But thanks to the TG16's ability to read from ROM, the 8k is a nuisance, rather than a crisis, and ultimately holds up well against the other two. However, this is precisely why the different CD-Rom formats required there to be system cards. CD-Rom is too slow a medium to read game data from on the fly, so the CD-Rom "loads" to the system card, then the system reads straight from said system card.

Moving along: Earlier in this series, I set up the dynamic which said "SNES = Crisp picture, muffy sound" and "Genesis = Crisp sound, muffy picture." Under that construct, I'd have to say "TG16 = Crisp picture, crisp sound." Moreover, if we called the SNES the "Gentleman", and the Genesis the "Snarly Beast", then I would call the TG16 the "Little Engine that Could." (a pun on PC Engine, but also a nod to its shockingly powerful and competent 8-bit CPU). When looking at just the graphics, we called the SNES "The Dazzler", and the Genesis "The Fast and the Furious". I'll call the TG16 "Rainbow Brite." Looking at just the sound, I called the SNES "The Jack of All Trades", and the Genesis "The Kraftwerk Concert at the Arcade." The TG16 will receive the distinctive title: "Buzz Lightyear." Let's find out why:

### Graphics: "Rainbow Brite"



The TG16 has even better RGB to composite conversion than the SNES, resulting in an even cleaner, sharper picture (which is why I almost dubbed the TG16 graphics "Golden Crisp" instead of "Rainbow Brite"), and yet, it somehow manages not to be offensively sharp. The TG16 has a significantly smaller total color palette than SNES (512 - the same total number of colors as Genesis, in fact - vs. an impressive 32,768), so it doesn't produce some of those really nice subtle colors that SNES has at its disposal. Yet, in the "more-important-of-the-two" color specs category (simultaneous colors), it can actually display more colors at once than either the SNES or the Genesis (nearly double what the SNES can do, and nearly eight times what the Genesis can do!)

The spec sheets say 481 vs 256 vs 64. However, Kamahl points out that this is an inconsistent measure (or perhaps, a double standard). What's going on is the SNES and Genesis spec sheets figure their numbers by reckoning that each palette is 16 colors (SNES has 16 palettes, so  $16 \times 16 = 256$ , and Genesis has four palettes -  $4 \times 16 = 64$ .) But the 16 colors per palette thing assumes that each one is responsible for generating the background color (the color that shows where there are no colored pixels - if/when you can see the overscan area, the color that shows there is the background color). But in reality, there is only one background color, not 4 for Genesis, 16 for SNES, or 32 for TG16, so instead of assuming 16 colors per palette, we should assume 15 colors per palette, and then add one color to the total color count for the background color. Therefore, the TG16 spec sheet is actually counting its colors right.  $481 = 32 \text{ palettes} \times 15 \text{ colors} + 1 \text{ color}$ . By that more accurate measure, the SNES would actually be capable of displaying 241 colors instead of 256, and the Genesis, 61 instead of 64. Or, if we reckoned the TG16 by the inaccurate 16 color per palette measure the SNES and Genesis spec sheets go by, then we would say it could display all 512 of its colors all at once (Impressive!) also resulting in the TG16 producing exactly double the SNES output, and exactly eight times the Genesis output (Most Impressive!)

One little caveat here that Kamahl also mentions: the 256 (241) simultaneous colors figure on the SNES is base colors. But with transparencies and fills, etc, it can actually exceed that figure, though what the final figure would be, or whether that final figure would meet or exceed the 512 (481) simultaneous colors of the TG16 is unknown to me. But even if it does, since not all SNES games make good use (or even any use) of transparency and fill effects, the TG16 would still be the more colorful "nominally" (stay tuned, we're about to deal a lot with the concept and implications of "nominal"). Also, I don't know what the breakdown of foreground vs background colors available on SNES and Genesis are (or if there even is such a distinction on those two systems), but that 481 on the TG16 is 240 foreground (16 palettes), and the background is 240 (16 palettes), plus the background color (241). However, even with this division, the TG16 is still more colorful.



The TG16's nominal resolution of 256x224 is identical to the nominal resolution of the SNES, which means Genesis has the highest nominal resolution of the three at 320x224. However, the TG16 is capable of realizing resolutions the Genesis is not capable of, and the SNES was never able to realize. The TG16 can achieve resolutions of 336x224, and even 512x448. It did make use of 512 in certain CD-Rom games, at least, but as I said earlier, we're factoring the CD games out, and just focusing on the core system (otherwise, we should've brought Sega CD and 32X into this, and we're not.) At least that I'm aware of; there are no hu-card games that use the 512x448 resolution. So we'll call the TG16's realized resolution 336x224. And unlike the SNES, which is pretty much locked into its nominal 256x224, the TG16 actually did have at least a few, and probably quite a bit more than a few games that really ran in 336x224 (such as R-Type, and Ninja Spirit)

What all this means is that while Genesis has the highest NOMINAL (or ordinary/customary/typical) resolution, and SNES and TG16 tie for highest THEORETICAL resolution (highest number that appears on the spec sheet), it is the TG16 that actually has the highest REALIZED resolution (resolution that you actually see used in real life). The theoretical figure is clearly the least important of the three, since it's nothing but academic abstraction and technical navel gazing, yet it's debatable whether the nominal or realized figure is the most important. I suppose it's case by case, and depends on how great the difference is first, between the nominal of the one with higher nominal vs both the realized and nominal of the other, and second, how prolific the realized figure is among the second system's game library as a whole. The difference between TG16 high res and Genesis res is pretty negligible (16x0), though the difference between Genesis res and TG16 nominal res is more significant (64x0). And while I can hardly claim to have checked every TG16 game, in my random sampling of, say, 50 to 100 games, I'd say the higher res mode was, at best, used in maybe one out of every five games, and perhaps even used as little as one in ten or fifteen. In my opinion, then (and you're free to disagree), in this particular case, the higher res mode was not used often enough on the TG16 to make it particularly meaningful to the overall system experience. Thus, the nominal resolution carries a little more weight, giving the resolution edge to the Genesis. But still, for the highest res anywhere out there in 16-bit land (including even the venerable Neo Geo), the TG16's the place to be.

The TG16 is also impressive in that I have never seen larger character sprites on any system outside the Neo Geo as I have seen on TG16. Though they aren't as simultaneously plenteous, nor as well animated as what you see on the Genesis, they are still bigger...at least sometimes. Again, the nominal/realized distinction comes up. In terms of nominal sprite size/action, the TG16 is probably equal to, or perhaps even a little less than SNES (Genesis ruled the day in the nominal). However, this statement, without a bunch of clarification is a bad statement: Just because you saw the biggest character sprites on the TG16 doesn't mean that the TG16 was the sprite king of the crowd. Kamahl reminded me of something that I had known, but long since forgotten: "Character sprites" are not made up of one "sprite", but of several.



Heck, the big Mario "character sprite" from the original Super Mario Bros on the NES was actually eight sprites moving in sync with each other – and this is not an anomaly, but the norm, not just for NES, but for all of the systems. When you put in a cart, and you get the garbage screen, where you see jumbled bits of characters, those bits are the individual sprites. Or another example, when you see flicker on a character where not the whole character flickers, but only certain square parts do....those are individual sprites flickering. So, just because a "character sprite" is bigger doesn't mean that the system is capable of producing the largest sprites. SNES is actually capable of producing the largest individual sprites (64x64 vs 32x64 on the other two) and yet, the nominal "character sprite" of the SNES is still far less impressive than the nominal "character sprite" on the Genesis, and the realized "character sprite" on the SNES is still far less impressive than the realized "character sprite" on the TG16.

In fact, Kamahl says that max sprite size is far less important than minimum sprite size. Let's say there's an 8x8 fireball. If the minimum sprite size of the system is 8x8 (as it is on the Genesis and SNES), then you're not wasting any space, like you would be on the TG16, where the minimum sprite size is 16x16. Also if you want a 64x64 object, you can simply use four 16x16 sprites to create it, so since maximum sprite size can be counteracted with multiple smaller sprites (and since virtually all character sprites and object sprites are made up of multiple sprites anyway), the total number of sprites is faaaar more important a figure than max sprite size. TG16 can have 64 sprites in either 256x224 or 336x224 resolution (this will result in smaller character sprites, and/or more flicker in 336x224 mode). Genesis also can have 64 sprites in 256x224 mode, but can have 80 in its nominal 320x224. SNES spec sheet says SNES can have 128, but this is another garbage figure since all three systems have maximum pixels per scanline limitations, and in 256x224 (the only res it really ever ran in), you'd hit that pixels per scanline limit long before you hit 128 sprites (so another "lie" from the SNES spec sheet). I'm guessing the 128 max sprites would be true assuming you were running in the never-used 512x448 resolution, and thus, real life sprite counts would be more like the 64 sprites figure of the other two at 256x224 (or, at least, somewhere in between 64 and 80)

Also, there's another figure that's more important than maximum sprite size, and that's how many different sprite sizes can be used at once. TG16 and Genesis are only limited by what sprite sizes they have at their disposal to produce with no other limits. SNES, however, has a huge limitation in that it can only display two distinct sprite sizes at a time. Now, it can change those two on the fly, but never can more than two distinct sizes share the screen. This severely limits the SNES's sprite options, and along with its sluggish CPU (and the relative ease with which it can be made to generate slow-down), is probably the biggest player in why the final character/object sprites on SNES tend to be less impressive than the other two systems. In the final analysis, per Kamahl, Genesis remains king of the sprites, because it can handle the most simultaneously, with the greatest amount of flexibility, and greatest resistance to slow-down, though it's debatable which system comes in second. TG16 is more flexible with sprite management as a whole, but SNES can push more sprites, as well as having a smaller minimum sprite size.

There is one thing related to all of this that was never made clear to me by Kamahl, and that is if Genesis was king of the sprites as a whole (and had the biggest nominal character/object sprites), and if SNES had both the largest maximum sprite size, as well as tying the Genesis for the smallest minimum sprite size, and could push more sprites at once than at least the TG16, why is it that we saw the largest realized character sprites on the TG16? Kamahl says that China Warrior could've conceivably been done to similar effect on any of these three systems, and I have no reason to doubt him, especially in light of what we know about "character/object sprites" being made from multiple sprites ...but why didn't we ever see anything like it on SNES and Genesis, when we saw not only China Warrior on TG16, but other instances like it (such as Big Bonk from Bonk III, not to mention



character sprites from ACDR2 Neo Geo ports that were much bigger than the SNES and Genesis ones, and even approached the Neo Geo originals)? Is it really nothing more than programming choices? Is that really it? Well, whatever the reason, for the biggest realized character/object sprites anywhere outside the Neo Geo, TG16 is the place to be.



So anyway, all this adds up to vividly crisp, and colorful images with very impressive character and object sprites. It may only have an 8-bit processor, but that processor is super fast. It can do two 8-bit operations in less time than it takes the SNES to do one 16-bit operation (and while I can't elaborate, I've heard that in a few select applications, it even bests the venerable 68000 in the Genesis). So, in the final analysis, despite the 8-bit designation, it is not even the slowest of the three (though it isn't the overall fastest of the three either).

Now, the TG16 does have its own disadvantages: It does not have any sort of mode 7 a la the SNES, nor can it keep up with Genesis on crazy geometry driven, multi-sprite things like Vectorman, or the running man boss in Gunstar Heroes, nor does it do nearly as well at parallax scrolling. SNES was king per Kamahl with three independent layers (four, if you took a color hit), Genesis had two independent layers, and TG16 had one. All three can do what Kamahl called "line cuts." This is where you subdivide one of the layers  $x\#$  of times, each cut area moving at a different speed than the rest. This makes it look like there's a lot more layers than there are, but it's not the same as actually having a bunch of real independent layers, since you can't overlap them, and usually the line cut is very apparent, as the different scrolling elements are divided by a crisp straight line. The most basic form of what is commonly (and perhaps overly broadly called "Parallax") is where the background scrolls at a different rate than the foreground. While it would be wrong to say the TG16 can't do it at all, or that you never see it, it is at least little rare, whereas it is pretty much expected on SNES/Genesis games (with multiple layers to boot), and to make matters worse for the TG16, let's have a little perspective here: I am aware of at least five NES games that could do the same thing. In the case of both the NES and the TG16, backgrounds that moved in perfect accord with the foreground were the sad norm. Furthermore, when it does appear on TG16, it appears with mixed results: while it did look good on, say, Magical Chase (I don't know how M.C. did it, but it really looked like there were more than one independently scrolling layer, which hardware was not even supposed to be able to do), you also had games like Ninja Gaiden where it was attempted with very awkward results. I would say the single most "8-bit" thing about the TG16 is its comparative lack of parallax. This may seem like a small thing, but its absence definitely can be felt. Also, due to the memory restrictions we dealt with earlier, programmers often were faced with the choice of gorgeous graphics on simplistic games, or more complex games with unimpressive graphics (sometimes even so basic, they were difficult to distinguish from the original NES). These two areas, in my opinion are about the only places where the weaknesses of the TG16 really show, but unfortunately, they are critically huge areas for them to show. Having the memory expanded system cards and the CD-Rom format of the Super CD Rom2 and especially Arcade CD Rom2 games goes a huge way to get around this quandary (ACDR2 has the best Neo Geo ports outside the Neo Geo itself), but since our focus is strictly on the hu-cards, the better results from SCDR2 and ACDR2 are irrelevant, except in that they serve to demonstrate that the limitations (except for parallax) are not the fault of the 8-bit CPU, or 16-bit GPU at all.

All of that adds up to this: while some of the games do look more like a middle-ground between NES and SNES, and even in a few cases, look hardly any better than the NES, while simple parallax is a rare treat across the board, and advanced parallax is essentially non-existent, the system also has games that look as good, or in more than a few cases, even better than the SNES/Genesis, and in my somewhat limited experience, the more 16-bit visual experience is the predominant one (the nominal one). We'll take the frustrating sub-16-bit experiences as read and put them aside. Looking at the 16-bit experiences the TG16 offers up, and holding them in contrast to what the SNES and Genesis produce, the TG16 looks -much- more like the SNES than the Genesis. Sharp picture, high color, but low res (nominally), low animation. You did see it occasionally make use of simply enormous character sprites, but otherwise, this will be a muuuuch more "SNES-ish" experience. IF you prefer the SNES look to the Genesis look, then you will love the look of the TG16 and probably prefer it to the Genesis. IF, however, you prefer the Genesis graphics over the SNES graphics, then you will still think the Genesis looks better. A caveat both for and against the TG16: while I'm aware of TG16 games with huge sprites, but low res, and games with high res, but small sprites, I am not personally aware of a game with both huge sprites and high res, whereas the pairing of the two is common on the Genesis. Still, higher-than-Genesis resolution paired with higher-than-SNES color count and RGB-to-composite conversion that beats both is hard to think of as anything but a best of both worlds compromise, and a huge credit to the capabilities of the system!

In any case, the TG16 is a strong contender in the 16-bit graphics contest that doesn't get nearly enough credit. I think it has the capability to perform perfectly in league with the other two, even outclassing them both in some interesting ways, but the more 8-bit-ish looking games (again, due to memory, and not CPU, or graphics hardware) do seriously damage its reputation, as does the parallax situation which actually is the GPU's fault (I would've thought it was the CPU's fault, but nope). In terms of subjective preference, I'd have to spend some more time hands-on with the TG16's high-res games before I could say whether I prefer them to Genesis or not, but since they're not the norm, and we're looking big-picture, and since I subjectively prefer the Genesis to the SNES, I'll still give the gold to the Genesis regardless, though I'm struggling to decide who gets the Silver (can they just both have the silver?)

**Sound: "Buzz Lightyear"**

There seems to be a LOT of confusion out there surrounding the TG16 sound hardware. Even for me, it's been a really tough animal to wrestle down (and as you are about to see, my understanding of it would probably best belong in the "tenuous-to-superficial-to-semi-superficial" range. I certainly do not have this thing mastered!) There are a lot of people out there who would say the TG16 sound hardware is more of a stripped down sampler that samples waveforms, while others tout that it's more of a super pumped PSG that can generate any type of waveform, even custom forms. Some have even said that since it can do LFO, it's more like FM, or at least, that it's a hybrid that slots somewhere in-between the NES and the Genesis. At various points in this "TG16 journey of discovery" of mine, I've been convinced of all three of these positions (first FM, then sampler, then PSG). Well, it turns out that the answer to the question of whether it's a kissing cousin to FM, a stripped down sampler, an uber duber pimped out PSG (or some hybrid of the three)...is...well...none of the above (though it does bear intriguing points of similarity at various points with all of them, hence the confusion).

PSG generates waveforms in real time (or "live", if you will). So does FM, but FM modifies carrier waveforms (which you can hear) with modulator waveforms (which you can't hear, but whose influence on the carrier you can hear) to get its unique timbres. PSG generates standard waveforms (such as a 50% duty square wave), or semi-standard waveforms (such as a 25% duty pulse wave) and has very limited flexibility with waveforms compared to the other technology types. Sampling takes pre-recorded sound clips and plays them back, straight, or manipulated (so, not "live", or not "in real time"). TG16 is based on a technology called Wavetable Synthesis (a commonly used, but technically incorrect acronym for it is WSG, which is what I'll be using anyway.) WSG is not really generating signals live, in real time like PSG or FM is, but neither is it playing back pre-recorded sound clips of real instruments, synthesizers, or even waveforms like sampling does. Instead, it works more like a database of pre-drawn (custom-drawn) waveforms, and puts them on a logical "table" (the "wavetable" in "wavetable synthesis") which it can move across for different timbres (or as I'm calling it, "timbre shifting"). As I understand it, a lot of Dubstep music is actually WSG based, with heavy timbre-shifting (and a lot of LFO). And while the radical majority of arcade games from the mid 80's - mid 90's were FM based (usually with a sampler channel or two thrown in for voices and sound effects), I am told that a few of them were actually WSG based instead (though I can't tell you which ones they were). Also, I would not have guessed it by listening to Genesis and TG16 music, but WSG is actually a newer technology than FM. The technology for FM Synth was developed and implemented in the early-mid 70's. The technology for WSG was developed in 1979, and I'm guessing actually hit the market a year or so later (like I did!) :-)

What WSG has in common with PSG is that except for the occasional LFO use, it's not using waveforms to modify other waveforms, nor is it playing back sound files of pre-recorded waveform clips (TG16 can sample as well, but that's a completely separate, and much less used function that we'll wait til later to get into). But it is playing waveforms that it does little to nothing to modify. What it has in common with FM is that in FM, after the "FM process" is done, the final waveform looks radically different from the original simple waveforms. The TG16 custom waveforms can be pretty much anything they want, and sometimes they can even resemble FM final forms. This is why sometimes some of the TG16 voices can sound NES-like, sometimes they can sound Genesis-like, sometimes they even sound SNES like (A, because of sampling, B, because it's not terribly rare for SNES, when sampling synths to sample WSG, and C, because sometimes WSG just does a good job of synthesizing an instrument that SNES does a mediocre job of sampling)...but most often, the TG16 doesn't really sound like any of them. Nevertheless the TG16's waveforms are often funky, and often complex, like FM (only without the dynamics, and mutability of FM).

TG16 does have LFO (Low Frequency Oscillation), which, just like FM (Frequency Modulation), modifies a carrier oscillator with one, or multiple modulator oscillators. But the difference is that with LFO, the modulator is sub-sonic, while FM modulation is sonic. Thus, LFO only modifies the wave's behavior, not its actual timbre. If you'll forgive a cheesy onomatopoeia: the unmodified carrier, let's say, a triangle wave is "woooooo". Put a triangle LFO modulator on it, and it may become "woop woop woop woop". Put a triangle FM modulator on it, and it may become "grrrr", or "boong", or "pffff", depending on how you have the operators set. So, you can see how FM and LFO, though they work on basically the same operating principle, actually don't really sound much alike. Now, most FM synths, including the Genesis, in addition to FM functions, also have LFO capabilities, so this is in-fact, a point a connection between TG16 and Genesis after all...just not one that is all that hallmark of either system's sound. Moreover, the TG16 theoretically can pitch the LFO up into sonic range, making it perform an FM operation instead. But due to other limitations in hardware, it makes FM effectively useless, and I'm not personally aware of any track where actual FM was used (and even if it was, it'd only be one FM voice, rather than the Genesis' six - a perfect opposite of the sampling dynamic of the two systems) Heck, for that matter, I still have yet to find a track where even LFO was used for music. Where WSG is similar to a sampler is that while it's not actually playing back pre-recorded sample clips of waveforms, neither is it generating these waveforms out of nothing "live", "in real time". One thing that WSG does share in common with sampling is that bitrate makes a direct impact on the fidelity of the sound. A low bitrate sample will not sound as good as a high bitrate one. Likewise, a higher bitrate WSG will sound better than a low one (this will come up again). Also, if we use the "play vs playback" distinction to grasp how a system makes sounds, PSG and FM would be "play", while WSG and sampling would be "playback" (even though one is playing back pre-recorded sound clips, while the other is playing back pre-drawn single cycle custom waveforms...or if it helps, one is sampling a recording while the other is sampling a graph.)

So, while WSG is technically distinct from all three of these other technologies, it bears strong resemblances to them all. For me, as a personal little mental device to get my head around it - I think of a triangle, with PSG on one point, FM on another, and sampling on the third (which point is which doesn't matter), and WSG is sitting square in the middle of the triangle. If this all sounds as clear as mud, in the clean up installment at the end of the series, I'll post some links to youtube videos demonstrating WSG in action, as well as things like Wikipedia articles that talk about it.

So now that we've talked about what Wavetable Synthesis is, let's see how the TG16 does as a wavetable synthesizer. In all honesty, it seems quite basic (or at least, that's how it's used). I don't know if I've ever even heard any actual "timbre shifting" happen in TG16 games. I think it's using WSG more for just the custom waveform aspect than anything. The amount of audio memory available on the system for WSG is even more shockingly small than the main system memory was...20bytes per channel (bytes, not kilobytes!) Genesis, by comparison, has 8kb always avail in the Z80, and through bank switching with the 68000, can kick it up to 32kb, while SNES has an even bigger 64kb at its disposal! 20b x 6 channels is exponentially smaller by comparison (I couldn't find specs for how much memory could be used when actually sampling)! However, the reason this is not a huge problem for the TG16, is because of streaming. TG16 can stream data to RAM straight from ROM. SNES and Genesis once again have to "load" data from ROM, and have enough RAM to do that. The designers of the TG16 opted instead to enable streaming, and then just have enough RAM to accommodate that. Nevertheless, just like 8k main RAM is small even though it can read straight from ROM, so is the audio RAM small, and I do wonder if this pittance of temporary storage is why we never heard any "timbre shifting."

We had discussed bitrate being important in WSG, much like it is for sampling, and the bitrate on the TG16 is also pretty low – only 5-bit. The Konami SCC chip (also WSG) that was used in a lot of Konami MSX games employs 8-bit WSG instead of 5, and the waveforms definitely sound the better for it (I have no knowledge of whether the SCC “loads” or “streams” its data). Then again, the TG16 has six WSG channels, and all six can be used at once for individual and distinct voices in music. The SCC has five total channels, and only four can be used for distinct instruments at a time, two channels will be doubling the same instrument (though I believe the General Instruments AY-3-8910 PSG built into MSX hardware can pitch in, and help with things like percussion). Plus, each of the six TG16 WSG channels can swap out WSG use for conventional sampling, where MSX can't. Which one is the better WSG chip overall is an interesting debate, but outside of the scope of this article. Nevertheless, in the comments section, I'll provide a link to the MSX version of the Contra soundtrack, which uses the SCC, as well as some TG16 music (probably Magical Chase, and/or Batman) for you to do your own comparative work with. The family resemblance is awfully strong though, so the MSX soundtrack will sound very TG16-like, but it will sound like less is going on (because it is), and also, the individual voices will sound richer.

Anyway, knowing that WSG is something completely different than PSG, FM, and Sampling makes it all the more fascinating for me. Knowing that it's not just a grown-up PSG, or stripped down sampler, or an NES/Genesis hybrid/compromise makes it feel much more substantial to me, and makes the 16-bit landscape as a whole seem all the richer for it!

Comparing the actual sound dynamics of the TG16 to the sound dynamics of SNES and Genesis, it is almost as bright and dazzling as the Genesis, and almost as rich, and full bodied as SNES, with reasonable sampling, and no muffle (plus, the [at least theoretical] ability to do six samples all at once is much closer to the SNES's eight, than the Genesis' one). It also tends to sound the “tightest” of the three. Best of both worlds, right? Well, as far as that goes, but its Achilles heel is that it's not as expressive, diverse, and dynamic as either one, plus it tends to sound really jaggy, or perhaps better said...buzzy, particularly the bass. Sometimes that buzziness was a vice, sometimes a virtue, but when it's always buzzy, it gets a little samey.

In the final analysis, I think despite there being a great disparity between the three in terms of method of sound production, and personality/character of the sound produced, the three nevertheless yield similarly quality experiences. In any case, we're looking at a very strong contender in the TG16. Still, I think Genesis is my favorite subjectively, and would be hard pressed to say whether SNES or TG16 gets the silver. I love all three, and not being as familiar with TG16 as with the other two, I face the pleasant and exciting prospect of getting to become more familiar with it. I guess the more time I spend with TG16 music, the more clear it'll become to me whether the TG16 or SNES gets the silver, and which one gets the bronze. Heck, is it possible that someday, the TG16 may even steal the gold from the Sega for me? I can't really see it at this point, but then again, if you had told me five or six years ago that the TG16 would be challenging the SNES for the silver, or even that the SNES didn't have the gold...I'd have laughed out loud at you. So I suppose anything's possible.

#### Overall Hardware: “The Little Engine that Could”



Yes, yes, the cat's out of the bag. The Turbograftx16 is in fact based on an 8-bit processor...but a very fast one. As I mentioned earlier, the HuC6280A CPU can handle two 8-bit processes in less time than it takes for the 65C816 CPU in the SNES to handle one 16-bit process. And a lot of stuff that happens in a 16-bit operation can be broken down into two 8-bit ones. So, the processor is not the hindrance that people think it is, it's not even the slowest of the three. It keeps up just fine. In fact, when you have the best Neo Geo ports of the era on the system requiring only the space of a CD-Rom, and an Arcade 3 card to hold the data, or when the TG16 ports of Sega branded arcade games like Outrun run faster and smoother than the Genesis version, even in the HuCard format, then the CPU can't really be blamed for very much, can it? Heck, we'll go further, Kamahl points out that in theory, if you could find a Hu-Card big enough, with enough physical memory, and program in some good memory mappers, then any of those Neo Geo port ACDR2 games would work just as well on just the core system, and not even require the CD-Rom add-on.

Furthermore, let's have a little perspective here: We give way too much credit to “bit count” anyway. The Intellivision was technically a 16-bit system, though it only performed incrementally better than the 8-bit Atari 2600, and was outperformed by the 8-bit Atari 5200 and Colecovision...not to mention being absolutely blown out of the water by the NES, MasterSystem, and even the Atari 7800...which were all 8-bit. The PS3 is a million times more capable than the N64, and yet there is debate over whether the PS3 is 64-bit, or 32-bit, whereas there's no debate that the N64 is 64-bit. Heck, there are even a few ways in which the Genesis is technically 32-bit (though not enough to actually make the claim it's a 32-bit system). Consider Windows 7: In terms of graphics and sound, how much difference is there between 32-bit Windows 7, and 64-bit Windows 7....absolutely none at all! Bits don't really matter in the way people think they do.

The graphics hardware isn't special effects rich like the SNES, is “para-lacking” (sorry, I couldn't resist), and is not [nominally] high res, or huge sprite laden like the Genesis, but all else being equal, it is just flat-out the best of the three for dazzling, crystal clear, vibrant, colorfulness (and can out-res, and seemingly even out-character-sprite-size the Genesis when it really wants to). The sound system is based on the most confusing, but most intriguing technology of the lot. Six channels of whatever waveform it wants, the ability to turn any of those channels into a sampler that spans the Genesis' one sample channel, and arguably even puts the sweats on the SNES. But the system, when compared to the others does suffer from a “buzzy sameness” to its sound, a sameness that is not as much of an issue with the Genesis, and especially the SNES, and where it does not sound samey, or insofar as it's not samey, then it experiences a similar 8-bit/16-bit spread to the graphics spread (sometimes it even sounds hardly any different than an NES game)

The big killer for the TG16, then, is the memory restrictions of the hu-card format. The Hu-cards are a really slick idea, but they also shoot themselves in the foot as they force programmers to either sacrifice graphic and sound pizzazz, or else make gorgeous looking and sounding games that are pretty basic. The CD-Rom drive (or Turbo Duo), and the latter two CD-Rom formats fix this, and then the TG is a full-on contender that consistently competes well, or even favorably against Sega and Nintendo, but those accessories are expensive and hard to come by (plus, the CD games are outside the scope of this article, except for where they testify to what is and is not to blame for poor performance when we see it). The TG needs those things to function at its full potential, unlike the other two systems, which perform perfectly well without accessories (one of them doesn't even have any accessories to begin with)

I had called the TG16 "The Little Engine that Could" earlier. Perhaps it'd be better said that the TG16 is "The Little Engine that Could -if-" because of the memory restrictions. Objectively I called the SNES and the Genesis a tie, though subjectively I came down on the side of Sega. As it concerns the TG16, the constant refrain here has been that I don't view Sega and Nintendo as "Up here", and the TG as "Down Here". Even if we were to say it's a smidge below the other two objectively (and I'm not sure I'd even be willing to do that), it is still unquestionably fully in the league; for all accounts and purposes a 16-bit system, and a system extraordinaire!

Subjectively, Sega's still king for me, but I'm not sure whether I'd give the SNES 2nd or 3rd. The SNES makes me so mad because of glaring internal weaknesses, but the TG16 has huge weaknesses too...here's the difference: the SNES gets a lot of praise and credit that I am not sure it deserves. The TG16, on the other hand, deserves a lot of praise and credit that I am not sure it gets. That may be why its weaknesses don't bother me as much on the personal, subjective level.

### Software: "Lost at Sea"

I don't really feel all that qualified to wax scatological about the games when I know so little about them. I've only been able to personally experience maybe 20 of them. Of course, the US got hosed on the software front (maybe 125, 150 games or so to hit the US across all TG formats (Hu-Card, CD2, SCD2, no ACD2) vs like 750ish in Japan) hence, why I'm calling the TG16 software library "Lost at Sea" SNES I would've called "The Telescope", and Genesis "The Microscope". The Japanese library is supposed to be fantastic, but based just on the US library, I do have to say that the TG would come in a very distant third here. Not nearly as many games, nor as diverse of games...but on the other hand, the games we did get have so much quirky coolness to them.

Subjectively, going back to the mountain analogy, this mountain is shorter, has less snow on the cap, and is not as wide as either of the other two mountains, but it also has less swamp around it...it's just a smaller library all around, and even the library we do have is so much less well known than the other two. I would love to plumb that goldmine, and as time, money, and opportunity allow, I'll do so. But for the time being, I don't have much of consequence to say.

I haven't looked in a little while, but last I knew, the price to get a base TG16 was actually not too bad, if all you're after is getting your foot in the TG16 door. But if you wanna be chic about it, the Turbo Duo, or all the hookups to the core unit are a fortune. I got my Turbo Duo back in 2003 for a whopping \$200. I think for used systems, it was the third most expensive system I bought after the JP Neo Geo AES and the JP Neo Geo CD. Now-a-days, you're better off to get a Japanese Duo, since they're so much cheaper (like half the price of a US model, which is now going for more like \$500), and either mod it so it can play US games as well as JP games, or get a region adapter (avail, but supposedly expensive), or you could even spring for a US standard TG16 to supplement it, if you neither want to mod, nor go for adapters.

On both US and JP models of the Duo, the disc drive is not region locked, so it's only the HuCards that would be a problem. Therefore, a standard TG16 would supplement a JP Duo just fine (and vice versa, of course, if you already have a US Duo). Another reason to spring for a JP Duo, rather than a US one is if you want to play ACDR2 games, then with a US, you have no choice but to either mod your deck, or get the adaptor, since there was no US ACDR2 system card. The US core system is not terribly expensive, and the JP version is even cheaper (plus the JP version has access to a whole lot more games, which most of the time you can also get for less than their US counterparts – when they even exist.) I heartily recommend all my readers to go out and get one! They're great!

As for me, who already owns a US Duo, I have a tough choice to make: Do I mod my Duo for multi-region, or do I try to sell it for the \$500 range, then plan on shelling out \$250-\$300 for a JP Duo, \$50-100 for a US TG16, and an additional \$50-100 for the US "power base" (or whatever it's called) to allow me to have US HuCards in Composite AV, rather than RF.) I know going the mod road would be so much easier, and it'll take up less shelf space, but just in the same way that I've found getting a JP Famicom, Super Famicom, Mastersystem, and MegaDrive to be so tempting and so appealing, rather than getting an adaptor for my US NES, modding my SNES, or trading my VA6 TMSS model 1 Genesis for a non-TMSS model so I can play JP games through the 32X, so does doing the elaborate TG16/PCE ebay exchange hold tons of appeal for me.

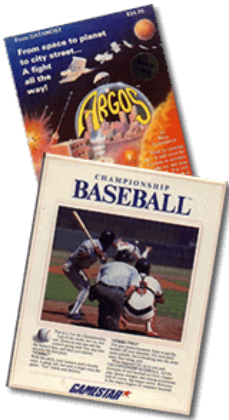
Alright gang, that's Turbografx16, which means we're just about done here! Next month we'll look at Neo Geo, and then either in that same installment, or another one, we'll recap and close out! Thanks for reading!





### My Apple II Game Museum

I have a few ideas brewing for articles but haven't been able to fully put them together yet. One involves a place I want to visit but have not gotten a chance to yet. The other is a piece of software that wasn't available online to play around with.



With the deadline upon me, I was reminded of a website I started years ago but have not touched in a while:

The Apple II Game Museum: <http://www.angelfire.com/80s/apple2/museum.html>

However, this site wasn't just a game museum. It was a museum for the BOXES of games. My reason for starting the site was to preserve some of the boxes of games. With emulators around, the original games were being preserved. But many of the items for the games (boxes, manual, etc) were likely getting lost in the shuffle. I wanted do my part to do some preservation and this site was the result.

It is definitely nothing fancy and by the use of Angelfire, you know the site goes back a few years. My HTML skills are (or still) very basic and so is the design of the site. Yet, it has attracted a lot of visitors over the years. I did my share of work with my collection but grew bored / tired and have not updated the site in years. Will I get back to it someday? Maybe if I get a working scanner!

However, my work may no longer be necessary. Plenty of other people have put in preservation efforts and you can find a lot of what I did online these days. But as Angelfire is still around, my site remains and I thought it was interesting to point out it was there.

See you all next month.



Like a lot of people who live in Northeast PA, I'm not a big fan of winter. I'm a wuss and hate the cold, and I certainly don't appreciate plans being canceled because of a 2-foot winter storm. But, aside from Christmas, there is one other thing I love about the winter months, particularly February. Sure, it's bitter cold by this point, but it is also the month where my two nephews, Ryan and Reid (or as I refer to them as, The Double R's) celebrate their birthdays. There's something about these two guys that really lightens my heart and makes me realize what's important in life. I have no favorites out of the nieces and nephews between both myself and my fiancée, each unique in their own way, each a blast to spend time with, but I'm a guy filled with traditions, and the story of this article involves Ryan's 9th birthday. For some reason, in my family, this is always an important birthday, even for me, because this was the same birthday I got a whole set of TMNT action figures, as well as when my late uncle that I got my first name from introduced me to coin collecting, another love of mine.

Ryan is a smart kid, and we've been best buddies since he was born, and I wanted his birthday to be special, especially since I had the money to actually make it good, so I really sat and thought about just what I wanted to get him for his special day. Yes, I gave him some of my coins, along with a coin book I had, so I had the sentimental gift down, but I wanted to get him something to

really share with him a bond we had formed in the last few years, my introduction to him of retro gaming. Sure, Ryan doesn't call it retro games, he calls it games from "my time" which yes, makes this 32 year old man feel about twice as old, but I digress. I did get Ryan a Wii one year, along with some games, but for about a year or so prior to his birthday, we really began delving into the classics, from playing arcade games on my MAME emulator on my laptop, to even enjoying a nice game of Hangman on the Atari 2600, Ryan was beginning to fully understand why these games are fun, and important to me. The more I thought about it, the more I realized I needed to give Ryan the same start, or at least a similar start to what I had, the Atari 2600.

There was a snag though, other than Hangman, there weren't really a whole lot of Atari 2600 games Ryan was familiar with, so I did what I felt needed to be done, purchasing my nephew the latest installment of the Atari Flashback plug and play system. Sure, it wasn't an actual Atari 2600, but it would give him a good idea of what was available to him should he ever start collecting in the future. I was mighty pleased with myself, snagging the last copy of it I could find in a local department store, and along with my sentimental gift, trudged through the snow to his birthday party.

So what was the result of all of this? Well, here's where it gets funny. Yes, Ryan loved the gift of the Atari Flashback, but I will always remember one of his friends looking at the box and saying with delight "I remember this! This is from way back in 1993!" 1993? Way back? I was amused, and yet also concerned that there were kids out there that didn't have the proper education and exposure to what I grew up with, while still being damn proud of my nephew for knowing what it was. In some ways this is what led me to want to open up a video game business at the local flea market, but why should we, as adult gamers, educate the younger folk in our lives on retro gaming? Well, there are a few reasons, and here are, in my opinion, the most notable.

### **Because They Need To Know Where It All Began**

This is probably the reason most adult gamers feel so strongly about teaching children about retro gaming. Just as we were so quick to jump on games from our time as the best thing going, we also had people who told us about the Atari 2600 or Pong, the humble beginnings of gaming lore, and now those things we gravitated towards need to be explained to this generation of gamers. I think this gives them a better appreciation for their Lego Star Wars games and especially their new Mario games or those games they just have to own for the 3DS.

### **Because They Need To Be Challenged**

I cannot properly express my shock, my downright near explosion of my brain when I read that quote about how 90 PERCENT of today's gamers cannot get through the very first level of the original Super Mario Bros. game. What the hell happened? I think, largely, consumers have been rewarded in games for doing next to nothing, and I swear I read somewhere that the Xbox One will reward gamers for watching television shows. I cannot express to you how much that disgusts me, but that's a whole other matter in itself. Companies are trying so hard to lure in younger gamers by giving them something easy to grasp, they forget that every kid deserves a challenge. Yes, any game for a child should have those things that make the kid want to play it, but we played games that really made us angry as kids, and I feel, on a whole, we became better gamers and better people because of it. I know when I have a kid of my own, they will be introduced to the classics by way of some of the most difficult games there are, just so they can understand that just because a game is challenging doesn't mean you just avoid it. You embrace it.

### **Because Modern Gaming (Especially For Kids) Lacks Substance**

I plan on writing an article about how I feel modern gaming has passed this retro gamer by, but I do want to touch on a fact I realized very early on when my nephew Ryan began playing video games with me. As much money as companies pour into games, as much of an emphasis as there is on all the bells and whistles, the visual aspect of gaming, there appears to be a huge hole in the way of innovative and fun games that actually capture the imagination of a child, capture that spirit, and really give them something that is both easy to grasp AND a blast to play. I have one of my favorite family pictures of all time on my Facebook, which is of me and a whole bunch of kids, ages 4 through 10, sitting around a refurbished NES playing Teenage Mutant Ninja Turtles on an old tube television. I'm all smiles, and not just because I get to show off my skills, but because I know just as I was at their age, kids are still fascinated by some of the same kinds of fads we were. In 2013, a Nintendo game can still keep the attention of kids growing up in a digital age. And why? Because most of them are timeless, timeless because back in the 1980s, it wasn't just about the visuals, it was about keeping the attention of your audience.



Christmas 2012, playing some TMNT on the NES, on the SAME television I did way back when.  
Ryan is the dude posing, with Aribella and Reid nearby. Fun times!

### **To Keep The History Of Gaming Alive**

This is a no brainer, so I won't talk much about it, but who will be left to collect these games after we're all gone? This generation of gamers. We began collecting out of a passion for it, an appreciation of what we saw, and the fond memories it elicited in our minds. I know that years from now, because I sat down with Ryan and played Hangman for the Atari 2600, WWF Wrestlefest on a

MAME emulator, and TMNT on the NES that he will remember many years from now, when Uncle Nick showed him the games he played when he was a kid. Knowing this makes me feel confident that retro gaming will never die.

We, as our own distinct generation of gamers, cannot change the overall thinking process of this generation of gamers, and while it is somewhat sad that it's been said many cannot get past the first level of Super Mario Bros. on the NES, neither could we when we first got started. If you haven't begun introducing children in your life to these games, I strongly encourage you to, because the results are always touching, funny, and definitely a revelation for you, one way or another. Will Ryan Lewis go down in history as one of the best gamers of all time? Who knows, but one thing I do know, is he is fully aware that there is more than just the Wii and PS3 out there, and that makes me one happy uncle.



## Has Modern Gaming Passed Me By?

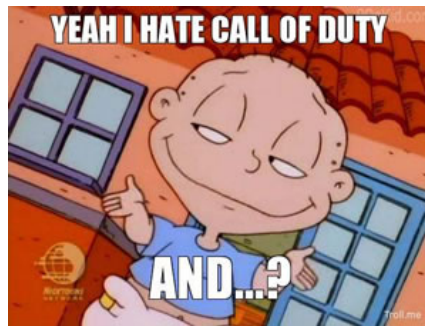
We've all experienced it before. We've all been on the receiving end of it. You have a friend or family member who is so psyched about a new video game console coming out, telling you everything you either already know, don't care to know, or some rumor that's been circulating that week. It certainly appears that in this highly digital age something new is coming out all the time, and while I certainly don't frown at many aspects of technology and the stunning advancements in it over the years, there is one form of entertainment I certainly feel I've lost track of over the years, and that is my once love of gaming. Even the fact that I've had to come to terms with this has been a struggle for me, because I used to feel hip, on the cutting edge, right on top of things with this industry. I was a loyal consumer and all was right with the world, at least to me. So what happened? What has made someone who was once just a plain, ordinary, run of the mill gamer, into someone who has had to reserve himself into the realm of retro gaming? Well, read on.

Welcome to what will hopefully be a series of articles I do here at RTM called Jaded Gamer, one man's look at how he feels there are certain things that unite us as gamers, as well as those observations and opinions I'm sure we've all had at one time or another, whether it be with retro gaming, or in the gaming scene as it stands today. Trust me, I can understand that a lot of this is common knowledge and perhaps too basic of an opinion, but you can blame my 8 years of college and three writing degrees on the fact I love sharing my thoughts on things I'm passionate about.

I guess the best way to start this is to talk briefly about my childhood and the years that would follow as it relates to gaming. As I've stated in other RTM articles of mine my family and I, we were not the coolest family on the block, we weren't the first family to have a system, so I got to experience things other kids didn't, or at least in a way that still sticks in my memory. I learned video games on an Atari 2600, playing games like Bowling, Space Invaders, and Pitfall. When we finally got an NES in 1988, I was hooked, and I knew I would follow Nintendo for many years to come. This was, of course, until the invention of the Nintendo 64, which turned me off with what I felt was a bizarre looking controller at the time, and I then became a loyal follower of all things Sony. I own a PS3, but what is most interesting about this is most games I have on my PS3 hard drive are, you guessed it, either reboots of classic games, or re-releases of those classics. While most people are using their modern systems to play the latest Call Of Duty, I am working third shift at a group home where I play Shining Force II on my PS3 as a part of Sonic's Ultimate Genesis Collection disc. Yes, Rob Luther, a collection of Genesis games, are you happy now? The point is, even in today's modern era of gaming, I am still using this new technology to play classic games. Why is that? One would think with my new job that pays me well, I'd be leaping at the chance to purchase a new console or a new game for my existing one, but I'm not. Why? Why do I feel so disconnected and disenchanting with something that once brought me such childhood bliss?

### Reason #1-Video Games Are Like Movies

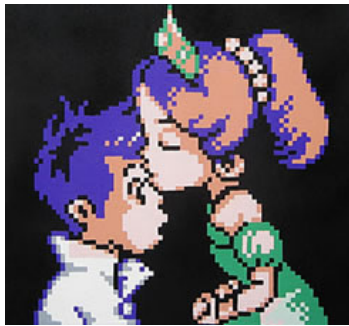
Perhaps not the greatest title for a first reason, but allow me to elaborate. Certainly we've all sat at a diner somewhere with a friend, talking about the latest flick in theaters, when either yourself or that friend of yours says that the movie industry is running out ideas, simply throwing something against the wall and seeing if it sticks, or rehashing a classic, probably ruining it, or simply continuing to pump out the same kind of movies, plots, etc. Perhaps this is only one man's opinion, but I feel the same way about modern gaming. For years I have felt like an outsider, after years of being "one of the cool kids" because I hate, and let me stress that again HATE first-person shooters. In fact, some move so fast I actually get dizzy and can't play them for more than 10 minutes. I also hate the fact that developers are taking these overrated games and packaging them with RPG elements. To me, RPGs are Final Fantasy, Chrono Trigger, Earthbound, and Secret Of Mana. You don't see developers of RPGs using first person shooter elements do you? While the games I find traditional, your Mario titles, your Zelda titles, still continue to bring both new and old gamers to the table, I still have an empty feeling towards modern gaming that most modern gamers tell me can best be filled by a hearty round of Call Of Duty, which sickens me beyond belief.



And I hated the later episodes of your show, Tommy Pickles!

## Reason #2-Most Modern Games Lack Substance

Here's a shocker for you. I haven't played a Final Fantasy game in many, many years. In fact, I don't even remember the last one I played, it has been that long. Why? Because Final Fantasy developers, like many others over the years, have gravitated towards this notion that almost echoes the old television and movie adage of "sex sells" in that they feel flashy visuals and realistic artwork in games is what sells, and they aren't entirely to blame as more than once I've walked into a Gamestop and heard someone say "Well the screenshots looked good online" and left it that. These are the same people who a week later are returning the game because it was "boring." I sound like a grumpy old man here, but did the games we played as kids look good visually? Most of them didn't, even to us back then, and yet we played them anyways. Why? Because the people who made them, most of the time, put their hearts and souls into making compelling stories and relatable characters, or at least characters we could gravitate towards. Why are people charging hundreds of dollars for some RPGs for the SNES on eBay? Because the games were such an experience, people want to play them again. I can pop in a new and "innovative" PS3 title, play it for 15 minutes, and had my fill.



Still a better game than Assassin's Creed III. AND a better love story than Twilight.

## Reason #3-Too Many Modern Games Lack A True Challenge

Remember last month when I talked about how Contra haunted me for years? How I never thought I'd beat it? I don't feel younger gamers are experiencing that same kind of challenge, that same kind of frustration with a game, and they need to. I also don't like games telling me what to do before I do it, prompting me to push a button, lighting up when I'm close to where I need to be. I blame the creators of trophies and achievements in gaming a lot for this, but also parents who would rather cave into the demands of their children and purchase them a game they will get bored with because it's too easy, instead of introducing them to the same games that made them want to throw a controller so many years ago. Video games are still challenging today, but it still doesn't pack quite the wallop as one hit and you die or continuing all the way back at one part of the map even though you died all the way over on the other side of the map.



I don't know..I've met some pretty mean toasters.

## Reason #4-Modern Gaming Is NOT Cost Effective

You know you're getting old when this happens with any aspect of your life, but with gaming it's an even bigger revelation I feel. My loving fiancée, who is so patient with me, will literally have to talk me into purchasing a \$60 video game anymore. Why? Because I know in about a week I will have lost interest in this thing I am told in countless video game magazines and review sites that I MUST have. I am ashamed to say I have some of the best games of the PS3's lifespan still sitting on my shelf, most barely ever played. The reason I tell everyone is that I just don't feel like modern gaming is cost effective for me anymore. I hate updates on systems, I hate loading times, so for me, I'd rather drop \$60 on a tote full of classic games I know I will play (or sell at my shop) than something that's just going to collect dust and offer me little to no enjoyment.





Oh sure, it's easy for you guys.

It's a funny feeling really, becoming someone who is so concerned over money spent on gaming, because that was certainly not something I could say about myself earlier on in my life. With this lack of spending comes a lack of knowledge on modern gaming, but, to be quite honest, I don't feel I need to know. Why? Because I'll always be behind in the times.

I have come to terms with the fact I am no longer the coolest guy in the room when it comes to gaming, and that how a 12 year old knows more about modern gaming than I do. It was a painful process, but I have come to these terms because I know, deep down, I'm getting the better deal playing games that actually challenge me, actually make me happy, and leave me entertained. So go ahead, modern gamer, tell me about how you just killed 50 people you don't know online in the latest Call Of Duty. I'll just be over here, feeding candy to animals, because that's how Nemo rolls.

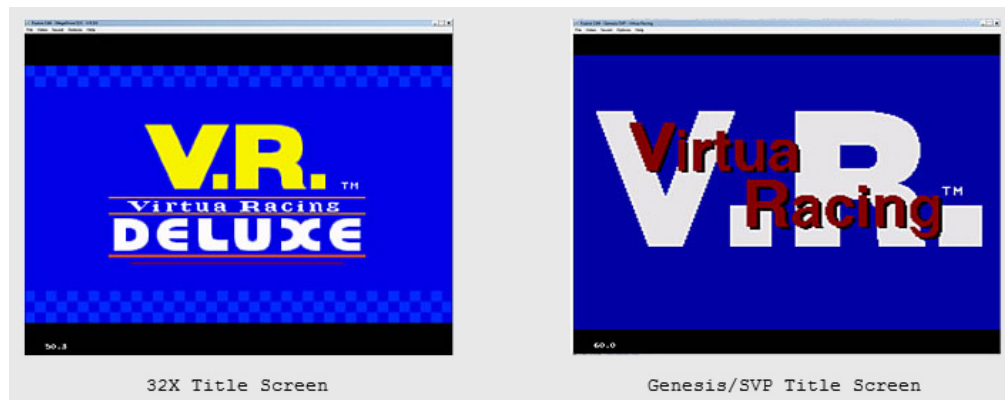


It's a beautiful day out there, Nemo. Let's go be 'lame' retro gamers together!

Yeah, that sounded lame. Whatever.



## Let's Go VirtuaRacing



Greetings Retrogaming Times Monthly readers!!! It's been a couple months since my last article, so I thought I'd let the CoCo-stuff sit until I have time for another dive into the land of the Color Computer. This month I'm going to tackle one of my favorite classic racing games – Virtua Racing for the SEGA Genesis and 32x. So, let's get too it!!

In the early '90's, polygon crunching was taking the video game world by storm. Games like Hard Driving started this trend in the late '80's, and were trying to showcase impressive polygon counts and visual styles. Never one to just sit on the sidelines, Sega

was working on a concept board which would improve polygon manipulation – the number of polygons, frame rate and scene complexity. The result was the Model I board. Sega's AM2 developed Virtua Racing as a concept, but, the results were so successful they made an arcade game out of it, and released it to the world in 1992.

Now, if you were to look at the overall specs of the game:

- 186,000 polygons per second
- 540,000 vectors per second
- 32 bit RISC processor
- 32 bit graphics co-processor
- 496x384 in 65,536 colors

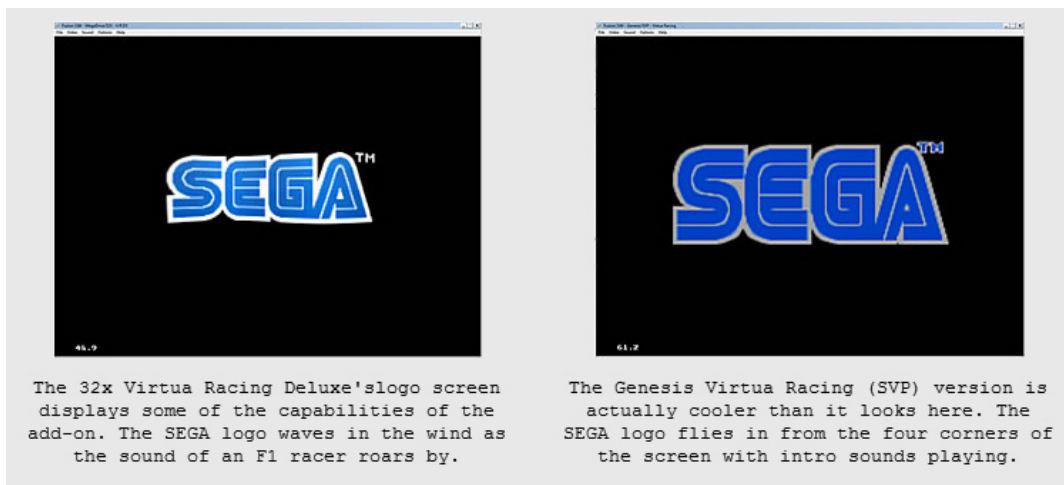
The first thought that would jump into your head would be there's NO WAY Virtua Racing could be ported to the Sega Genesis. Well, they DID port it to the Genesis and it's 32x add-on. This article will compare the two versions, with some screen-shots. Due to my personal situation, I currently don't have ready access to my Sega hardware, so I used the Fusion emulator for the screen shots.

For starters, I'll get this right out in the open – neither the Genesis nor the 32x version compares to the arcade game. It's that simple. Really, nobody should expect them to, either. The stock Genesis hardware shouldn't even be able to do this game any justice. At all. However, the whiz-kidz over at Sega (in conjunction with Hitachi) developed a chip called the Sega Virtual Processor which allowed the Genesis to present a respectable 16 bit version of an otherwise, impossible port.

Much like the FX chip did for Star Fox, the SVP allowed the Genesis to crunch polygons well enough to provide a passible 3d experience. The problem was the SVP increased the cost of Virtua Racing to \$100, giving Virtua Racing the distinction of being the ONLY SVP game ever produced. Even while the chip vastly improved the polygon crunching abilities of the Genesis, AM-2 still had other hardware limitations to work with. The graphics are grainy and washed due to the limited color palette, and many of the sound and music effects sound like they're in a tin can.

As for the much maligned Genesis/32x add-on, the in game results were much more impressive. While not on par with the arcade version, the 32x's Virtua Racing Deluxe is an outstanding representation. The 32x has two Hitachi SH-2 processors allowing the Genesis/32x to push out 50,000 polys per second with more than 32,000 colors. The results speak for themselves - graphics are less grainy, polygons are smoother, and the overall animation is much smoother and appears to run at a much faster frame rate; and the improved sound hardware gives the 32x version has significantly improve music and sound.

Now, with all that out of the way, let's get to some comparison pictures...



Differences are noticeable right from the logo screen. The 32x version has the SEGA logo in the center of the screen, then waves in the air like a flag as the sound of a Formula 1 car roars by. It's a pretty impressive effect for the era. Not to be outdone, the guys at AM-2 created a really cool effect for the Genesis/SVP version as well. Graphics start rotating from the four corners of the screen towards the center, to form the SEGA logo. Again, a very cool effect, and given the hardware constraints, it's very impressive.

## SEGA Genesis Specifications:

**C.P.U:** Motorola M68000 16 bit processor running at 7.67Mhz

**Sound C.P.U:** Z80a running at 3.58 MHz

**Main sound chip:** Yamaha YM2612 6 channel FM

**Additional sound chip:** 4 channel PSG

**Palette:** 512

**Onscreen colors:** 64

**Maximum onscreen sprites:** 80

**Resolution:** 320 x 224, 320x240 (more modes available, these were the most common used)

## SEGA 32X Specifications:

**Processor:** Twin Hitachi (SH2) 32 bit RISC processors - clock speed of 23 MHz/40 MIPS

**Co-Processor(s):** Genesis 68000, Z80, Genesis

### 32X VDPVideo processor:

- 50,000 texture-mapped polygons/sec
- texture mapping
- hardware scaling and rotation

**Video:** 32,768 simultaneous colors on screen

- Genesis resolution
- Overlaying over existing Genesis/SegaCD video

**Memory:** 512k (4 MBit) additional RAM to Genesis/SegaCD memory

**Audio:** Stereo PCM chip  
- audio mixing with Genesis sound

The specifications of the SVP are as follows:

**Chip Command Type:** DSP, 1 command, 1 clock

**Speed / Instruction per second:** 23MHz (23 mips)

**ROM:** I-ram (instruction RAM) 2048 bytes

**Polygons per second:** 300-500 (16 colours) with 4 interrupts

**Sound expansion:** 2 channels PWM

**Data BUS bandwidth:** internal / external 16 bits

**Source:** <http://www.gamefaqs.com>

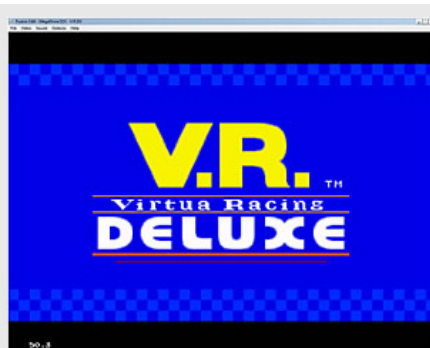


The intro screen for the 32x version. Notice how smooth and well shaded the polygons are. Not bad for having less than a third of the arcade machines power.



The Genesis SVP intro screen. Polys aren't as smooth, and you can see the limitations of the Genesis hardware looking at the on screen colors. 64 colors doesn't compare to 32,000+, also notice the lack of textures and shading.

In the game intro scenes and game play, there's an obvious difference in polygon counts, textures and shading. It's not resolution; both the Genesis and 32x have 320 x 240 modes (the Genesis usually used 320x224).



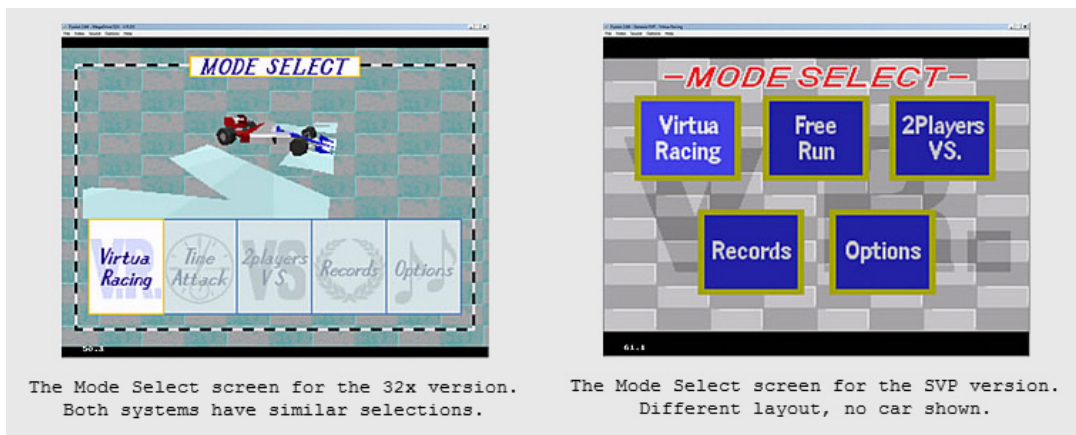
The title screen for the 32x version. Nothing really special to see here...



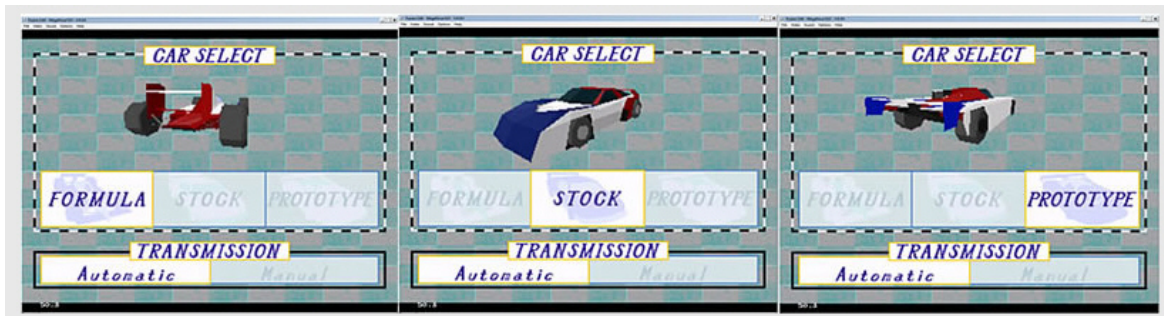
The title screen for the SVP version. Again, nothing of note here...

The title screens above do show some differences, again mainly due to the enhanced colors available on the 32x.





The only real clue here these are on different hardware is the background colors chosen. Oh and the car in the background rotates in the 32x version. Obviously if these could have been replicated on the SVP version it would have.



The three screen shots above are from the 32x version of Virtua Racing, showing your choices of cars for the game. If you've never played the game, I suggest starting with the Stock Car – it handles much better than the other two and is perfect for getting a handle on the controls. The Genesis/SVP version has only one car – the F1 racer is it.

Speaking of the controls, they are excellent in both games. Sega did a masterful job at ensuring the game is playable, the controls are rock solid and the cars handle brilliantly. This is an absolute necessity when trying to make a solid and enjoyable racing game and SEGA nailed it.



A racing game is nothing without tracks to race on, duh! V.R. for the 32x and Genesis/SVP provide five and three tracks respectively.





The Race Start sequence for the 32x version. Notice the smooth textures and shading and color gradations, and the animated pit crew - quite a novel idea in the early '90's.



The Race Start sequence for the SVP version. The lack of colors on the Genesis is apparent. The animated pit crew is here as well. Color palette limitations are noticeable.

As we start getting into the actual game, the abilities of the hardware become readily apparent. The 32x version of Virtua Racing continues to display smooth, shaded polygons with excellent color gradations and really good animation frame rates. The Genesis and its 64 color palette simply cannot perform the same smooth color gradations. While the SVP chip does improve polygon counts and manipulation, it does so in 16 colors, not the 64 colors the Genesis can provide.



In race graphics for the 32x version. Again, the smooth textures and shading and color gradations are quite impressive. Notice the tire smoke.



In race graphics for the SVP version. The animation is smooth and fast. The Genesis/SVP version also shows tire smoke, I just wasn't able to capture it.

It might sound like I'm ragging on the Genesis/SVP version of the game. Really, I'm not. The Genesis without the SVP chip would have no chance at all of pulling off Virtua Racing. The animation is smooth and fast and the controls are outstanding. It really is a great racing game for the Genesis, and the SVP made it possible. The 32x version is just better in terms of graphics and sound, and the added cars and tracks are a great plus.

As good as the 32x version is, the Saturn version is even better - better graphics, better sound, more tracks choose from and more game modes. The Saturn version might qualify for an article as a retro game, but, I'm not going to look at it here - since my Saturn died years ago. (I'll continue to ignore the PS2 version; while the graphics were great, the controls were more like playing Virtua Tokyo Drift).

Back to the 32x& Genesis SVP... I've enlarged the next few pictures so you can really see the differences in better detail.



The heads up display is virtually identical in both versions of the game. Minor graphic differences, but, it is there and remained true to the arcade version.

Big Forest track - bridge scene. Look at the hillside and the railing on the bridge. Also, look at the detail of the F1 car as well - then compare it to the Genesis SVP version below. The 32x does a great job of replicating the look of the arcade. While not a perfect translation, it was certainly the best for its time.



Same track, same area for the SVP version.

The lack of colors on the Genesis is apparent. Look at the bridge and the textured hillside. The 16 color limitation of the SVP is readily apparent here. Please ignore my car doing an end-over-end. It's kind of difficult to control the car and hit 'Print Screen' at the same time.

It's obvious SEGA attempted to keep the feel of the game similar between the two versions. I think they succeeded spectacularly.



Big Forest track - carnival scene. The big story here is this: In the 32x version (top) the pirate ship and the Ferris wheel are both animated, just like in the arcade version.

In the Genesis/SVP version (bottom), the pirate ship and Ferris wheel are present, but, they're static pieces and are not animated. It's understandable since the SEGA probably didn't want to take anything away from the game play since the Genesis/SVP were already doing something nobody would've thought possible - running Virtua Racing.

Animating the eye-candy might have severely impacted frames rate for this scene.



You can also see the detail, texture and shading differences between the two cars as well as the carnival scene (32x top, Genesis/SVP bottom).

The carnival scene is in both versions of the game - colors, textures and missing animations in the Genesis/SVP version is the main difference.



When I came up with the idea to do a comparison of games between the Genesis and the 32x, I knew right away Virtua Racing would be the first one I'd do. By a large margin V.R. was my favorite racing game until Daytona USA and Sega Rally came out. I also knew there was no way I was going to declare a winner or loser since that wasn't my goal. In reality, I just wanted to showcase the possibilities offered by the 32x – which neither SEGA nor third party developers really took full advantage of.

Virtua Racing was a ground breaking arcade game, utilizing new hardware and pushing polygon counts to astronomical levels for the day. There's no reason to think it could've been ported to a system like the Genesis, but, the development of the SVP chip made it possible. Not only possible, it made the game very enjoyable, and was a technological feat for its day.

AM-2 completed a remarkable task in a spectacular fashion. If you didn't have a 32x, the Genesis cartridge with the SVP chip was the only way to play V.R. at home. With the solid game play and controls and acceptable sound effects and music, and an excellent handling car the game was far better than it had any right to be. The only real drawback of the game was the price of the cartridge - \$100, which was ironically the result of the added cost of the SVP chip.

On the 32x, Virtua Racing approaches masterpiece level. It's really that good. The fact that it took a machine several orders of magnitude more powerful than the 32x (the Saturn) to really improve on it speaks volumes to the job SEGA Sports did. The different perspectives, improved graphics, smooth polygon manipulation, in game music and sound effects, multiple cars and additional tracks makes this game a true MUST HAVE for 32x owners.

Is it perfect? No, but, what game is? In a perfect world, I'd have dedicated a review for each version of the game. But, I think we know this isn't a perfect world...

I haven't decided yet if I'm going to do another CoCo article or a SEGA article next month – or even if I have the time for either. Till next time...



## Hunchback

Sorry, but in this instance I'm right and everybody else is wrong.



Actually, I'm not sorry at all. I'm bewildered and a bit PO'd. It's hard to blame the video game industry for treating us like idiots when we elevate crap games like Hunchback to classic status.

The culprit is a 1983 coin-op by Century Electronics, responsible for other sensations such as Heart Attack, Space Warp, Dazzler, Video 8 Ball, Gold Bug, Logger, and Radar Zone. Hunchback appears to be their biggest success, with a rarity rating of five out of 100 on The Killer List of Video Game's scale. It appears Century thought its best sales pitch for Hunchback to arcade operators was as a conversion kit for Scramble and Galaxians.

A thorough exam of Hunchback's crookedness is forthcoming, but the short version is Hunchback is slow, looks like it was programmed two years before Donkey Kong rather than two years after and features all the creativity of Taco Bell – mixing a few simple things in various ways in the pretense they don't all have the same basic flavor.



Among the vastly superior platform games released that year – to cite just one letter of the alphabet – were Mappy, Mario Bros., Major Havoc and Mr. Do's Castle.

The thing is, gamers initially knew this ugly and clunky platformer was crap because it was a flop in arcades, but for some reason they rushed to embrace home versions for a staggering number of computers and consoles. Remakes are still appearing for everything from the Atari 2600 to iPhones. I know I've come across lousy coin-op games before that became home hits, but I'm failing to recall any on this scale.

The reason I'm even bothering to allow Hunchback to see the light of day in this space is because of my other column in this issue comparing how Dragon 32/64 games compare to identical titles on other computers/consoles. Hunchback has about the same number of home versions of hits like Robotron and Demon Attack, but is a rather dismal game on every platform. So naturally I had to take a look at the coin-op original to see why there was such eagerness to port it and why the home crowd was so receptive.

Many virtual quarters later, I still don't know and can't find anyone else who does. I'd be willing to acknowledge my low opinion of the game is perhaps flawed if I could find others (heck, even one person) extolling the wonders of the coin-op, but a reasonable exploration of cyberspace reveals nothing but a big vacuum. The best rationalization I can offer is the arcade version is so much like the crappy pixelated platform games that bred by the thousands on the Sinclair Spectrum, et. al, it loses very little in translation to even the humblest of home machines.

Then again, the masses flock to and heap praise on Taco Bell, so just because I'm ranting doesn't mean you won't have a good time getting your back bent. So let's take the grand tour, starting with a plot deserving airtime on Twisted Fairy Tales...



You play the role of Quasimodo, the famous hunchback of Notre Dame, whose mission is to rescue Esmerelda from a castle tower. In this retelling, Quasimodo is the reincarnation of Robin Hood, which explains his green outfit and the abundance of arrows during gameplay. (According to StrategyWiki, the protagonist was supposed to be Robin Hood and the switch came after the artist that designed him left the company. I'm not sure if it speaks poorly of the artist or company – or both – that Century figured the green gimper looked enough like a hunchback that no redesign was necessary. Although, in fairness, the couple of extra pixels on Quasimodo's back depicting his hunch could just as easily be a quiver of arrows or tiny backpack.)

The game makes a cheesy impression the moment you press "start" as Quasimodo does a prancing spring across the bottom of a couple of screens and then making an apparently magical supernatural leap to the top of a castle wall that covers the bottom two-thirds of the playfield.

Corny animation and chiptune aside, a few questions:

- Since he's standing right below Esmerelda when the game starts, why doesn't he just make his magic leap there instead of opting to run the obstacle course of death?
- How does he cross only two screens before starting his quest, yet must cross 15 going the other way to reach his damsel in distress?
- Why does he move like Usain Bolt during the intro and a geriatric mall walker during the game itself?
- Similarly, where did that magic leap go? Is the power of gravity different on top of the castle wall?

Once Quasimodo is under your control, each screen features some mix of hazards like a row of soldiers who raise their spears at intervals, fire pits with Pitfall-like ropes above them, arrows fired by off-screen assailants and such. There's only one hazard on the first few screens, with more added until the final "rescue" screen is a fairly complex combination of perils to navigate.

In addition, all screens feature a soldier that climbs the castle wall on the left side of the screen and then tries to approach you from behind. If he reaches you he'll kill you with his sword. But he's so slow at first he's not much of a threat and by the time he speeds up you should be familiar enough with the various dangers to navigate past them quickly enough to elude him.

Reaching and touching a bell at the top right of the playfield causes the next screen to scroll into view. Make it through five screens in a row without losing a life and a "super bonus" is awarded. Get through all 15 and the screens repeat at a faster pace.



Controls are a simple right/left joystick. DIP switches are similarly simple with three or five starting lives and a bonus life at 10,000, 20,000, 40,000 or 80,000 points.

I've already mentioned Hunchback resembles a My First Assembly Language Program project, at times dipping below the line for what ought to be minimum commercial quality for an arcade game released in 1980, let alone 1983. The indistinct and limited-color graphics would be merely below average if not for the LSD-inspired palette, which is both an eyesore and impediment to gameplay. Red and purple are dominant (although your beloved in the tower has bright green skin), making it somewhat hard to discern things such as the guard climbing the castle wall. (Note: I was playing the Donkey Kong conversion ROM, the only one that worked in my emulator. Screenshots at various websites indicate at least one other marginally better color set exists, even if it gives Quasimodo purple hair instead of bright red).

Sound is just as bad regardless of which ROM you're using. The various blips are painfully primitive and inelegant in tone. A blind man would know just by listening to whatever games were in the arcade that you were blowing your quarters on probably the worst of them.



As for gameplay, it's all about memorizing the patterns for navigating the hazards on each screen. Similar to the endless computer platformers like Manic Miner this can be a challenge, but often one where you find yourself blaming the quirky controls or crappy physics rather than your own inabilities. Jumping on ropes, for instance, takes time to learn simply because Quasimodo's leaps are so slow and weak you need to rely on experimentation rather than logic to learn the timing. I suppose this is where an optimist would say Hunchback bears a strong resemblance to one of 1983's biggest breakthroughs, Dragon's Lair, in that success on each screen frequently means dying, trying to get a step or two further in the progression with the next life, dying, etc.

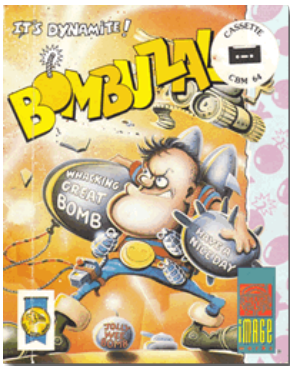
Another upside is most of the home versions are just as good, and sometimes better, than the coin-op. Even the unofficial Atari 2600 homebrew Hunchy II (actually a port of the home-only sequel – yes, Hunchback an offspring that's a more traditional ladders-and-platforms game, since commercial success is a great antidote for shame) is a decent effort with a remarkable 14 screens.

But when these kinds of things are the best IO can do to "try to find the positives of a game," obviously I'm really reaching. Still, I haven't encountered a game I wouldn't suggest playing a few times if only for reasons of comparison and accumulative knowledge, and it's dreck like this that make one continue to appreciate the likes of Donkey Kong all the more.



## Bombuzal

Puzzle games are one of my favourite genres, so it's time to look at another C64 classic. And I've just written an article for Retro Gamer magazine (to be published in issue 121) on how it was created.



**Designed by:** David Bishop & Tony Crowther  
**Released in:** 1987  
**Published By:** Image Works (Mirrorsoft)  
**Players:** 1 player only

### What is the Premise?

The basic idea of the game is to detonate all the bombs on each level - without being blown up or falling off the tiles. Uniquely, the game offers players a choice between a 2D overhead view and a 3D isometric view to play the game, along with a smaller 2D map of the level. There are 130 levels to complete, with 4-letter passwords given every few levels allowing the player to resume at a later level once reached.

### What is the Gameplay Like?

As the level increases, so more features are added. Bombs come in one of three sizes, the bigger the bomb the bigger the blast radius (which will also trigger bombs within the area around the blast). Swell bombs change size between the three types. There are also A-bombs of various sizes, and setting off one A-bomb will trigger all of them on the current level at once. Bombs sitting on slotted tiles can be picked up and moved along the slots. Mines appear in two different sizes and are automatically deadly when the player steps on them. Dissolver tiles disappear when the player steps off them, while riveted tiles will survive an explosion. Ice tiles are very slippery - the player will continue to slide in the direction of travel until they meet a standard tile or fall off the edge. Switches will alter the level layout and teleporters move the player to a new location. Finally the power temple will absorb the power of a nearby explosion.

Two enemies patrol later levels, known by the Latin names Dexter and Sinister. Dexter always turns right, Sinister always turns left and both will blow up the player on contact. They can be dispatched with an explosion or removing the tile under them. To help the player there are two droids that can be activated, with the player safe while they are in action. Bubble can be moved freely around the level to detonate a bomb, while Sqweek will detonate the first bomb it meets.

### What makes it Special?

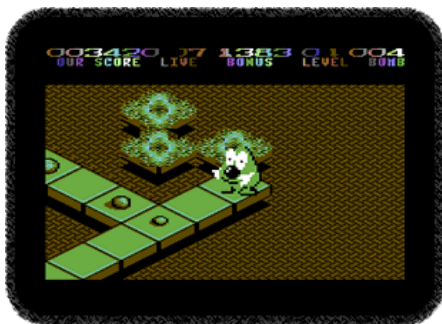


The choice of view is a very unusual idea and it really works. The isometric 3D is great and the characters are cute. The 2D view gives a larger window onto the level, which is useful in planning ahead - although the map comes in handy. Most of all there is a logical challenge to test the brain cells. What does that switch do? How do I get past that enemy to trigger the last bomb? And what order should I set things off, having moved that big bomb away from me to stay safe?

Perhaps the most intriguing aspect of the game is that various programmers and magazines contributed level designs to the finished game, thanks to a level editor developed by Tony Crowther. Andrew Braybrook (Uridium, Paradroid), Jon Ritman (Head Over Heels, Matchday II) and Geoff Crammond (The Sentinel) were among the programmers to create their own level. Jeff Minter of Llamasoft had Tony's help to create a level that explodes to leave behind the shape of a llama - and a small pile of dung at its tail. The staff of ZZAP! and Your Commodore magazines also made their own levels. ZZAP! gave the game a Gold Medal, calling it one of the cutest puzzle games on the C64.

### What did they do next?

David and Tony completed work on Bombuzal while simultaneously writing the C64 version of Fernandez Must Die. On the surface it looks like a Commando clone, but there is more depth - players must liberate prisoners of war and loot enemy gold, earning medals based on their performance. The duo's last C64 game was horizontally scrolling shoot 'em up Phobia, with creepy levels based around fears including spiders, birds and death.



Tony would go on to create many classic Amiga games, including Captive (a futuristic RPG similar to Dungeon Master), and later worked on PC and Playstation. He is currently at Sumo Digital, the company behind Sega's All-Star Racer and All-Star Tennis as well as the fantastic Outrun Coast to Coast. David has continued to work in games, having recently been part of the Pop Cap team behind Bejewelled 3 before moving to Mind Candy Games (creator of Internet sensation Moshi Monsters).

### What to play next?

The North American PC and SNES conversions of Bombuzal were known as Ka-blooey and are worth playing. The game also inspired two more titles. The Bombing Islands on Playstation featured Kemco's mascot Kid Klown. Its biggest change to the format was the addition of a step counter, awarding better medals for taking fewer steps to complete the level. The N64 game Charlie Blast's Territory has many similarities to Bombuzal too, as well as adding a fun four-player mode where bombs are used to capture territory.

### Web Links

<http://www.gb64.com/game.php?id=951&d=18&h=0> - Bombuzal on Gamebase64

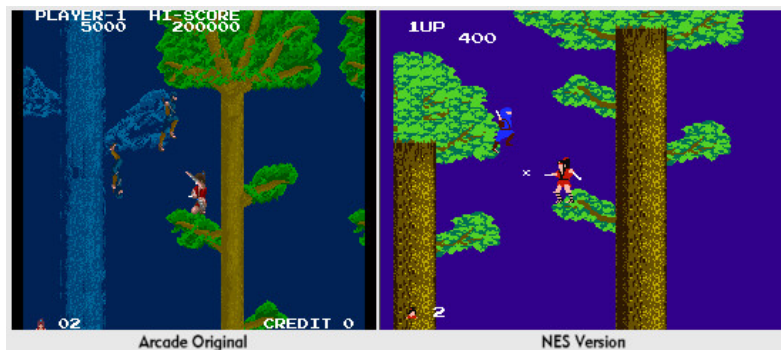


## The Legend of Kage

Sometimes when discussing arcade to NES conversions the topic of paying retail price for a watered down port of an old arcade game will come up. It's an interesting thing to think about as compilations of classic games these days, many with dozens of games included, tend to be released as value titles with price points well under the initial price of most titles on a modern platform. Did people really pay forty dollars to play a reworked version of Galaga on their NES? How about a watered down version of Joust? Imagine paying sixty dollars to play Pac-Man on a PlayStation 3. Granted, as the games weren't yet quite as old and still had fairly recent familiarity, they sold well against the latest Famicom localizations out of Japan. The games were obviously still fun, that's why people still play Galaga, Joust and Pac-Man to this day but what about a conversion of a game that wasn't as prevalent in the arcades? When thinking about early NES games that were straight up arcade conversions, that seemed to be more common at home than in the arcades, The Legend of Kage comes to mind. So the question is, would one pay full retail price for a simple home version of a relatively unknown arcade title?

The Legend of Kage took the quickly becoming standard of the player character rescuing a princess and dropped it into Japan during the Edo period. Kage, a ninja from Ida Village is tasked with rescuing Kiki, daughter of the Shogun. Kiki has been captured by ruthless villains and is being held in a castle high atop a mountain fortress. Kage is armed with a pair of short swords and an unlimited supply of throwing shuriken. His swords can be used both offensively as well as defensively, allowing Kage to deflect enemy shuriken and protect himself. However Kage's greatest asset is his extreme agility, including the ability to leap to great heights and climb effortlessly. Kage must traverse four areas to reach Kiri including the forest, the water filled passageway, a long climb up the fortress wall, and finally infiltrate the castle itself. Each area has its own requirements for completion. The forest requires Kage to defeat three blue fire breathing magic monks known as Yohboh. After defeating the three blue Yohboh, a red Yohboh will then appear and defeating him will complete the stage. The objective along the secret passageway is to defeat ten Shinobi, who stand in on every stage as the game's regular foot soldiers. The climb up the fortress wall is just that, a climb. While there are plenty of enemies to defeat the goal is to simply reach the top via long vertical jumps. Finally Kage must work his way to the top of the castle by traversing a series of staircases. Once Kiki is freed she is then escorted off the roof of the castle by Kage with a daring jump down to the forest below. As they flee, Kiki is captured once again which leads into the boss fight. After defeating the boss, the game begins again during another season. Completing all four stages once more allows Kage to properly rescue Kiki and complete a run of the game.

Home releases of The Legend of Kage began to appear in 1986, a year after the original arcade release, with the NES localization and release a year after that in 1987. So while the game is a relatively simple concept, it also had a relatively quick release stateside on the NES. Thankfully no one tried to reinvent the wheel on the NES, giving us a pretty much direct conversion of the arcade title with a few enhancements. Eight direction joystick movement from the arcade is replicated with the NES control pad and works in exactly the same way. This has to be one of the only games where pressing up to jump actually works fine. Pressing up and left or up and right will cause Kage to leap diagonally and all jump distances are related to the duration in which the control pad is pressed. If Kage is in front of a tree then pressing up will cause him to climb. Pressing down will make Kage jump down to a lower level unless he is already at the bottom of a screen, where he will duck instead. While it sounds as if this would break the control expectations of nearly every NES game, here it works great and allows you to keep up with the pace of the action on screen. Also in line with the arcade controls, one button throws shuriken while the other swings one of Kage's swords. The swords can be used to block enemy shuriken or for close quarters attacks. Using the swords to defeat enemies yields more points than dispatching them with shuriken.



Originally the only power up Kage could find were scrolls. After grabbing a scroll, Kage will descend to the bottom of the screen and use its mystical powers to defeat all enemies that come on screen. While this really isn't useful to the ultimate goal of a stage, it does allow Kage to rack up some big bonus points and allows the player to take a quick breather as the entire sequence is handled automatically. Think of it like using a screen-clearing special attack in a beat 'em up. The NES version adds a few new ninja tricks for Kage to utilize. The most useful are crystal balls which regular enemies sometimes drop once defeated. Collecting a crystal ball will change Kage's clothes from red to green and enlarge the shuriken he throws, making enemies easier to hit. Collecting a second crystal ball will change Kage's clothes from green to orange and give him a speed increase. However the

most useful effect of the crystal ball is that it allows Kage to take a hit without dying. If Kage is struck by an enemy shuriken or sword while powered up, he will simply lose the power and revert to his standard red outfit. However the fire from a Yohboh will still kill him instantly, no matter how many power ups he may collect. Speaking of Yohboh, they are far more deadly on the NES than in the arcade original as here they pretty much constantly spout fireballs that fly across the screen. The only defense from fire is to avoid it with a jump. In addition to the crystal balls there are also special forest monsters that sometimes appear and grant special tricks once collected. The most powerful of these allows Kage to throw shuriken in all eight directions simultaneously, making him a Shinobi slaying machine. However this special power can also make Kage complacent and it's not uncommon for an enemy shuriken to slip in and catch him amongst the carnage.

The four stages work exactly as they did in the arcade. The forest requires defeating three blue Yohboh and then a red Yohboh. The passageway can only be passed after defeating ten Shinobi. Climbing the fortress wall makes up the third stage and the castle infiltration rounds out the fourth. As in the arcade, after rescuing Kiki and leaping from the top of the castle, she is then captured again and Kage must defeat the stage boss before beginning a new season. However the NES version features three seasons to complete to reach the ending of the game. Summer ends with Genboh, twin fire breathing monks. Yuki, an evil samurai with twin swords similar to Kage, waits at the end of Autumn. Yoshi, yet another evil samurai, serves as the game's final boss at the end of Winter and functions as a combination of the skills of all enemies from the game. After Yoshi is slain, Kage finally rescues Kiki, until the next game that is. While the character sprites and backgrounds aren't as detailed or colorful as the arcade originals, everything is represented properly and cleanly. Sound effects and music are spot on with the simple soundtrack matching well to a fast action game of this type. While the visual presentation may be simpler than the arcade version, the game feels like it plays tighter and more responsive. The Legend of Kage on the NES is still a challenging game but I tend to have a much smoother time with it than the original arcade release. I'm at a loss as to exactly why this is as the enemy encounter and attack rates seem to be about the same between each. The control is simply just more responsive with tighter jumping control on the NES. Throw in the additional loop and new power ups to find and collect and the lower resolution graphics are more than made up for.

So back to the initial question: Is an NES conversion of a relatively simple and obscure arcade title worth full retail price? To be very honest, I can spend hours upon hours playing The Legend of Kage on the NES. That's not nostalgia talking as while I can distinctly remember the game being covered in magazines and seeing the game on rental shelves back during the NES heyday, I never played it myself until about fifteen years ago. During its original release it just looked too basic and simple for a game I had never played before, even for an arcade conversion. Jumping through trees and throwing shuriken made it look like some low rent clone of Shinobi, which was new to arcades around the time of Kage's NES release. I really didn't care all that much for Shinobi to begin with (and I still don't) so I never bothered with The Legend of Kage. In the late 1990's when I was in high school, a small video store opened in town that actually rented out a small selection of NES games. We're talking NES rentals in 1997 or so, back when pretty much any cartridge could be had for five dollars or less, and for whatever reason we had no problem tossing down two bucks to rent these ten year old video games. A friend of mine had rented their copy of The Legend of Kage as he had fond memories of it from when he was a kid. He talked up the game over a couple lunch periods at school so I finally gave it a try. It took about five minutes for me to figure out the basic gameplay and after that I was hooked. While many other arcade conversions on the NES can get a few plays out of me before I move onto something else, I can play game after game of The Legend of Kage without discontent. It strikes me as the perfect balance between arcade simplicity and arcade challenge with specific goals that must be completed to advance, however it never takes so long to complete those goals that the game wears out its welcome. Some consider The Legend of Kage a lost Taito arcade classic and while I'm undecided on that, the NES version is definitely worth a look if you're interested in a fast action, arcade style adventure.

"InsaneDavid" also covers all types of video gaming at <http://www.classicplastic.net/dvgi>



### Deja Vu

When I was a young gamer, I used to pride myself on getting into the games that a lot of my friends either didn't get, or never had the chance to play. One of these was Déjà Vu, the game I am reviewing today. There was definitely something special to me about this game, so much so that it is still among my favorites to play today. For me, any game that tells a good story is one I will instantly gravitate towards, and this game was a prime example of that. So, with that in mind, let us fire up the NES and play Déjà Vu, a game that, for me, defined my childhood.





## Sound - 9

Déjà vu, in my humble opinion, has one of the most underrated soundtracks of any NES game. The game sounds like something right out of one of those noir movies, or those gangster films from back in the day. The music is catchy and helps put your mind in the time period and overall setting of the game. Sometimes NES games are credited as having some stellar tunes, other times, not so much, but in the case of Déjà vu, while the sound effects aren't terrific, the music more than makes up for that. The intro music still gives me the chills.

## Graphics - 8



What a horrible way to start a Monday

I've always believed that these point and click games for the NES always had some pretty good graphics for an 8-bit title, and Déjà vu is no exception. The objects and settings in the game all fit the time period and really bring the game to life with a nice color scheme. There really aren't any moments in the game when you are wondering what it is you're looking at, which for a game during this time period, is an awesome sight to behold. While I wish you could have actually seen Ace Harding throughout the game, it was still pretty cool to see him at the end.

## Gameplay - 10

I've said it to all my friends, but this game is a hidden jewel in the NES library, and deserves more recognition than it has had over the years. You are in the middle of a mystery, trying to figure out what happened to you, piecing together the puzzle and trying to survive on the streets of Chicago post WWII. You get to gamble in this game, punch thugs, even knock out a woman who is trying to kill you (not that I condone such things). You get to do all of this while figuring out just what happened to you when you woke up in the beginning of the game. This game may not take long for some gamers, but it is enough to keep you busy for a few hours, and finishing the game isn't quite as simple as it looks.

## Overall - 9



This is what will happen if you don't play this game. No, seriously

It took me a while, but through the kindness of a dear best friend, Déjà vu now sits proudly on my shelf. Déjà vu, to me, is even greater than Shadowgate and Uninvited, the two other point and click adventure games for the NES, and I've played all 3. So go ahead gamers, grab yourself a copy and give this game a try. I assure you, you won't regret it.

It was a blast reviewing a game that is so beloved by me, but we have to move on. Tune in next time for the RTM and Retro Junkies approved Turning To Channel 3 when we take a look at another retro classic!

Until then, take care, and remember, GAME ON!



Streets of Rage

The year was 1991. The town was once a happy, peaceful place ...until one day, a powerful secret organization known as SEGA of America took over. This prolific syndicate soon had control over children and even the adults on the block. The town had become a center of quarreling and strife-kids and adults alike fighting for a chance to play a single game.

No one was safe.

Amidst the turmoil, a group of determined young gamers had sworn to clean up the town from selfish gaming and jealousy. Among them were Rob Luther, Landon Long, and Nick DeMarco. They were willing to risk anything ...even their lives so that everyone could play...

*Streets of Rage.*



Streets of Rage's box art is hard to beat!

### Quick Specs

**Publisher:** SEGA of America, Inc.  
**Developer:** SEGA Enterprises Ltd.  
**Released:** September, 1991  
**Platform:** Sega Genesis  
**Genre:** Action, Side-Scrolling

### Rob's History Lesson

Streets of Rage was released for the Sega Genesis in September of 1991 as a definitive answer to Capcom's arcade beat-'em-up Final Fight, which was ported to the Commodore 64, Amiga, Atari ST, and Super Nintendo within the same year. Streets of Rage was designed by Atumiya Seisi, who also designed Revenge of Shinobi, Strider, and House of the Dead III as well as the following two Streets of Rage sequels. Hiroaki Chino (Sonic CD, ESWAT: City Under Siege) and Rascal Fuku-Chain (Formula One World Championship: Beyond the Limit) are both credited with designing Streets of Rage as well.

Streets of Rage was met with very positive reviews in the early 90s. While Sega Pro and Joystick magazine gave Streets of Rage a 96 and 96 out of 100 rating respectively, Sega Power gave it a perfect score of 100-cementing Streets of Rage as one of the very first games to ever earn a perfect score in Sega magazine publication. Due to its huge success on the Sega Genesis/Mega Drive, Streets of Rage was later ported to the Sega Game Gear in 1992 and Sega Master System in 1993.

### Landon's Music Lesson



It's nice to see that Axel plays retro games on the side!

The music in Streets of Rage is unmistakable with a sound all of its own. The composer Yuzo Koshiro has stated that the music has a very dance club influence. Furthermore, Koshiro stated that he was also influenced by R&B as well as hip hop music. If you listen to the music of Street of Rage you can certainly hear these influences and more.

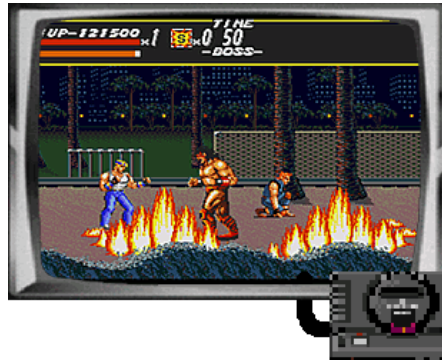
The 1st level music "Fighting in the Street" is a great representation of all the influences that inspired Koshiro in the composition of the game's soundtrack. It has a really catchy bass-line with several techno elements thrown in to serve as percussion. This use of a really solid bass-line with percussion and other electronic/techno is prevalent through the entire game and throughout the Streets of Rage series.

Another track that is a gem is the boss theme music. It has a really solid bass beat with other techno and electronic elements that go from a basic bass beat up to something dramatic. Just when you think the theme is going build up to its crescendo; it totally changes rhythm and tempo from up-beat and fast-paced back down to a slower pace that then loops back into the theme's beginning. This change of tempo is a welcomed change and really makes this theme stand out.

While Koshiro was composing the music for Streets of Rage he stated he was using older hardware and his very own programming language to compose the music. Koshiro was quoted as saying his original language was a mix between BASIC at first that had elements of ASSEMBLY in it.

Streets of Rage has some of the most memorable music in video games. The mixing of different styles of music, coupled with really solid and iconic beats and tempo changes, and the fact that the composer Koshiro created his own language to play this music speaks volumes about how this game not only had graphics and gameplay in mind, but the music as well.

### Nick's Review



Stage Three Boss: Landon Long

Hey folks, Nick DeMarco (Atari Man!) here to shed some light on the actual gameplay aspects of this Genesis classic. Now, truth be told, I did not play this game much growing up, because I did not own a Sega Genesis, playing it mostly at a friend's house, or over a cousin's house now and again. It wasn't until much later in life when I began collecting that I really sat down and appreciated this game for what it was. I feel I offer an interesting outlook on this game because I am not, by any means, a "Genesis guy" (Even though Phil Collins is the bomb!) so I feel I offer an unbiased look at a game that really did help shape the journey the Sega Genesis took in gaming history. I will say that initially this was a very hard thing for me to do, review a game on a system I have little love for (sorry Rob!) but I managed to talk myself into plugging in my Genesis and popping this game in to give you guys my take on it. Here we go!

### Sound: 8

Here's another Nick Fun Fact. One of the main reasons I didn't own a Sega Genesis growing up is because I thought the music on most of the games, while good, just didn't have great sound quality in comparison to the SNES, and yes, most sound effects in Streets Of Rage are somewhat filled with static, or are just downright annoying (the groans of a defeated enemy for sure) but the tracks for the individual levels are very well done, and the main reason I gave the sound in this game such a high score was that awesome (and ominous) boss music. You get done beating down a level of thugs, and all of a sudden the music stops and that tune hits, and you know you're in for a battle. It was definitely unique for its time and I think really helped set the game apart from other brawlers that were out before or during that time.

### Graphics: 9

Obviously a grade this high on a Genesis title (or any other 16-bit title) deserves some explanation. It isn't to say that the graphics in this game are the best on the Genesis, but they are certainly among the best in the beat 'em up genre. For me, I was, and still am impressed by the variety and versatility displayed in this game with graphics. The characters all seem very detailed, and while there's not much in the way of variety, perhaps more than other brawlers of the time period. The bosses were all so different and well designed, and the levels, even now, look beautiful and feel fresh. It's very easy for brawlers to put levels on streets or in warehouses, but in Streets of Rage you're all over the place, even on the beach! I think, with all the punches and kicks in this game, we forget to take a look around and see those awesome level designs, but they're worth pausing a game and admiring, I'd say.



The final showdown with Mr. X

### Gameplay: 7

Now look, this isn't a "Nintendo guy" hating on a Genesis product, but I feel it is logical to judge a game based on how easy it is for someone not familiar with it or the system to grasp it. I can't count how many times I wasted my special (which is still pretty awesome) in the game because I couldn't remember which button did what. Now while that is ultimately my own fault, I'm kind of glad they did away with this during later Streets Of Rage games, because it was annoying, as well as waiting for the whole process to go down. This title also comes with a hearty dose of one of the more frustrating features in brawlers for the time, the cheap hits and with it, poor hit detection. I can never beat this game, and you want to know why? Because every time I swear to the retro gods that I hit that fat jerk who breathes fire, I get knocked down anyway, like I didn't hit the button to punch or kick when I know I did. This happened with regular enemies too, along with them doing their best to get cheap shots in on me when my back was turned to them, and the AI purposely positions enemies behind you while you're wailing away at a wall of them. I know this happens in other brawlers too, but it just felt over the top in this game. Now, all of that being said, Streets of Rage is still a blast to play, with some great characters, enemies too, and it plays in a way that doesn't bore you. The levels aren't too long, the game is pretty generous with pickups and even though I couldn't beat the game, I was still left feeling satisfied. I honestly don't know why the hit detection is so poor sometimes, because the controls are very responsive. I do wish there was a run button though, as characters seem to walk a bit too slow for my liking.

### Overall: 7

Streets of Rage has a lot going for it, great level design, some killer tunes, and some well-drawn out bosses, just to name a few. However, it is also plagued by poor hit detection, cheap shot mania, and some slow moving characters. If I remember reading this right, Streets of Rage was to be a rival to Final Fight. I've played the series of both (which each have 3 for their respective 16-bit systems) and I'm sorry to say, Final Fight is the better game, at least overall. I do feel this is a game every true Genesis collector should have, but for its initial outing, Streets of Rage falls a bit flat for me.



### A DuckTales Remastered Review



Oh yeah. It's on.

I sat there, patiently waiting for it to download. In fact, I was kind of nervous because I had purchased it earlier in the day and all I got was a theme for my PS3 because I guess I was still in that pre-order stage. Still, it wasn't long after that the game was downloaded and installed onto my PS3. For many of us, it has been many years since we've got to play a new DuckTales game, and if you're someone like me, with the cartoons on DVD and the theme song running on your internal playlist in your brain whenever the topic of cartoons from your youth comes into discussion this has felt like the longest time you've had to wait for anything that reminds you of simpler times in your life. Truth be told, I wasn't the biggest fan of the original NES game. I didn't hate it, but it wasn't in my short list of top 10 NES games. I guess in my youth I had a hard time grasping the whole pogo stick/golf type dynamic with the cane. Still, there are definitely some fond memories for me playing the game just the same. Could this new "remastered" DuckTales game bring me the same kind of excitement? The following is only one gamer's opinion, of course.





Go save your money vault from those Beagle Boys, Scrooge.

### Sound: 9

One of the first things you'll notice about this game is the fact that the voices you remember from the original cartoon show have been successfully added to this game, which really helps take this title to the next level just on that to start. In addition, there's a nice mix of revamped versions of the original level music, as well as music for the interface portion of the game and the first level as you're saving your money vault from the Beagle Boys. This game really did a great job on soundtrack alone at bridging the gap between the classic video game and the classic cartoon show. And this is only one aspect of a job well done in that regard.



Yeah, get Launchpad on the horn.

### Graphics: 9

The artwork in this game is really well done. I didn't know how I'd feel about a revamped version of the NES classic, but again, I think developers were smart in that they really honed in on the kind of animation style that both honors classic gaming while giving it a feel like you're right inside the classic cartoon show. The levels are brilliantly designed, but not so over the top you feel overwhelmed by it, and the characters are bright and well designed too. From that original shot of Duckberg you see how much detail went into this game graphically and in the end, it helps continue painting a great picture of what made you fall in love with both the classic game and the cartoon show.



I couldn't find an actual screenshot, sadly. But hey, its the original cartoon!

### Gameplay: 10

One of the big drawbacks of the original NES title was the difficulty of grasping the pogo stick/golf club style of Scrooge's cane. It turned a lot of gamers away back then who just didn't have the time or patience to learn it. Thankfully it feels much easier in this title, more fluid, and I think it makes gamers more willing to give this game a try. The bosses in the game are both original and offer a nice challenge as you progress through the game. There's also the addition of unlocking character portraits and a whole list of things through getting various diamonds as you go through a level. If that isn't enough for you, dear gamer and lover of all things retro, what game allows you to actually dive into Scrooge's money vault and swim around in his gold? Oh yeah, this game does.



Seriously, you need to play this game. Why? Because life is indeed like a hurricane, here in Duckburg. Or is it Duckburg? Eh, whatever.

#### Overall: 9

DuckTales Remastered may be one of the most complete remakes of a classic game as well as a nice homage to a cartoon that really helped shape a lot of childhoods of many gamers out there. You have all the original voices from the cartoon show, all your favorite characters are there, you are really left feeling like you've played a better game than the original as well as stepping right into the cartoon show. While the whole thing of unlocking stuff may drive people bonkers (you can't unlock another level of secrets until you buy the stash above it) but you know you're going to keep going at it until you unlock the whole music level. Speaking of music, the theme is a nice mix of the classic cartoon theme and the NES variation of it. What's that? You loved the Moon Theme? That's there too. The best kind of remakes are those that make you feel the dedication put into it by developers, and it certainly shows in this game. There's certainly a future out there for remakes of classic games, and if DuckTales Remastered is any indication of this future, it's looking pretty bright.

I hope you enjoyed this review. I'll be looking into more reviews of some true classics, so stay tuned for that!

Take care, and remember, **GAME ON!**



Well, have a great Labor Day everyone! If you are looking for something a little different from reading retro gaming articles, try listening to some of the podcasts on [www.theretrojunkies.com](http://www.theretrojunkies.com). There are a ton of good podcasts there and it's been growing daily. The site was only launched 1 1/2 months ago and it's already to over 117 "Gamecasts", which are the retro gaming podcasts. There are podcasts there dedicated to arcades, Atari 2600 games, and more. Considering new podcasts are added every few days, it's a great hangout for all retro gamers out there. It should at least keep you occupied until the next issue of RTM!