entirely by itself, free to use all the available rendering resources. (From an e-mail from Tim Skelly to the author, September 27, 2007.)

At the time of this writing, footage of the game *Speed Freak* being played could be seen in a video clip on YouTube at <http://www.youtube.com/watch?v=syDQ1GEM-s8> (accessed September 27, 2007). The gameplay of many games can be seen in action in videos at video sites like YouTube and Google Video on the Web.

4. Both 1985 and 1986 are given as release dates for *Space Harrier*, which may indicate individual release dates in Japan and North America, respectively.
5. Most of the axonometric projections used are dimetric projections because the grid of pixels used by video game graphics does not allow for smoothly-drawn isometric projections, which require all three axes to be exactly 120 degrees apart; typically a two-to-one ratio of pixels is used in the diagonals of most games. See <http://en.wikipedia.org/wiki/Isometric_projection>.
6. According to the page for *Cyber Sled* at www.klov.com:

   > Because of the large number of polygons in the game and the processing power required, the game also *requires* cooling fans to blow across the game boards. Without these, the game will freeze up, or cease functioning completely. (From <http://www.klov.com/game_detail.php?game_id=7466> accessed on November 8, 2007.)

7. An example of a 1985 prototype can be viewed online at <http://www.youtube.com/watch?v=ab8GMdPFikA> (accessed November 8, 2007).
8. Robert Polevoi, "Lesson 83—3D E-Commerce With MetaStream- Part 3", from his January 5, 2000 column *3-D Animation Workshop*, available online at <http://www.webreference.com/3d/lesson83/part3.html> (accessed November 8, 2007).

CHAPTER 9

Retro Reflexivity

La-Mulana, an 8-Bit Period Piece

BRETT CAMPER

Since its inception, the commercial video game industry has been fundamentally oriented towards the steady "progression" of technology platforms. Along the way, representational aesthetics have largely followed these technical advances. We have moved from one-screen action game classics like Atari's *Missile Command* (1980) and *Centipede* (1982), to side-scrolling platformers borne from the genre-defining *Super Mario Bros.* series (Nintendo, 1985–ongoing), to 3-D first-person shooter franchises like *Half-Life* (Valve, 1998-ongoing) and *Halo* (Bungie, 2001–ongoing). At the same time, childhood gamers have grown up, and a powerful nostalgia for older styles of games has germinated: players in their twenties recall the ground-breaking 2-D titles of the Nintendo Entertainment System (NES), while thirty-somethings remember the thrill of Atari's VCS (also known as the 2600), when broadcasting's monopoly of one-way television ended and millions of households first "brought the arcade home."

Today, the commercial industry is increasingly recognizing this retro market, resuscitating its back catalog of older titles via digital distribution, with dedicated outlets such as Microsoft's Xbox Live Arcade, Nintendo's Virtual Console on the Wii, and the PC-based GameTap subscription service. This in itself is a positive and meaningful development for the medium and business, an explicit recognition (and business legitimization)

of its history. But why stop at re-packaging older titles? Why is it that these older game aesthetics cannot still be relevant today? Why should today's games be driven *only* by today's newest technology? Independent developers outside of the traditional commercial industry have responded with a trend of "retro" styled—but original—video games. By adopting technologically "obsolete" audiovisual conventions for a new generation of games, they display a stylized self-awareness of technologies, aesthetics, and genres, and the underlying relationship between them. Perhaps considered outliers or oddballs when viewed alongside the larger field of commercial (or even many other independent) titles, we find in them the kind of reflexivity that is arguably central to advancing our critical understanding of video games as a medium. From an historical angle, the throwback look and feel of these titles also visually reminds us that today's resurgent momentum for amateur and other non-traditionally produced games—from zeitgeist pop culture websites such as Homestar Runner, to the industry's annual Independent Games Summit—is a return to the roots of the hobbyist "bedroom coder" of the 1980s.

To illustrate, I will take an in-depth look at *La-Mulana*, a puzzle-centric platform-adventure for Windows PCs, created by a Japanese amateur development team called the GR3 Project (now known as Nigoro). Originally written in Japanese and released in 2005, an English version (patched by the fan translation group Aeon Genesis) was completed in early 2007, considerably expanding the game's audience, and bringing with it high critical praise: one reviewer simply said "It's the best game I've played in a year."[1] *La-Mulana* belongs to the subgenre of 2-D platform-based action-adventures, which originated in the 8-bit console era most prominently with the classic *Metroid* (Nintendo, 1986) for Famicom/NES. Unlike a traditional action platformer, the emphasis is on world exploration, with a degree of non-linearity and player discretion. The genre borrows elements of methodical puzzle-solving and incremental character development from adventure and role-playing games, which are traditionally less action-oriented. Several lesser known NES games contributed to the style early on as well, such as Hudson Soft's *Faxanadu* (1989) and *Milon's Secret Castle* (1986), as well as Konami's *The Goonies II* (1987). In the past decade, the *Castlevania* series from Konami has also adopted and advanced the form, from *Symphony of the Night* (1997) on PlayStation, through the recent *Portrait of Ruin* (2006) for the Nintendo DS.

Professor Lemeza is *La-Mulana*'s player-protagonist, an archaeologist explorer reminiscent of Indiana Jones, charting out vast underground ruins in a distant, unspecified corner of the globe. Though the game provides plenty of fierce action and demands a relentless on-guard posture, the player's progression is mostly dependent on the solution of cryptic

Figure 9.1 *La-Mulana* is a 2-D action-adventure in the tradition of *Metroid* and *Castlevania*. Though it was created in 2005, the game uses retro-styled graphics to evoke its 1980s predecessors.

riddles and other challenges of logic (punctuated by customary, punishing "boss battles"). The game employs a familiar "start from zero knowledge" conceit: the player arrives at the ruins with no map and only the vaguest of rumors, setting the stage for the free-roaming, hostile territory common to the genre. *La-Mulana* is an extremely well made title that ranks among the finest in its class, commercial or amateur, past or present—particularly impressive, given that the action-adventure genre is arguably among the greatest of challenges to independent developers, requiring a diverse, multidisciplinary mix of skills. Where many of today's laudable indie titles are action or abstract puzzle games that rest (fairly enough) on one or two clever game mechanics, novel graphical effects, or a well-tuned physics engine, the action-adventure game demands a blend of fictional setting, game mechanics and rules, audiovisuals, and textual exposition on a grander scale and often with a much greater amount of content. *La-Mulana* displays unusual craftsmanship and cohesiveness.

What really sets *La-Mulana* apart, however, is its distinctly recognizable retro visual style, and from the title screen onwards we are treated to a sparse, "8-bit" styling. While *La-Mulana* is in fact an ordinary,

contemporary Windows game without any special technical capabilities (or limitations) of note, it mimics a very specific older game technology: the MSX, an 8-bit home computer popular in Japan in the mid-1980s. This self-stated adoption of the MSX platform makes the game an attractive case study, because it explicitly foregrounds its retro aspirations, while giving us a specific technological rubric by which we can analyze it. Nick Montfort and Ian Bogost have established the approach of *platform studies* as a means of understanding a program's technical basis in context: "the investigation of underlying computing systems and how they enable, constrain, shape and support the creative work that is done on them."[2] The distinct bundles of hardware and software that make up a platform profoundly shape the kinds of games that are (and can be) made for it: 2-D pixel-based systems favor side-scrolling platformers and top-down maps; native support for 3-D polygonal graphics has made the first-person shooter a mainstay; the lighting effects of today's programmable shaders encourage further stylistic distinctions like the shadowy "survival horror" genre.

Though *La-Mulana* is not actually written, compiled, or executed on a real MSX computer, the game's conscious imitation of (as well as dissonance with) that system makes for a degree of platform study by proxy. Below, I mix this mindset with other methods and sources, viewing *La-Mulana* from a wide angle: close technical and gameplay analysis, quotes from the game's developers on their own stated intent for the project, responses from the larger indie community, and comparisons to commercially marketed "retro" offerings.

An "MSX-style" Game

In a sense, *La-Mulana* is an 8-bit "period piece": the creators intentionally position it as an "MSX-style" game, with specific mention of Konami's *Maze of Galious* (1987, also known as *Knightmare II*) as an inspiration. To fully understand the game's aesthetic and cultural references requires some background knowledge of the MSX itself. Although the system was never seriously marketed in the USA, the MSX was a successful platform, particularly in Japan: it sold over 5 million units worldwide, and maintained its relevance alongside the fierce competition of Nintendo's better-known Famicom (branded the Nintendo Entertainment System in the USA); both machines were released in 1983. Notably, the MSX hosted the first titles in significant franchises that have remained strong to this day, including the inaugural *Metal Gear* (Konami, 1987) and *Bomberman* (Hudson Soft, 1983) games.

As a computational platform, the MSX had an unusual genesis: the brainchild of Kazuhiko Nishi, a Microsoft executive at the company's

Figure 9.2 The MSX was a hybrid console-computer, popular in Japan in the mid-1980s. Though it looked much like other personal computers of the time, its standardized cartridge format and graphics acceleration made it attractive to game developers. (Photograph by Paolo Tonon. <http://commons.wikimedia.org/wiki/Image:Canon_V-20_MSX_computer.jpg>. Licensed under Creative Commons Attribution ShareAlike 2.0 (CC-BY-SA)).

Japanese branch, it was an attempt to standardize the nascent PC market by providing clear guidelines for hardware manufacturers. Rather than building or assembling the machine itself, Microsoft instead specified which components third party vendors should use in order to make their computers "MSX compatible." Over fifteen years later, Microsoft would consider the same standards-based approach when planning its Xbox console, before rejecting the idea in favor of keeping production centralized.[3] The MSX was a general-purpose computer rather than a strict game console, but its graphics and sound chips (from Texas Instruments and Yamaha, respectively) provided 2-D hardware acceleration and music capabilities that were lacking on regular PCs. The reliability of standardization made it attractive to game developers, who dominated the machine's software library. In relative technological horsepower, the initial MSX1 was more sophisticated and had a higher pixel resolution and greater graphical variety than predecessors like the Atari VCS 2600 and Intellivision consoles, but lacked some important features of the rival Famicom (such as continuous scrolling). The audiovisual components were later upgraded with the MSX2 specification in 1986; *La-Mulana*'s chief reference point is the MSX1.

Much of *La-Mulana*'s 8-bit aesthetic is tied to its self-imposed graphical

limitations. To start, the native resolution of 256 × 192 pixels is (as we would expect) much less than that of contemporary standards, which deliver 640 × 480 pixels on the low end, with the Xbox 360 and PlayStation 3 consoles supporting far greater detail up to 1920 × 1080 pixels as HD (high definition) television is ushered into more homes. As with most of its technical guidelines, *La-Mulana*'s 256 × 192 resolution matches that of the original MSX1. By default, the game scales up to a full-screen display in Windows, restoring the familiar coarseness of NES (256 × 224) and PC EGA or VGA (320 × 200) era titles. Conveniently, the currently common PC resolution of 1,024 × 768 is four times greater than that of the MSX1 on both axes, allowing *La-Mulana*'s original pixels to be easily blown up to an area 16 times their original size. If desired, the user can also opt to play in a windowed mode—and doing so makes the game so tiny that the vast differences in detail are immediately driven home.

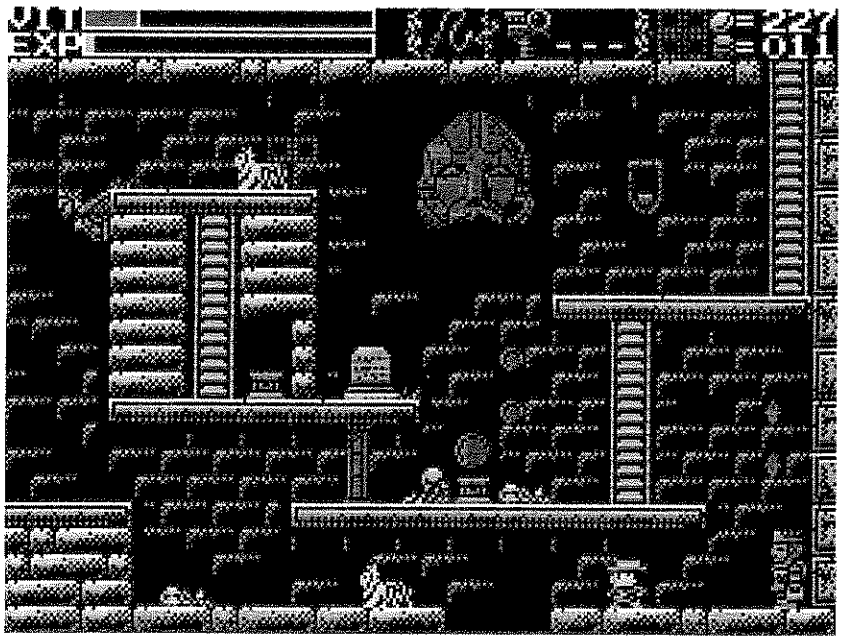
Nonetheless, *La-Mulana*'s graphics are dense enough to depict reasonably recognizable representations of "real-world" objects and environments: from stone statues, to waterfalls, pottery, birds, and skeletons, right down to the player's hat and whip. There is a noticeable increase in fidelity over the stereotypically blocky style of the Atari VCS console, where highly abstract games like *Breakout* (Atari, 1978) and *Kaboom!* (Activision, 1981) were common. For example, Atari's *Adventure* (1979), the progenitor of the entire action-adventure genre, was so visually constrained that it represented the player's character on screen as a simple square, while the sword looked more like an abstract arrow shape. *Pitfall!* (Activision, 1982) is the closest VCS comparison to *La-Mulana* in theme and gameplay, but despite its reputation for pushing the system's graphical limits (pioneering techniques for multi-color sprites), the wide rectangular pixels and severe limitations on the simultaneous display of sprites favor broad splashes of solid, contrasting colors, with each screen literally centered on a single interaction (as the VCS has a technological predisposition to symmetrical environments).

While pixel resolution is arguably an important criterion for a more general concept of retro game style, *La-Mulana*'s particular look actually owes more to its palette, which is limited to a mere 16 colors. Replicating the palette of the MSX1, these run the gamut from gaudy cyan, to neutral brown and gray, to deep primary red; though not a perfect match, US players unfamiliar with the MSX would likely recognize *La-Mulana*'s often jarring juxtapositions as similar to those of PC EGA games (also 16 colors). Because the palette is fixed throughout the game, much of the artistic accomplishment surrounds creatively mixing these 16 colors, using dithering techniques to achieve distinct moods in each of the game's areas: the grassy village outside the ruins, the huge red stone monuments depicting the god-like creatures of the "Giants' Mausoleum," and the faux Egyptian tombs of the "Temple of the Sun."

But where *La-Mulana* ups the ante is in its more subtle adherence to the MSX1's specific limitations on the spatial distribution of colors. The platform's greatest challenge is: upon the background layer, each horizontal segment of eight pixels can only consist of two separate colors. While the specific colors used can be altered from segment to segment, the two-color restriction puts significant "local color pressure" on the visual design, and encourages the use of vertically-stacked bands of horizontal gradients to create a sense of texture or sheen—an effect evident from *La-Mulana*'s title screen logo to its environmental backdrops. Furthermore, while the MSX1 did provide basic support for freestanding sprites (that could be placed anywhere on screen, unlike the fixed location of its background tiles), each sprite graphic is limited to a single color (plus transparency, for a total of two values, or 1-bit-per-pixel). As a result, most of *La-Mulana*'s characters and enemies are flat silhouettes that require the artist to carefully attend to shape and outline. The color palette plays a sometimes subliminal but significant role in establishing a platform's visual style, so *La-Mulana*'s particular 16 colors provide an effective cue of its MSX origins; even the Atari VCS, which generally only allowed four unique colors to be shown per line, still had a far larger palette of 128 overall colors from which those four could be chosen. By contrast, every pixel of every MSX1 program had to be picked from its lonely 16 color palette.

Although my technical focus has been on visual elements, MSX sound is faithfully reproduced as well, in the style of Konami's SCC (Sound Custom Chip), an add-on chip (not part of the MSX's base specifications) that was included with popular cartridge games for the system.[4] Even though the SCC has just 128 bytes of memory, the chip uses wavetables that allow each game to customize the sound samples of its underlying "instruments"; this provided for considerably more variability and texture than the fixed-wave channels (pulse, triangle, white noise, etc.) of competing systems, chiefly the Famicom/NES. (The SCC was still undeniably primitive: the next generation of similarly designed wavetable sound boards, like the Gravis Ultrasound released for PCs in 1992, featured over 2000 times as much memory.)

As players, we do not need to consciously recognize or understand all (or even any) of *La-Mulana*'s specific technological constraints in order to appreciate its aesthetic style, and to intuitively identify it as "8-bit." The MSX's computational similarities to other platforms in the same "family"—the Nintendo Famicom/NES, the Commodore 64, among others—create a wider, more accessible aesthetic and cultural touch-point. The game appears to be attractive to retro-minded players in the USA, for



Figures 9.3 & 9.4 *La-Mulana*'s low-resolution, 16-color graphics follow the conventions of the 8-bit MSX computer, which limited horizontal color variety. Instead, the system favored vertically-stacked bands of solid horizontal colors, seen in the title screen lettering, as well as the ladders and bricks of the in-game graphics.

instance, despite the MSX being almost unheard of in this market. At the same time, a technically-oriented analysis, as I have begun to explore here, can provide deeper insight into the context of both production and reception. *La-Mulana*'s self-assigned and abided rules create such specificity that even without an explicit statement of connection (as the game provides), a devoted MSX fan would likely recognize the visual inspiration purely from the phenomenological experience.

La-Mulana's MSX obsession is far from limited to its in-game look and sound, extending to ancillary materials like the accompanying manual, and even worming its way into much of the storyline and game mechanics. For instance, when the game loads, the deep blue MSX start-up screen is displayed, along with the amount of available video RAM—yet in a passing systems joke, the RAM listed by *La-Mulana* is thousands of times more than a real MSX would have had. Within the game itself, Professor Lemeza's most prized possession is a "portable MSX," described in the game's tongue-in-cheek back-story as a niche, laptop version of the computer created for use by global adventurers. The in-game MSX turns out to be critical: in addition to powering basic functions like the game map, the player can unlock new abilities by finding and buying cartridges strewn throughout the ruins, most of which are named after real MSX games, like Konami's *Comic Bakery* (1984) and *Hyper Rally* (1985). Outside of the game program itself, the developers have crafted a faux MSX instruction booklet and box (presented in HTML form), with cartoonish, pen and ink illustrations of characters, enemies, and items; in keeping with such 1980s era supporting documentation, these analog drawings have a distinctive style, a "printed" monochrome half-tone quality (despite being created digitally) that is wholly separate from the low-res in-game sprites. Functionally, the manual includes detailed descriptions, tables, and hints that are near necessary to deciphering the game—again, congruent to actual 8-bit titles, but deviant from the general trend today that favors interactive tutorials and de-emphasizes external references (as well as aesthetic clashes between intra- and extra-game imagery). As one reviewer aptly put it, *La-Mulana* is a "100-hour love letter to the 'Xbox of 1983'" (ActionButton.net).

An 8-Bit Game with Contemporary Ambitions

As we have seen above, the influence of the MSX is most immediately apparent in the game's visual style and paratextual markers. Yet if we read what the game's developers have to say about their intent, graphics are never explicitly mentioned. Instead the inspiration initiates from gameplay, and more specifically the concept of challenge. *La-Mulana* is a

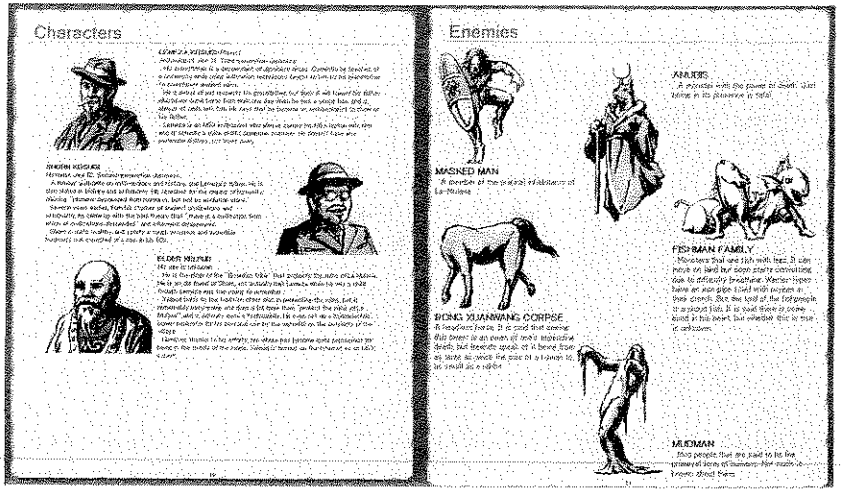


Figure 9.5 *La-Mulana*'s digital manual mimics the pen and ink illustrations of 1980s instruction booklets, with sharply different representational styles for in-game and out-of-game visuals.

deeply difficult game, which the developers describe as a reaction to "the new-style of really easy games," going on to say: "it may be very hard to beat *La-Mulana*. But that's OK. We're looking for those gamers that could in days past defeat Druaga [*The Tower of Druaga*, Namco, 1985], bring the baby back safely from the clutches of Galious [*Maze of Galious*], and seal the Evil Crystal [*Hydlide 3*, T&E Soft, 1987]."[5] There is a two-part supposition here: first of all, that the trend of gameplay in the commercial industry has been from harder to easier; and second of all, that an earlier platform style can reset that clock, triggering an association with those older, harder games, and the set of gameplay expectations that come with them. The evocation of 8-bit gameplay is at least as important as, if not more so, than that of 8-bit graphics. And the developers have bent over backwards to categorically associate the game with the long defunct MSX platform because they believe the two are intrinsically linked.

All of this is to say that the technological artifacts of the MSX are stamped not only upon *La-Mulana*'s visuals and sound, but also its gameplay, and within its world we can see how certain technological methods of aesthetic presentation correspond to particular gameplay mechanics or styles of interaction. The MSX-adopted limitations on pixel configuration and color distribution create graphics that are highly repetitive within each area of the game world. But rather than attempting to "overcome" this, the game naturally orients itself in this direction. In the tradition of the Atari VCS *Adventure*, many of *La-Mulana*'s underground rooms are very similarly templated, with slight variations that create a sense of labyrinthine confusion. Distinguishing between these rooms is a key challenge—it is a designed psychological task of gameplay, a simple visual example of the developers' overarching intent to make you slow down, take your time, and carefully observe your surroundings. As the designers chide:

> You can proceed however you like, but if you solve riddles and don't pay attention to how the ruins change accordingly, that's not very archaeologist-like! . . . Try not to miss changes in the ruins, things that seem out of place, or strange mechanisms just because you didn't look them over carefully enough! (Instruction manual)

The MSX1 did not have hardware support for the smooth scrolling of background images. Following this cue, *La-Mulana*'s world space is displayed as a vast series of contiguous (rather than continuous) single-screen areas, similar to *Adventure* (the first game to use such a method) and *Pitfall!* or (on the Famicom/NES) the first *Legend of Zelda* game (Nintendo, 1986). Quick, chunky scrolling transitions show one area sliding into the next each time the player reaches a screen edge (again, consistent with the MSX's ability to shift the entire background map one complete 8-pixel-wide tile at a time—too little resolution to depict precise player-driven movement, but sufficient for a pre-calculated visual effect).

As is typical of this mode of spatial representation and era of 1980s gameplay, non-player characters or enemies are confined to the area of their own local screen, and they will not follow the player across screens. Action scenarios are choreographed around specific, partially predetermined "room" setups, with pseudo-random elements introduced through techniques such as multiple potential enemy spawn points. Such containment is convenient to the MSX's limit of 32 total simultaneous sprites (with a maximum of four allowed per line of pixels); juggling the display of an indeterminate number of characters across a free-roaming world composed of hundreds of screens would be atypical for the machine (even if it might be possible). Continuous action is therefore de-emphasized to some degree. Though the game does require complex execution of real-time actions (many of them quite challenging), a reconnaissance style of exploration is enabled by both the ability to escape local battles by leaving the room, and through the Grail, an item acquired early in the game which allows the player to warp instantaneously to a handful of key checkpoints. In another technique borrowed from 8-bit classics, many puzzles depend

on "clearing the room"—defeating all enemies in the immediate vicinity—in order to trigger events or reveal items.

The room system provides for a good blend of action and thought-focused riddles. In the level known as the "Giants' Mausoleum," for example, large inanimate statues are scattered throughout the individual rooms. On first glance, the figures appear mostly to be decorative backgrounds, the subjects of the epic but fragmentary mythology that is scrawled upon the ruins' ancient tablets. By the time the player discovers that accomplishments in one room may alter the pose of a statue in another (offering a visual clue to yet another riddle in turn), the need for careful self-documentation of the surrounding behavior is apparent. In fact, the game's translators even advise taking sequential screenshots (using extra-game utilities) of rooms and tablets as an aid to deducing one's progress.[6] It is a strategy reminiscent of the 8-bit adventure game tradition encouraging (sometimes requiring) the player to create hand-drawn maps of the game world, with a twist that suggests the play-style of recent "camera"-based games, in which visual evidence is gathered directly from within the game world itself (such as *Fatal Frame*, Tecmo, 2001, or *Dead Rising*, Capcom, 2006).

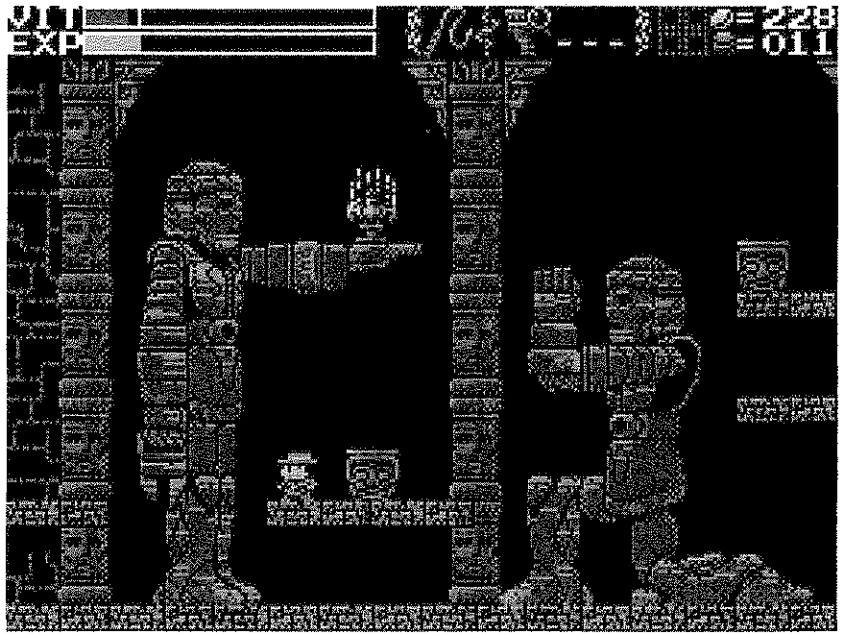


Figure 9.6 Players must pay close attention to the poses of the statues in the Giants' Mausoleum. Completing a puzzle in one room may subtly alter a statue in another.

We could also see the choice of 8-bit visuals as an expression of Jesper Juul's argument that less graphical representation of a game world tends to correspond to a greater awareness of the functional rules of that world.[7] On a formal (rather than visually aesthetic or culturally nostalgic) level, we could imagine *La-Mulana* dispensing with the lushly-rendered background images that appear in 16- and 32-bit platformers because (theoretically speaking) they are extraneous to those games' rule sets, and therefore part of an "optional world" that is unnecessary to gameplay. The stripped down graphics force the player's attention onto action and function over strict fidelity of representation. *La-Mulana* also teases the player with this expectation, playing with the established 2-D platform game conventions of non-interactive backgrounds that have no bearing on the game world state, and thus do not require significant active attention.

La-Mulana's designers have consciously aimed for a style of play that does not simply replicate its classical models, but adapts and evolves them. Recounting their development and play-testing process, they describe an initially vague but continually nagging self-recognition that while they worked ever more to match the source of their inspiration, a sense of satisfaction did not follow, even in their success. Coming to a moment of design crisis midway through, they concluded that "in the end, what we had was nothing but a cheap *Maze of Galious* knockoff" (Instruction manual). Their response, interestingly, was a direct attempt to inject contemporary (that is, current platform generation) gameplay trends into their design: they "wondered if it might not be possible to incorporate the sense of tension in newer games like [the] *Metal Gear* [*Solid* series, Konami, 1998–ongoing]" (Instruction manual). What they pivoted towards was a design best described as contemplative. They describe this philosophy as follows:

> We tried to make it so that people wouldn't get hopelessly stuck everywhere, but if you just whack walls at random without thinking you'll die. If you think "Ooh, a treasure!" and run charging toward it without thinking, you'll die. If you just operate a mechanism without thinking about how it works, you may end up not ever being able to get a specific item. If you think "I'm trapped! I'm going to warp out!" and do so, you won't be able to get back into that room from the outside. Once you do finally manage to find your way back in, you may be confronted with an even more obnoxious mechanism to overcome than before. If you make enough big mistakes it will even become quite tough to complete the game. (Instruction manual)

The design demands self-regulated pacing and patience from the player. One of the most commented upon aspects from new players is its difficulty at the outset: initially, players cannot save their progress (until they have

purchased the Game Master MSX ROM), cannot read the ancient tablets that contain the majority of clues to the game's riddles (until they have acquired the Hand Scanner accessory which translates this text), and even assuming one did manage to successfully solve a puzzle under these conditions, they would not receive any positive feedback or encouragement alerting them to this fact (until finding the Shell Horn, which sounds a note each time an action is completed). Many of the basic scaffolding capabilities that players have come to expect are noticeably and intentionally absent. To sum up: "we decided to put in the fear of death" in *La-Mulana*.

While it would be inaccurate to call this design style more "realistic," the game's stark beginning does set the tone that a different set of expectations are at play. The archaeological fictional setting—exotic and adventurous on its face, yet clichéd and humdrum as a game trope—is to be taken seriously this time around. Rather than an exaggeration or parody of its forebearers, it is more accurately a re-doubling and intensification. Above all is a demand towards logical contemplation ("What would I do in this situation?"), and away from the immediacy of combat-oriented action. The latter is positioned as an ever-present threat to be deflected, rather than as an end in and of itself (the handful of culminating boss battles possibly aside). One parallel would be to see the designers as bringing the game world's emphasis more into line with related pop culture archaeologist-heroes of other media, from early examples like H. Rider Haggard's late nineteenth century pulp paperbacks, chronicling the adventures of the Englishman Allan Quartermain, to the best-known example on the big screen, Indiana Jones. As standard-bearers of the "thinking" action hero, these protagonists are apt models for *La-Mulana*'s dependence on observation and intellectualism, remaining firmly embedded in an action framework.

As *La-Mulana*'s particular subgenre of 2-D platform-adventure has seen a recent resurgence of critical interest, its roots are undergoing a reappraisal. *La-Mulana* has fared well in the comparison:

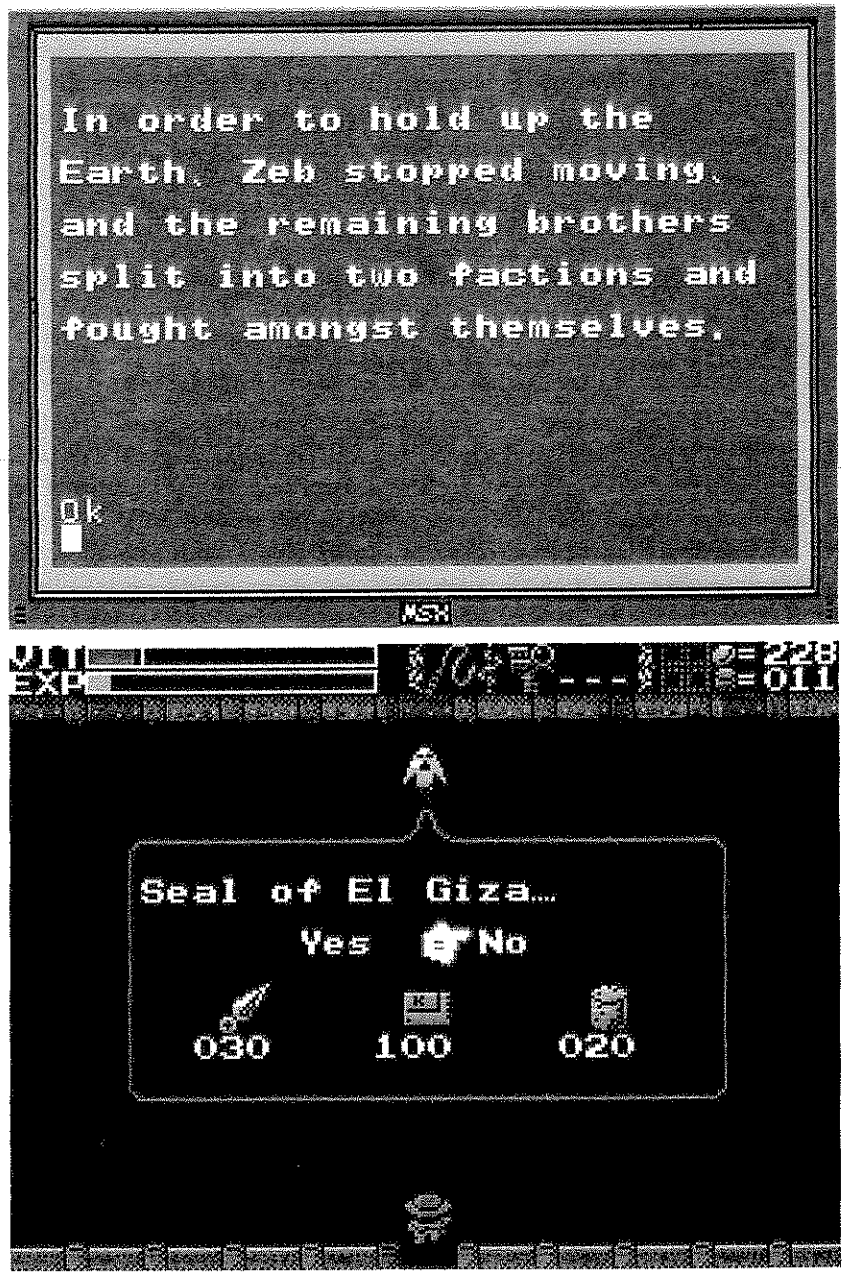
> [S]omehow, *La-Mulana* manages to avoid the clunky presentation and gameplay which has aged the real 1980s games so dramatically. Operating without real 8-bit constraints, the developers have made an 8-bit game with modern ambition. It makes me want to throw away my next-gen devices, but at the same time it is richer and more satisfying than any game I could find for an emulator. *La-Mulana* is deeper and more complicated than any other game with 16-colour graphics, though it is never inaccessible or obtuse. It is exceedingly difficult without ever feeling arbitrary. (ActionButton.net)

Difficulty may be central to *La-Mulana*'s charter, but it is a challenge built on clarity of presentation and logic, rather than the charge of obscurity often leveled at similarly large, non-linear 8-bit worlds. For instance, while the NES action-platformer *Milon's Secret Castle* (1986) could be considered a progenitor of *La-Mulana*, it is anything but logical; a recent stream-of-consciousness review by journalist Kyle Orland began and ended in frustration:

> I get hit by one enemy four times in rapid succession and it's game over. What the hell!
>
> I know games were harder back then, but DAMN!
>
> . . .
>
> Starting over, I kill an enemy and he turns into an umbrella that floats away before I can grab it. Now that's good design.
>
> . . .
>
> [A]pparently shooting a bubble in JUST the right spot in the upper right corner uncovers a door out. Intuitive![8]

While the comments may be sarcastic, they underscore the fundamental lack of cause-and-effect seen in many games of the period, even those which innovated in other ways (in this case, non-linear world design). While the objections raised about *Faxanadu* (1989, NES) by Jeremy Parish are less derogatory, they go to the heart of the issue: "there's a certain element of abstraction to the whole thing—vaguely-translated objectives, unexplained item effects, a bit of trial-and-error—but do recall that this is the 8-bit era we're talking about."[9] *La-Mulana* aims to correct these flaws and evolve past them by adopting the 8-bit form; thus its design began grounded in nostalgia, but ended up driven by critique.

Finally, from a perspective beyond direct design, we also ought to remind ourselves of the changed nature of global communications today, two decades after the MSX and NES heyday: *La-Mulana* is blessed with an excellent English translation that was done entirely by dedicated fans. The game's English text is clearer than that in a great number of Japanese commercial games of the 1980s. Such quality is crucial to understanding its complex system of logic and riddles, and the title's appeal outside of Japan would be severely limited without it—a fate many of its 1980s predecessors endured in the USA. Further mitigating its difficulty, an exhaustive series of walkthrough videos (comprised of 89 individual segments) appears on YouTube (again courtesy of a fan). These tutorials can be especially helpful in starting the game, and as of January 2008 the opening episode had garnered over 15,000 views.[10] *La-Mulana* was designed in a far more advanced (and commercially independent) environment of cross-cultural reception.



Figures 9.7 & 9.8 Despite their amateur origins, *La-Mulana*'s textual riddles and conversations are better translated and more intelligible than their professional predecessors from the 1980s.

Platform Remediation

La-Mulana is only one example in a host of indie games that consciously adopt a "chunky pixel" aesthetic, and the technique has emerged as a clearly identifiable trend. In a recent interview Phil Fish, an independent game developer as well as a level designer in the commercial industry, ruminated on the roots of the pixel's nostalgic attraction by way of other lo-fi media:

> I'm playing *Mass Effect* [Bioware, 2007] these days. It's incredible, the game is all shiny HD [high definition] graphics, and yet it has a MOVIE GRAIN FILTER! This pure, sharp 100% digital image gets all fuzzied up with a thick grain. And for what? To get that 70s feel. To give it that warmth that a pure, sharp 100% digital image so completely lacks. And it's so wonderful. It fits the game's aesthetic perfectly. It hides all sorts of little imperfections and just makes it all that much cooler. I like it better like that for the same reasons I prefer a fuzzy drowned-in-noise Jesus and Mary Chain guitar to some contemporary over-produced Pro Tools crap: for the warmth. Like Vinyl [vs.] CD. I think pixels have reached that status.[11]

What Fish is describing in the vernacular is a phenomenon that media theorists Bolter and Grusin call *remediation*.[12] As particular media technologies mature, we become comfortable with them and the artifacts that they bring to representation—the grain on celluloid film-stock that began as a barrier to capturing the "true" image ceases to be seen as noise, and instead becomes a hallmark of authenticity. The aesthetic becomes detached from the necessity of the technology. This kind of cross-over is a longstanding trope of media development: for example, in the late 1880s adherents of Pictorialism, one of the dominant movements in early photography, strove for soft focus and lighting in an attempt to make their photographs appear like paintings. In a train of thought paradoxical to today's concept of "photorealism," paintings simply felt more natural to pictorialists than did the unfamiliar harshness of unfiltered photography.

Games are no stranger to remediation. As 3-D game technologies advanced in the mid-1990s (most notably on the PC and Sony's PlayStation console), graphics programmers looked for ways to bring an aura of "realism" to their images. One effect they often used was the "lens flare," the blinding white starbursts and concentric rings that form when an optical lens catches a bright light source. These were especially popular in leading titles with urban settings, like *Gran Turismo 3 A-Spec* (SCEA, 2001) and *Grand Theft Auto: Vice City* (Rockstar Games, 2002). For a while, lens flares were the game graphics state of the art, part of the ecosystem, from

the evaluative criteria of game reviewers to the selling points of third-party game engine licensers. The irony, of course, is that lens flares are the artifacts of curvature in physical optics, an old media signature injected into the new for legitimization. As with film grain, the lens flare no longer obscures the image, but instead has been integrated into its definition. Similarly, Fish's enthusiasm for *Mass Effect*'s film grain emerges from the dialectic of Bolter and Grusin's "double logic of remediation": an ideal of immediacy—the "pure, sharp 100% digital image"—mitigated by hypermediacy, the awareness and exploitation of a medium's artificiality. The unreality of one medium helps to make the other feel subjectively "real."

Remediation also happens "locally": as a medium evolves, its earlier stages begin to be remediated within it. The emphasis on legitimization or realism fades, and remediation drifts from a fallback to a conscious stylistic choice, a tactic for evoking and re-interpreting the medium's past, an expert vehicle for the homage, the parody, or the genre revival. This is where remediation meets retro. The technique is relatively new to gaming, but it is richly developed in other media like film and music. For example, in the film *Pleasantville* (Gary Ross, 1998), two present-day teenagers are transported into a black and white, suburban 1950s-style alternate reality. The monochrome presentation of the world evokes its mid-century American naïveté, and as viewers we understand this connection because of our familiarity with actual television shows of that period. The original, technical requirement of black and white film and broadcasting is long gone, but in our historical memory it is closely associated with the content it represented. The twin sociological and technological transitions of the past five decades become the backbone of the film's symbolism: as elements of 1990s modernism slowly seep into 1950s innocence, the world is literally colorized, one character, building, and flower at a time. *La-Mulana* extends this logic from film hardware to game hardware: it is an MSX *platform remediation*, and as we have seen, evocation through technological aesthetics is similarly central to its origins.

But in terms of both aesthetic presentation and formal ambitions, perhaps a more apt film comparison than *Pleasantville* would be avant-garde film-maker Guy Maddin's *The Saddest Music in the World* (2003). Shot in a varying pastiche of early film tropes, including black and white (with some color sequences), heavy film grain, and fuzzy iris lens-induced edges, the plot centers on a bizarre musical competition set in 1930s Winnipeg, and "evokes Busby Berkeley musicals, silent melodramas and Depression-era studio fantasies of wealth, romance, and intrigue."[13] Most notably, a shock of temporal displacement marks the critical reception of both *Saddest Music* and *La-Mulana*, with reviewers in each case expressing the disorienting (and undeniably striking) simultaneity of a technologically dated presentation paired with a contemporary sensibility:

> *La-Mulana*: "You get the feeling that the history of video games went awry about 20 years ago, and that *La-Mulana* somehow came to us through a wormhole from a beautiful parallel universe." (ActionButton.net)
> *Saddest Music*: "[S]eems to pop out of an otherworldly time capsule. It is a tribute to, and a sendup of, old movies that never quite existed. . . . delving into a past that never was to prophesy an alternative vision of the future of movies." (Scott)

That the retro mode created by the remediation of *La-Mulana* and *The Saddest Music in the World* is expressed in science fiction or mystical terms of "time travel" belies the degree to which we historicize the aesthetics of our technologies. This notion of generative retro views the past neither reverently nor quaintly, but instead, as Elizabeth Guffey says, with an "unsentimental nostalgia."[14] Retro is delineated from the more classical form of revivalism, which while taking great pleasure in the past nonetheless considered it from a detached perspective, as a "completed" protocol rather than as a still viable branch of evolution. This retro strategy is to mix up recognizable components of past aesthetic styles and genres, reassembling them into previously unseen forms.

From these examples, we see retro as a unique subset of artistic inspiration and influence: retro carries with it a source of *discontinuous* influence, resemblance coupled with temporal distance. This is distinct from the more generally incremental nature of game design, such as the step-by-step evolution of the "matching tile" puzzle game genre over more than 20 years, traced by Jesper Juul from *Chain Shot!* (Kuniaki Moribe, 1985), to *Dr. Mario* (Nintendo, 1990), to *Bejeweled* (PopCap Games, 2001).[15] Retro media, on the other hand, is not that which innovates upon its direct parents, but rather those ancestors which are unequivocally "outdated." Of course, the determination of currency vs. obsolescence is itself imprecise and up for debate. But broadly speaking, creative industries that are structured upon cyclical change have a particular predilection to retro as phenomenon and rhetoric. This is no doubt why fashion was at the center of the term's establishment by 1970s French critics (Guffey, 14). Gaming hardware may not be quite as pliable as fabrics and colors, but the break-neck leapfrogging of technology and periodic turnover of game consoles provides a built-in obsolescence that almost guarantees the emergence of retro gaming. The aesthetic potential of a game platform is only beginning to be understood by the time it is discontinued commercially.

Beyond Commercial Conservatism

A comparison to the field of titles marketed by the commercial game industry under a "retro" moniker can help to further contextualize *La-Mulana*'s distinct approach and originality. Generally speaking, there are two forms that currently dominate commercial retro gaming: emulation, and remakes. Today, the commercial emulation product with the most exposure is probably the Nintendo Wii's Virtual Console. This service allows players to purchase individual titles that originally appeared on older game platforms of the 8-bit and 16-bit families (and beyond), including Nintendo's own systems (the NES, Super NES, and Nintendo 64), as well as those of past rivals such as Sega's Master System and Genesis, NEC's TurboGrafx-16, and even the MSX itself (available only to Japanese Virtual Console customers). Games on Virtual Console range from $5 to $10 apiece, and the service has been widely successful, generating $33 million on sales of 7.8 million titles in its first two years of availability.[16]

The games on Virtual Console are emulated, which means that even though the game program is "hosted" for the player on the contemporary Wii platform, the original game code is maintained, running via an intermediary program (an emulator) that simulates the CPU, graphics chips, and other computational functions of the original platform for which it was compiled. In this sense, emulation attempts to re-create the "real experience" of particular classic games. Because the game's code is the same, its rules and mechanics are identical to the original, and it should (theoretically) respond to player input in exactly the same way. In most cases, the graphical pixels of 2-D games are also accurately preserved. Of course, emulation never produces a true replica of a native platform: input devices with differing material qualities and control layouts affect the player's physical interaction; the need to up-scale graphics for display on higher resolution screens alters the quality of their appearance, and so on. And emulators can consciously introduce new capabilities to the platform as well, such as the Wii's ability to instantly suspend or "save state" at any point during play (rather than relying on the individual game's own save mechanisms), increasing convenience and easing the difficulty level. (However, it is worth noting that unlike more flexible emulators, the Virtual Console does not allow the player to save several states individually, instead providing for only one state to be saved at a time—in other words, a global "pause" button rather than a "rewind" function.)

An important distinction of philosophy and operation is that while emulation actually *enacts* a platform at the computational level, *La-Mulana* selectively *imitates* the platform's aesthetic hallmarks as a vehicle for stylization. *La-Mulana*'s developers may have carefully followed the MSX1's most immediately visible properties (such as resolution, palette selection, and spatial color distribution), but there are many technical aspects of the platform that are not adopted or enforced. These include fundamental low-level structural elements, such as the maximum addressable memory space, or the lack of a linear frame-buffer representation for the video display—often significant hurdles to programmers writing real-time graphics code on an actual MSX. And while these limitations could be dealt with through skilled coding, *La-Mulana*'s programmers, developing on the much more "friendly" and flexible environment of the modern Windows-compatible PC, were able to conveniently skip these challenges, and instead implement only those ultimately resulting visual artifacts which they deemed relevant and necessary to their goal of aesthetic association. In some circumstances, such differences in the production process may not be detectable to the player at all. Yet in other cases, *La-Mulana* does flaunt some MSX1 specs, bending the color distribution rules for the player sprite of Professor Lemeza (adding a thin black outline to make the character more legible), and ignoring the flicker caused by more than four simultaneous sprites per line. It is possible that the extra color employed for the player sprite might be achievable on the MSX1 through multi-sprite overlay techniques (in which two sprites are stacked upon one another) or other tricks. But *La-Mulana*'s pixel artist gave himself the benefit of the doubt, and left us with a hypothetical question.

Microsoft's Xbox Live Arcade (XBLA), the downloadable game arm of the Xbox 360 console, is an illuminating contrast of a different sort. Unlike the Virtual Console, XBLA is not an exclusively retro service, and contemporary original titles are featured alongside classic games of the 1980s and 1990s. Nonetheless, a significant portion of the catalog is comprised of older titles, including many of its bestselling games in 2007, such as the *Teenage Mutant Ninja Turtles* arcade game (Konami, 1989), and *Castlevania: Symphony of the Night* (1997, PlayStation).[17] While the retro appeal of the two services is similarly title-nostalgia-centric, XBLA's retro strategy is not based purely on emulation of existing code and audiovisuals. Instead, many titles are offered as remakes (also known as ports) that have been rebuilt for the Xbox 360 from the ground up, incorporating all-new "enhanced" graphics that leave behind low-res pixels in favor of a visual aesthetic more in-line with today's mainstream commercial games. Sometimes this means a new set of high-resolution 2-D images that aim to preserve the stylistic spirit of the original, such as with *Yie Ar Kung-Fu*'s (Konami, 1985 [2007]) self-proclaimed "stunning hand-painted models and backgrounds."[18] In other cases like *Jetpac Refuelled* (Microsoft Game Studios, 2007) and *Prince of Persia Classic* (Ubisoft, 2007), the hand-drawn 2-D sprites have been replaced entirely with renderings of 3-D models.

While maintaining the look of older games is a basic assumption on Nintendo's Virtual Console, there is no such preference for historical fidelity in these XBLA titles. (It should be noted however, that not all XBLA classics feature altered graphics; some of the lesser known titles like *Cyberball 2072* (Midway, 1988 [2007]) and *Root Beer Tapper* (Midway, 1983 [2007])—those which would most likely attract a smaller niche nostalgia crowd—retain the original visuals, and most of the enhanced titles still offer this option as well.) On the contrary, from a marketing standpoint, the shift in representational modes of these "re-skinned" remakes is an unequivocal attraction unrelated to their nostalgic authenticity:

> *Jetpac Refuelled*: "The completely updated graphical look of the game gives you a truly hi-def and in-depth gaming experience."[19]
>
> *Prince of Persia Classic*: "This new version features updated character designs, animations, visuals, and lighting effects, all transforming the game into a fresh, close to 3-dimensional look."[20]

In many regards, Virtual Console and XBLA are both valuable and popular services that regard classic gaming seriously not only as a commercial enterprise, but also as an important element of game culture. And both have made interesting contributions to the nascent field of retro gaming: XBLA adds a layer of community-oriented features on top of its classic remakes, taking advantage of a networked environment to offer online play (a novelty for titles of the 1980s), leader boards (top scores that can be viewed by players across the world), and "achievements" (game-specific goals that display accolades on a player's online profile, creating a framework for comparison across disparate titles). On Virtual Console, Nintendo has ventured beyond the strict nostalgia market by offering games like *Battle Lode Runner* (Hudson Soft), a 1993 title for the PC Engine (the Japanese market name for the TurboGrafx-16) that was previously unreleased in the USA. Yet when we pull back to a larger perspective, both services are also fundamentally conservative because they are focused on recycling existing game designs (or in more business-oriented terms, their goal is to maximize existing intellectual property (IP) value through re-packaging). Virtual Console is at best about preservation. XBLA recognizes the opportunity to re-contextualize retro games in new ways that resonate with today's gamers, but adopts the predominant, self-sure industry view that technology is the path to improvement: it is time to dust off those old neglected games and bring them up to snuff. Both are based on title-specific (sometimes franchise-specific) nostalgia, intended to attract players by evoking childhood memories of particular games.

La-Mulana's MSX platform remediation turns this notion inside-out. Nostalgia still plays a key role, but the focus is shifted from specific game content—recognizable characters, trademark game mechanics, worlds, or storylines—to the more abstract concept of platform-centric nostalgia. *La-Mulana* could be called an anti-XBLA game: rather than arranging contemporary technologies around a kernel of historical gameplay, its developers have flipped the proposition, creating an original title that is driven by the aesthetic guidelines of past technological constraints. Both approaches are viable, and the comparison is theoretically interesting because it helps us to examine the interdependence between alternating formal, historical, and technological game elements—and the effects of changing one, but not the others. The commercial view of retro as a hobby of collecting things is certainly a commonly accepted one outside and irrespective of games; it is popularly expressed in trends such as "vintage" clothing at thrift stores, or 1960s plastic and glass furniture at higher-end boutiques. But *La-Mulana* is a more transformative interpretation: like the best retro precedents, the game "challenges positivist views of technology, industry, and, most of all, of progress itself" (Guffey, 13).

Indie Retro: The Stylistic Traces of Materiality

La-Mulana has been my primary example of this "indie retro" trend in part because it is such an excellent game, but also because it is so well-defined in its approach to technology and genre. But the phenomenon is fast-growing, and there are many creative indie games that employ the platform remediation calling card to varying degrees, with styles that span the past 20 years; new specimens appear weekly on blogs like The Independent Gaming Source, and IndieGames.com: The Weblog. The tongue-in-cheek *Shotgun Ninja* (2008), for instance, is a fast, precision action platformer that borrows its 16 color palette and oblong-shaped pixels from the Commodore 64 (C64), the beloved 8-bit home computer (far more popular worldwide than the MSX, in fact, with roughly six times as many sales). Designed by Jonatan Söderström, a prolific Swedish indie developer known online as Cactus (creator of the Independent Games Festival 2008 finalist *Clean Asia* (2007)), the game is both clearly inspired by the C64—the executable filename is c64ninja.exe—and also blatantly at odds with it: the C64's pixels were similarly rectangular, but they were fat, horizontal rectangles (at 160 × 200 resolution), while *Shotgun Ninja*'s are tall and thin (with an effectively 320 × 120 screen). It is the kind of mismatched, technical mash-up found in Maddin's *The Saddest Music in the World*, which caught reviewer A. O. Scott off guard with its silent film-era visuals acting as vehicle for a heavily vocal musical.

Another commercially abandoned genre that maintains a strong indie

following are "shmups," shoot-'em-ups in the style of classic 2-D scrolling shooters such as *Gradius* (Konami, 1985) and *R-Type* (Irem, 1987), in which the player usually controls a "ship," navigating complex patterns of "bullets." While there are a dizzying number of indie shmups of all technological stripes (2-D and 3-D), *HoneyBlaster* (LowFuel, 2007, featuring a honeybee theme) and *Guxt* (Pixel, 2007, with a more genre-traditional aircraft) are two that employ a monochrome gradient look. They mimic the washed-out colors and ghosting artifacts of primitive, unlit LCD screens, such as those found on the original handheld Game Boy platform (released 1989). Moreover, their pixel resolutions are even lower than *La-Mulana* (120 × 160 and 160 × 100, respectively). *Beluga Mk II* (T. Matsushima, 2008) takes a different approach: a horizontal shooter with an astronaut protagonist, it has a four-color palette of bright, fully-saturated green, blue, red, and yellow, and uses an unusual fuzz filter that gives the graphics a blur and bleed strongly reminiscent of 1980s CRT (cathode ray tube) televisions. Each of these games is notable in foregrounding the physical effects of earlier display technologies, going beyond the aspects of color and pixel resolution governed by CPUs and graphics chips to embrace the optical properties of the screen itself. *Beluga Mk II* recalls a childhood spent 12 inches from the TV screen.

In the indie retro titles above, platform association is evoked vaguely, but not as a priority. *La-Mulana* is still rare in its explicit coupling to a specific platform, and this has made it a focused example—a more common strategy is to cherry-pick 8-bit hallmarks without aiming to re-create a holistic platform aesthetic. *Beluga Mk II* cheerfully proclaims "FOUR COLORS SYSTEM" and "8BITS COLOR COMPUTER" on its load screen, but targets no particular brand of console or home computer. The inspiration is not limited to computers of the 1980s though, either. *Cave Story* (a widely used English translation of the original Japanese title, *Doukutsu Monogatari*) (Pixel, 2005) is an action-adventure platformer that shares many genre qualities with *La-Mulana*, and garnered extensive gaming press following its release in 2005 (rare for an indie title, then and now). Its technological aesthetic is a "16-bit" analog to *La-Mulana*'s 8-bit MSX, with a full 256 color palette, higher 320 × 240 resolution, smooth high-speed scrolling including parallax background layers, and hundreds of sprites across a continuous multi-screen space, suggesting the era of the Super NES and Genesis consoles. *Cave Story*'s lush backgrounds and detailed characters recall Hayao Miyazaki's Studio Ghibli films such as *My Neighbor Totoro* (1988) and *Princess Mononoke* (1997)—the game's graphics are key to its personality and mood, and the endearing characters that make its story come to life simply could not be created under *La-Mulana*'s 8-bit conditions.

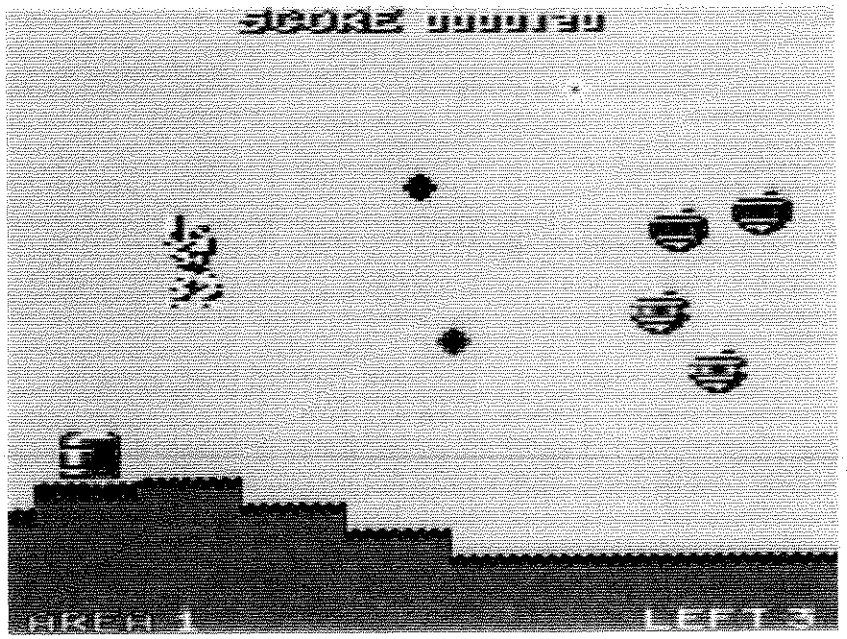


Figure 9.9 *Beluga Mk II* evokes a fuzzy Cathode Ray Tube television with its blurry and cheerfully bright blue, green, red, and yellow colors.

In theoretical terms, there is nothing about this game design strategy that makes it *inherent* (or limited) to independent producers. And encouragingly, we can find small pockets of the commercial industry where such a style is possible: notably, *Game Center CX* (Namco Bandai, 2007) for the Nintendo DS, a clever retro game inspired by a popular Japanese television show of the same name. In the TV series, the comedian Shinya Arino plays (and often completes) games from the 8 and 16-bit eras, his progress charted in a reality show format. The DS game is an outlandish adaptation in which you play as an elementary school-aged gamer, taking on short (but not mini) 8-bit-style games in the most popular console genres of the 1980s, including shmups, platformers, top-down racing, and even an RPG. As with the indie games discussed so far, *Game Center CX*'s "faux retrogames" (as Chris Kohler describes them[21]) are carefully-crafted throwbacks through and through, from their look to their gameplay (in this case the NES is the clearest platform of reference). But its most impressive twist, reminiscent of *La-Mulana*'s extensive (and crucially helpful) 1980s-era instruction manual, is the inclusion of an overarching meta-game that requires the player to peruse fake magazines (in-game, on the DS screen itself), seeking out hints and cheat codes necessary for

completing specific challenges—like "Clear Floor 4 without losing a single life"—within each sub-game (Kohler). As is *La-Mulana*'s aim, this last structural element ties contemporary influence (think Xbox Live's achievements) back into a firm retro grounding, commenting on gaming's history in parallel.

Yet *Game Center CX*'s retro creativity is still very much a commercial exception. On the whole, indie developers have considerably more freedom to play with our aesthetic expectations. Without the same financial pressure or corporate structures, they are able to push game genres, platforms, interfaces, and audiovisuals into unusual (sometimes unintended or counterintuitive) territory, presenting juxtapositions that might be commercially risky, unviable, or illogical. Neither are they bound by traditional development cycles—indie designers like Cactus often complete games from start to finish in under three days, a radical, one-off approach far beyond even the most progressive forms of rapid prototyping employed by commercial development houses. Indie retro creates a new field of production, maturing the medium of video games by moving off-axis from commercial concerns.

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