SuperKidFighter CDL

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Children as Tactical Media Participants

Critical Art Ensemble & The CarbonDefenseLeague

Part I

This story is apocryphal, but the unspoken motto of the Jesuits in regard to children's education is said to be, "Give them to me until they are twelve, and they are mine for life." This statement, coming as it does from the Jesuits, conveys a cruel honesty: western education is not about opening one's horizons through expanding the possibilities of interpretation and encouraging the exploration of various simultaneous becomings. Quite the opposite: education is about copying—it is digital reproduction in its most hideous form. Education (or for that matter any interaction between child and authority) is a means to replicate specific semiotic regimes within individuals that will direct them to become a part of a digital aggregate. It also functions to block any conduit that could allow the individual to flow in directions other than those approved of by dominant culture. The apocryphal saying quoted above

clearly implies that the goal of Jesuit education is precisely to inscribe an immutable and irreversible semiotic regime in individuals that will produce fully committed Roman Catholics. The goal of capital's educational system is the same, only on a larger scale; it must impose a semiotic regime that produces new generations of workers/consumers. Unfortunately, capital's education apparatus does not share the honesty of the Jesuits (making it all the more despicable), because its true ends are hidden by false rhetoric and bureaucratic habit.

Education is not the only culprit. Wherever a child turns, another institution is ready to do capital's digital social work. Children are coerced by the family, church, school, media, and even peer groups into learning that which feeds capital's ideological ends. These institutional bunkers combine to create an inescapable spectacular environment that envelops children and adults alike in a thicket of capital's semiotic barbed wire. Children have only unspecified desire as a defensive potential against the fate of imprisonment within the symbolic order. In view of the biotech revolution in the areas of pharmacology and genetic engineering, unspecified desire may soon be a poor final defense. The one glimmer of hope is that desire cannot be done away with if the organism is to continue to function, so it can only be diluted and misdirected, but never completely destroyed.

Any tools that could be used by children to cut through capital's thicket are withheld. Critical thinking is not introduced to intellectually developed children; they must wait until they are adults to be exposed to it in any radicalized form. What passes as teaching children critical thinking is lim-

ited to teaching what is needed to prepare them for success in a given specialization. This process of socialization insures that children use their mental skills in a self-managed way when they enter the workforce. For example, among assembly line workers, criticism is not a means to reveal the unsaid, or to mine out undisclosed meanings or hidden axiomatic principles. Rather, criticism is used to recognize how a product or production process can be made more competitive. Criticism is very specific and focused in this case, and is only valued when directly applied within the parameters of production. The worker is rewarded for thinking critically about specific products and processes, but if this energy is directed toward any other activity, such as criticizing capital itself, it is marginalized or punished. The same can be said about inventiveness. These intellectual and creative endeavors are presented as meaningful only within contexts acceptable to the capitalist machine.

For the tactical media practitioner, children are a significant audience simply because they are the least exposed to any critical pedagogy (when they should be the group most engaged with such learning practices). Since children are so deeply immersed within the institutions of the status quo, any practitioner with pedagogical intent will find it difficult to penetrate the semiotic regime of capital with even a gleam of light to expose the cells in which children are incarcerated. Having never experienced any form of autonomy, children have only vague unspecified desires that tell them that something is missing. However, this unspecified desire is the very x-factor (a desire which cannot be controlled) that makes children a potential audience. By finding representations and processes to stimu-

late the desires that the enriched privation of product consumption and alienated labor cannot, tactical media practitioners can help children visualize the possibilities that are withheld from them, and to realize these possibilities in language and performance.

In order to reach children, means must be devised to trespass on their territories. Children are surrounded by many different barriers. One of the worst is the mass media. The media blanket is very difficult to penetrate, in spite of many protestations to the contrary. Mass media work well to promote the ideology of the powerful, but they work very poorly for minoritarian causes. This is partly because sign systems work in networks. When a specific semiotic signal is broadcast, it is effective only if it meets with systemically sanctioned expectations of the audience members receiving it. For example, to think that a TV broadcast with gay content could "turn" impressionable youth gay (as various right-wing camps claim) is absurd. In the homophobic U.S., sign systems are rarely deployed by the socialization apparatus to support homosexuality. With very few exceptions (a few progressive schools in major cities, and occasional references on television), any sexual identity/role system other than heterosexuality is withheld until adulthood, and any contrary tendencies displayed by the child are discouraged or punished. Hence, any positive gay message (or for that matter, even a message of acknowledgment and/or tolerance of gay subjectivity) can only make a tentative impression at a preverbal level. No linguistic matrix is in place to receive alternative signals. Even those individuals who identify with the message at a nonrational,

nonspecific level still must then find a means to express the desire in the existing language, one that is hostile to their desires. Thus the process of becoming a minority hits a second level of linguistic fortification.

CAE/CDL do not want to be misunderstood as arguing for a replication of minoritarian systems by *imposing* a new sign regime (however alternative). Those producing pedagogical work for children should only provide the means to bring about a situation in which a process of broad-spectrum invention, discovery, and criticality can occur. Tactical media practitioners should not suggest where the use of these qualities should lead once unrestrained. When the qualities of self-awareness, criticality, and inventiveness emerge, children can entertain a broad variety of narrative possibilities in regard to identity and performativity. Fortunately, these minoritarian narratives can only function if an individual child is predisposed by an x-factor desire to be interested, and if the individual has a capacity for autonomous action.* Hence, the minoritarian process acts as its own fail-safe against exploitation and domination, since a child can only be motivated to act on these possibilities by he/r own desires, and never by any preinscribed values.

Tactical media practitioners should also note that individualized interventions are not very useful because the child will not be able to recuperate desire in the company of he/r peers. Children are very

* The need for this capacity eliminates the possibility of reaching younger children, who generally have not reached this point of development.

dependent on consensual validation. Since state institutions are not going to help in the development of minoritarian consciousness, only one place is left for resistant forces to turn, and that is to the peer group. While the peer group is often the unwitting agent of ideological replication, the x-factor is alive in this social constellation and can be liberated.

One suggestion for exciting the x-factor within a peer group can be found in the writings of the proto-anarchist Charles Fourier. He identified four tendencies that he believed conjured excitement and pleasure in people. The most relevant of these tendencies is the cabal, which refers to taking pleasure in secret, underground, and conspiratorial activities. This notion is useful to aid in creating autonomous situations for children. Children's first flirtations with autonomy within the social generally come in the form of the cabal. Here, the peer group acts as a foundation for productive power that allows each individual to test the known limits of the social. Sometimes these groupings can be very cellular and insulated (friendship groups): other times children's cabals can be complete networks, ranging in form from gaming groups to pop political fronts (such as punk) to drug economies. Such cells and constellations can be used as distribution networks for situational stimulants. The problem is that since children's desires and the desirous social currents within various networks are liquid, it is very hard to know what objects or gestures children will respond to. Discovering what will appeal to them is a roll of the dice.

To complicate matters further, children are key in structuring punishment and repression. Indeed,

they are material resources that are protected and thereby intersect with disciplinary and punishment systems, but they also are of extreme symbolic value. Children as living signs are prime controllers of adults. Much of the disciplinary apparatus is based on the assumption that children must be protected from the dangers of the adult world. Children are totalizing signs (much like "nature") that, once deployed, cannot be argued with. Anyone who resists the appeal of children must be psychotic, perverted, or just mean-spirited. Children are used to stop critical discourse and to provide the justification to reinforce the disciplinary apparatus—an apparatus that has never benefited children, except to the extent that the needs of children overlap with the needs of capital. As a general condition, capital loves the idea of children (much as it loves nature as its narcissistic mirror), but despises actual children. In the U.S., the heart of transnational capital, millions of children live in poverty, and even more do not have adequate health care—the infant mortality rate is the highest in the first world. In the third world, the conditions for children of low social rank are even more unspeakable. Capital only cares for children as a material resource to the extent that they have the potential to be molded into beings that suit its needs.

Children as signs are also used for less militarized forms of repression. Adults are infantilized in order to prod them into acting like "adults" (i.e., as agents of capital). Minoritarian political movements are very susceptible to this type of finger-wagging. For example, security agencies often laugh at politicized hacking as something being done by kids, pranksters, or adults who have yet to grow up, thus encouraging the idea of naive

youth rebellion in which underdeveloped, immature people cannot stop replaying the oedipal narrative. At the same time, security agencies in the U.S. claim that infowar is one of the greatest threats to national security, and that adequate funds need to be made available to battle this new menace by expanding the militarized cybercorps. Neither of these two scenarios is very accurate, but both serve their respective purposes well. The former demeans and marginalizes radical media critique and e-activism, while the latter creates a spectacle of anxiety in resource allocation sectors that will lead to increased funding for police and military agencies. In spite of this obvious contradiction in rhetoric, one can be sure that the call for resistant forces to stop acting like children will be as common as police persecution of minorities.

Whether one attacks the sign of children in its many ridiculous manifestations as a disciplinary code, or reaches out to real populations of children, punishment will be swift and harsh for those who are caught doing so. Of all the tactical media audiences, this one is the most hazardous. It is illegal to discuss any topics with children other than those approved by capital. Those speaking from a legitimized platform from outside the narrow specializations of parents, teachers, social workers, or other emissaries of the state are especially discouraged from engaging children in any critical discussion. For example, artists interested in their own socioeconomic legitimization cannot appeal to kids. They must appeal to tastemakers, collectors, other culturalists, and so on. An audience of children is of no career value. Such artists are infantilized as having lesser tal-

ents that could only appeal to the immaturity of children. Getting the attention of kids for cultural purposes is only useful in terms of its profit potential; it has no prestige value, which is what upgrades a common item to a luxury item, or in this case, converts amateurish musings into serious art. Nearly all avenues for starting critical dialogues with children are apparently shut down, so such an initiative will require extra inventiveness, and quite a bit more research.

Video games, however, provide a good starting point. Children are already socialized to the form, so no education is needed. The sticking point is content. Creating a critical narrative that will be attractive to kids is not easy. The second big advantage of using video games for research is that they have huge children's networks. For example, Blizzard, the maker of *Starcraft*, boasts that 35,000 people are visiting its *Starcraft* web-site at any given time. Hence, distribution possibilities come prepackaged. This situation has not gone unnoticed by various politicized groups that have programming capabilities, to the extent that hacked games constitute a micro-contestational front in itself. Neo-Nazis have created death camp games, and radical left groups such as Mongrel (UK) have created cop- and nazi-icon killing games. To be sure, the state of the art is very crude in terms of content, but the research shows that the games are effective in terms of distribution and hours logged by game players. Harwood of Mongrel claims that kids remain at their events for hours, attempting to master a game provided by the group. The question now becomes, how can the content be made more complex and critical without losing the audience?

Part II
Subverting and Perverting GameBoy

While the multi-user games on the Net have the greatest advantage in terms of distribution, the Nintendo GameBoy is a useful site for intervention for two primary reasons. First, the GameBoy is the top-selling video game console of all time. When rolling the cultural dice, how can it hurt to try and break the bank? Should the game take off among the target audience, it would have a tremendous effect on the gaming population. Or, if other capable politicized programmers use the tools and methods provided to create games for their own subversive purposes, another important goal would be met. The second reason for choosing the GameBoy is Nintendo's obsession with stopping piracy and reverse-engineering of its products. This project will help demonstrate that no product is perfectly fortified, no matter how many precautions are taken. Everything necessary to rewire a cartridge with a programmable ROM chip (an EPROM) is now available. This allows anyone to upload he/r own game onto the system. Everything necessary to replicate this intervention is downloadable from <www.carbondefense.org>. The details for the first game CDL has developed, *Super Kid Fighter* (SKF), are outlined below.

The narrative of SKF plays on oedipal desires in which the game participants can challenge everyday-life socializing agencies. The basis for the storyline comes from the writings of Wilhelm Reich regarding children's sexual rights, and the concept of a free public brothel for people of all ages. The game is written as a role-playing game

(RPG), and is primarily text-based. A player must make correct choices in order to escape authorities, earn money, and gain information that will help the player find and gain entrance into a brothel. In SKF, entrance into the brothel is the final reward of the game.

While this game is complex in its conceptual structure, it's not a complex game to play. After a few losses, the player will understand the customs of the game, and will be able to effectively navigate the avatar to the brothel at the end of the game.

Story

The setting for SKF is a town structured in grid form. The player begins the scenario at school where s/he is passed a note from a classmate announcing the opening of a free public brothel in town. Since none of SKF's classmates knows the location of the brothel, the player must find information elsewhere. The game really begins when the player escapes from school to search for the brothel. Since the authorities will not help in this quest, the player must rely on marginal groups to learn the brothel's location. Through interaction with characters outside of the disciplinary apparatus, the player acquires money (by running numbers, getting condoms for prostitutes, etc.), purchases drugs/alcohol, gets directions to the brothel, and learns techniques to avoid various characters set

on stopping the search. Money can also be acquired by working for local shopkeepers doing menial tasks for little pay, but the player soon learns that this option is basically a waste of time and effort. While gathering information and money, SKF is hunted by truant officers, parents, neighbors, school officials, and church authorities. Most of these characters can be avoided simply by running away; to escape others, crack is needed for super-speed; while to evade still others, such as police officers in cars, requires the help of street characters. SKF is also armed with a slingshot with unlimited ammunition, and can choose to fight when cornered. If a player lingers around one area or performs no action for an extended period of time, s/he will be attacked by the specter of guilt. The brothel will only appear on the grid if a player has proved he/rself to be a friend of all the people outside the disciplinary apparatus. Once the player has entered the brothel, s/he has the option to unveil one of two images—one being a naked male and the other a naked female. The overall favorable rating acquired during the game determines what percentage of the image the player will see. This mechanism helps to advance the replay value of the game.

Audience

Market research shows that most GameBoy players are males between the ages of ten and fifteen. This is the target audience. There is also a second-party audience—the parents of the children who may discover the game in the child's possession. Finally, Nintendo functions as a third-party audience. Thus, we assume that eventually one of the carts will make its way to Nintendo headquarters, which would result in either a flood of publicity or a silencing of it. In all, the real purpose of the game is not so much the play time involved, but the situational possibilities that will be generated as the game is passed around. Interference from second- and third-party audiences will only intensify the desired outcome.

Hardware Re-Tooling (Instructions for Reverse-Engineering the Chip)

Two options currently exist for creating a cart that can be reprogrammed. We chose to work through both routes, so as to explain the benefits and pitfalls of each option. The first option requires the programmer to grab up an existing cart and work from there. Any cart that contains the following hardware—ROM+MBC1+RAM+BATTER—is suitable for re-assignment. A full listing of the actual contents of each cart can be obtained from the Jeff Frohwein site (http://hiwaay.net/~jfrohwei/gameboy).

The following list contains names of carts more widely used for this procedure:

Donkey Kong, Donkey Kong Land, Donkey Kong Land 2, FFL 2, FFL 3, Kirby Blockball, Kirby Dreamland II, Kirby Star Stacker, Lucle, Mario's Picross, Metroid II, Mole Mania, Super MarioLand II: 6 Golden Coins, Super MarioLand III: MarioLand, World Cup USA 94, Vegas Stakes, Zelda.

Once you have obtained a cart, the next step is to remove the existing ROM chip and install a reprogrammable EPROM chip. First, you must carefully cut away the feet of the existing ROM chip. This can be done with a very sharp X-Acto knife. You can also simply desolder the chip, but beware, because both procedures risk pulling off the contact feet on the board. If this happens, you must start over with a fresh board. Once the chip is removed, you must obtain an EPROM chip from any major electronics dealer.

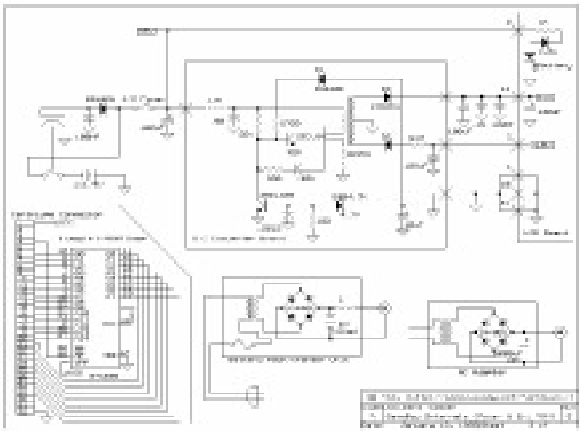
EPROM chips suitable for the procedure include:
- AMD AM29F040-150JC
- FUJITSU MBM29F040A-12PD
- TI TMS29F040-12C5FML
- SGS M29F040-150K

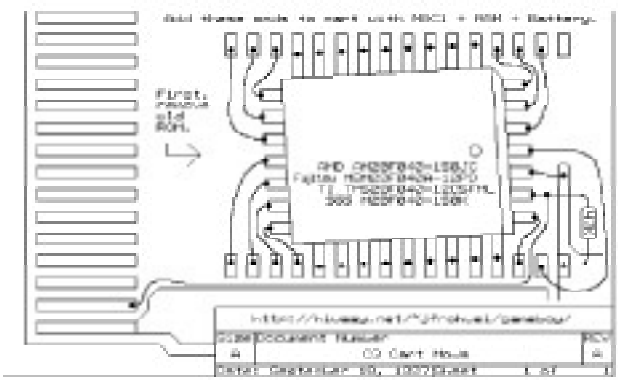
The schematic for the EPROM chip insertion into the GB cart looks like the image below (courtesy of Jeff Frohwein):

http://hiwaay.net/~jfrohwei/gameboy.

Adjust the EPROM to fit an angle similar to the schematic here (courtesy of Jeff Frohwein).

Legs may need to be bent apart to make the chip fit snugly against the board. Solder the pins that reach the pads and use wire wrap to solder connec-

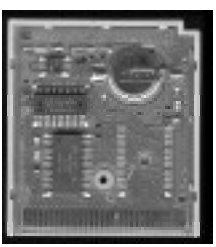


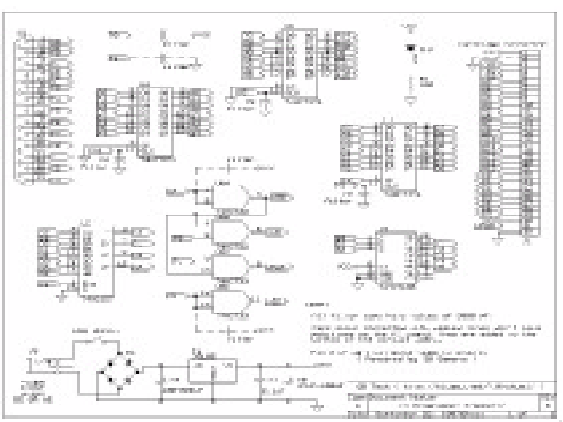


tions to pins that won't reach. Install the 47k resistor. One end will connect to pin 31 of the cart connector. Make sure that you tape off at least 75% of the connector to keep the solder from creeping down the whole pin. The cart should now be ready for reprogramming. This may take two to three hours for each of the first few carts you produce, but as you get more comfortable with the procedure, you will need to devote less time to the task.

Here is an image of a cart with the original ROM chip removed and with the new EPROM wired in its place.

Once the EPROM has been properly inserted into the cart, you are ready to begin work on the EPROM programmer. We did this by working off a printed circuit board and schematic that we obtained courtesy of Jeff Frohwein. This is probably the simplest way to work. The other option is to buy a pre-built EPROM programmer from any major electronics dealer. More information on programmer specifics can be obtained from Jeff Frohwein's site. The schematic and picture of the programmer we built from Jeff's design are shown below.





If you don't want to go through the hassle of such a hands-on procedure, you can modify a cart through the second option. A company called Bung of Hong Kong (http://www.bung.com.hk/) has recently started selling pre-built flash EPROM GB carts and programmers for a relatively low price. We purchased a few of their carts and their programmer to do some experimenting and found it a great relief from the tedious task of re-soldering large numbers of boards. Bung also offers their own software compiler for their programmer that proved to be even simpler to use than the hacked compilers we initially used. Both procedures work well. If you do not have a lot of experience with hardware, we recommend beginning with the Bung materials and playing with that before rewiring carts from scratch. Remember that help is always out there, and we were recipients of much of this help during the initial stages of our venture.

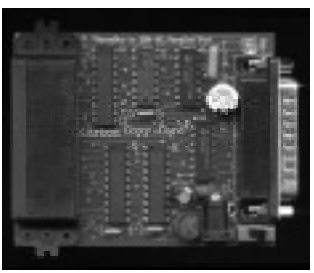


Image Conversion

Two types of images must be created for the game. The first is for background images. To create background images, we used a converter called PCX2GB available from the MegaMan X z site (http://digitalparadise.cgocable.ca/MegaMan_X/Projects/). With this software, we created .pcx files through PhotoShop and then ran the conversions. The sec-

ond type of image that you must create are sprites. These are the images/characters that are moveable and cannot be larger than 32 x 32 pixels. For memory's sake, it's best to keep sprites at 16 x 16 pixels. We created sprites pixel by pixel through the GameBoy Tile Designer, available from Harry Mulder's site (http://www.casema.net/~hpmulder/). The Tile Designer requires a talented illustrator, since images are created in four shades of gray (remember two of those shades are white and black).

Software Initiation/Programming the Game

This explanation for the game's development was written by a programmer. If you are not working with a programmer on your project, keep in mind that there is a lot of help out there, including help from the CDL. However, it is best to find someone capable of learning the techniques described below.

SuperKidFighter was written entirely in C using the GBDK v2.0.17 (written by Pascal Felber and Michael Hope). We used the No$ emulator (http://www.work.de/nocash/) for testing. A help page with some information on the function calls does exist, but outside of that, there is very little documentation to assist you. The best way to figure out what functions in the gb.h do is to examine the code examples, or bother Pascal Felber (http://www.aracnet.com/~pfelber/GBDK/) relentlessly like we did.

If your application is going to be of any substantial size, it will not fit entirely into ROM0. Apparently, there is a limitation on the size of constant data you can use in lcc. This limit is an lcc limit, however, not a GameBoy limit. In order to use more

GameBoy ROM than lcc will let you, you need to "ROM Switch." (The same problem exists for RAM, but we never hit the ceiling of RAM lcc). ROM0 is where your main program is loaded and cannot be switched out, but any other ROM can be switched into the high ROM area. There is a caveat: only one other ROM other than ROM0 can be loaded at any time. You create ROM information in .c files, and your makefile will generate .obj files that are essentially your available ROMs. The makefile also establishes the ROM numbers for your ROMs. The following line from my makefile makes ROM 5 from the code in DCbank_5.c: ..\..\..\bin\lcc -Wa-l -Wf-bo5 -c -o 5.o DCbank_5.c

To switch ROMs in your code, call SWITCH_ROM_MBC1(x) [where x is the ROM you want switched in]. Now, anything in the code for this ROM is available to you but if you call SWITCH_ROM_MBC1(y) [where y is any ROM number other than x], you cannot access anything in ROM x until you call SWITCH_ROM_MBC1(x) again. You cannot call SWITCH_ROM_MBC1(y) from ROM x because you will switch out from where you are calling from.

We didn't know that the overall .gb file would run out of space in ROM0 when we first started SKF, so we didn't plan to use ROM Switching. The result was that we had a fair amount of functionality coded before running out of room in ROM0. As such, every time we added something afterwards, we had to start ROM Switching. We threw code into any ROM that it would fit into. This led to seriously ugly code where unrelated elements existed in the

same ROM. This also caused us to ROM Switch far more than we would have had to if we had planned ahead. Our only word of advice is to design your code with ROM Switching in mind from the start. Try to keep like data in one ROM where possible. You won't use ROM Switching at first, but you will eventually.

There is room only for 39 sprite tiles and 255 background tiles. This is important. The "art department" at CDL used a bitmap conversion routine by MegaMan_X to create the graphics data for SKF. No repeated tiles were used in any background structure. The problem with this is that there is more background real estate on the GameBoy screen than there is room in VRAM for background tiles. It is standard practice in commercial GameBoy game design (and in most sprite-based game console development) to "re-use" sprites and background data. The seemingly never-ending streams of "brickrod" in Super MarioBrothers, "spacefloor" in MegaMan, and "steel beams" in DonkeyKong are all really one sprite that is repeatedly displayed over and over. We did not do this when we started SKF. Only after all the graphics were done did we discover that graphic structures designed to cover the whole background would consist of more than 255 background tiles.

If you are going to use text, use a version of GBDK > v2.0.17. Not only is the normal text for printf() grossly oversized for any practical purposes, but calling printf() when not in TEXT mode overrides data in background VRAM. Our (not too intelligent) solution was to create alphabet sprite tiles. With this approach, most of the 39 available sprite tiles

were now occupied, but every new line of text required loading the appropriate alpha tiles into the remaining sprite tiles and displaying those updated sprite tiles. This left me with two available sprite tiles. This was incredibly stupid. Evidently, v2.0.18 and higher of the GBDK provide a cleaner way of displaying text in graphics mode.

Use the No$ emulator to test .gb files on a PC. We can't overstate how important the No$ emulator was during the coding of SKF. To dump .gb images onto Bung carts, we used Gangaboy (it's a dumb name, but it's free and it works). It is available from the Bung site (http://www.bung.com.hk/).

Finally, throw out everything you know about game programming. If you're familiar with MS-DOS game programming or with the DirectX SDK, forget about concepts such as double buffering, blitting, surfaces, Win messages, Mode13, other applications clipping your window, stretching images for different display modes, etc. For example, there is no need to capture the background data before displaying a sprite and replacing that background data when the sprite is moved. If the sprite is moved, the "Dig Dug" effect of losing background data does not happen. The sprite is simply moved to the new position and the background data for the former position of the sprite is restored. There is no need to move the sprite or change backgrounds in a back buffer or "secondary surface." You can move the sprite in the "primary surface" and no tearing occurs. Also, there is not an infinite number of resolution modes, video cards, and input devices that you have to write special code for. If it works on your GameBoy, it will work on any GameBoy.

Game Building Tools

Mega Man X PCX2GB can be found here:
http://digitalparadise.cgocable.ca/MegaMan_X/Projects/

Jeff Frohwein's GameBoy Tech Page (too useful to describe): http://home.hiwaay.net/~jfrohwei/gameboy/

Bung Enterprises prebuilt carts and programmers available here: http://www.bung.com.hk/

Pascal Felber GBDK available here: http://www.aracnet.com/~pfelber/GBDK/

Harry Mulder's GameBoy Development GBTD and GBMB available here: http://www.casema.net/~hpmulder/

The RGBDS Zone GameBoy
specific assembler software available here:
http://www.matilde.demon.co.uk/rgbzone.htm

Groove's GameBoy Page
A good source for software examples:
http://freespace.virgin.net/stephen.blanksby/

Reiner Ziegler's Web Page ReadPlus
software available for cart construction available here:
http://vs-info.de/ziegler/

NoCash Funware No$GB Emulator available here:
http://www.work.de/nocash