

Inside the space

Didaktik Gama is a series of game-like media and poetic artworks by Wiley Wiggins, made with aesthetic and structural restrictions, accompanied by a collection of games and artifacts that contextualize them.

1. Game Station

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- *Dig it* (Wiley Wiggins, 2022)
- *Drift Mine Satellite* (Everest Pipkin, 2023)
- *Obelisk* (Wiley Wiggins, 2022)
- *If We Were Allowed to Visit* (Ian McLarty, 2021)
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1 Background

I am a descendent of Moravian (Czech) immigrants to Texas, a family split that happened in 1872. Texas Czech family farms were insular. My grandmother’s family primarily spoke a dialect of Czech and held on to a Czech identity, despite how culturally removed they had become from their Eastern European relations. Throughout the cold war my family continued to receive letters from Czech relatives. At age seven, I remember the feeling of staring at a page of ruled notebook paper, unable to think of what to write to my Czech cousin Marek who had told me he was, “praying for a basketball for Christmas.” My mother and I lived alone on her preschool teacher’s income but I had no conception that we might be poor. At this age I was obsessed with acquiring a computer, and did not understand that this was then out of the question financially— in fact I assumed it could happen at any time. The letters from Eastern Europe were full of dizzying pathos to me and I found myself unable to write back.

By the early 1980s, the home video game industry in North America was experiencing a sharp decline, exemplified by the collapse of Atari Inc. During this period, consumer electronics in the west shifted their design and marketing focus. Home computers were promoted as essential tools for education and home finance, rebranding computing devices as household information appliances. In Japan however, the game console market survived this downturn— Nintendo Inc’s “Family Computer” (Famicom) console was a surprise success following its 1983 release.

One year prior, Sinclair Research released the ZX Spectrum home computer in Europe and South America. Manufactured in Scotland and priced at an accessible £125 (\$200), it significantly undercut its main international competitor, the Commodore 64, by \$400. This compact, all-in-one unit connected to a television and utilized audio cassettes and a tape recorder for program loading and saving. The Spectrum has since become a canonized landmark in many histories of computing, especially in the United Kingdom where it was extremely popular.

Nintendo had planned to enter the Western market with a programmable successor to the Famicom— a device with a built-in keyboard and data tape drive like the Spectrum. Against prevailing wisdom, it pivoted to a devoted gaming console instead— the Nintendo Entertainment System (1983). By 1985 the device had completely revitalized the game console market in the United States. In the UK,

Sinclair went on to sell five million Spectrums (an impressive number considering there were roughly only 30 million homes in the region), the Spectrum was a programmable device through which millions of Europeans learned hobbyist programming. Its low price point made it attractive to working-class parents who hoped their children would be able to compete in an imagined, computerized, future job market, making it a symbol of class mobility set against a backdrop of neoliberal austerity. Many of the homebrew software projects created by young Spectrum users were videogames, shared on audiocassette via a sneaker-net of aficionados and user-group fanzines. While Nintendo exerted strict quality control, having been convinced that the downfall of Atari Inc. had been the result of loose licensing control and a glut of substandard games, the Spectrum game landscape was an uncharted jungle of uncountable, wildly diverse (often homemade) titles. Between the extremes of consumer electronics as locked-down entertainment product or instrumentalized work/educational machine, there was a glimpse of a possible future where computing devices suggested a democratized possibility-space.

During the same period, the CoCom (Coordinating Committee for Multilateral Export Controls) embargo denied the export of modern technology, like CPU chips, to the Soviet bloc. In response, Eastern countries reverse-engineered chips and made their own copies. In places like Soviet satellite-state Czechoslovakia, hobbyist scenes sprang up, despite the unavailability of parts and internal legal restrictions placed on software sales. In 1987 Czech manufacturer of school supplies Didaktik Skalica, created a computer named Didaktik Gama – a clone of ZX Spectrum, extended with 8255 PIO and with RAM expanded to 80 kB. Homebrew Czechoslovak games from the time eluded censorship. Many were *Textovka*, a localized style of text-adventure that was unforgiving to play—stories that required typing in shorthanded verbs and cardinal directions to explore. Recently, I played through a collection of Slovak games recently translated as part of a project sponsored by the Slovak Design Museum. The more I played, what initially felt like poor game design resolved into a very specific flavor of dark humor about the futility and superficiality of choice, punishing arbitrary choices (sometimes the very first choice the player makes) with instant death. A few of the games also presented a distorted echo of western media and brand fetishism as seen through the eyes of their teenage programmers, imaging a world of abundance and freedom, in stark contrast to the actual experiences of many young Spectrum users in the



Figure 1: *Expert for Bank*, Kamasoft, 1988, Czechoslovakia

UK. The difference in access to these devices themselves though, could not have been more glaring. In comparison to the flood of cheap computers in the UK, less than 2% of the Czechoslovak population owned a computing device during this period (Reed 2021).

It was unusual that the Timex Sinclair 1000 ended up being *my* first computer. It was the American version of the Sinclair ZX81, developed by Sinclair Research in the UK and resold by the famous watch manufacturer in the States. Like the Spectrum it was compact and affordable, if underpowered and lacking color graphics. The Timex Sinclair 1000 featured a Z80 microprocessor, 2 KB of RAM (expandable to 16 KB), and a flat ‘membrane’ keyboard. It was not a popular computer in the US, although its low price kept it competitive. My mother had found one, not functioning but complete, in the trash at her job- she was a teacher in the embattled Head Start government subsidized preschool program where I was also a student. A school administrator had placed the computer, back in its box with manual and power adapter, in the trash. My mother gave it to me to play with and encouraged me to take












it apart and look inside. I remember opening the computer's plastic case with a screwdriver and finding that by clipping a broken ribbon connector I was able to get the computer functioning again. With the manual I was able to learn some programming in the embedded BASIC programming language.

Programming was a new way of thinking for me, a procedural form of writing that caused things to occur, like a magic incantation. I spent hours writing programs that were like primitive chatbots. I delighted in making the computer print strings with whatever swear words I knew in them. In the back of my Sinclair manual was a folded page containing a BASIC program that, if painstakingly typed in, would create a working text-based game of *Monopoly*¹. If you managed to write its lines out exactly you could then record it to audio tape to reload it later, something that never worked for me as a child no matter how many times I tried it. If you are old enough to have held a "Speak n' Spell" toy, you'll recognize the same flat plastic membrane keyboard that was on the Sinclair 1000. Imagine trying to type a short novella on that 'keyboard', at age eight. Imagine that a single typo would render the entire work unreadable. Then imagine that, once successfully completed, you could not save the book, that it dissolved in your hands like a sand mandala. Do this again and again anyway, despite each failure, and despite having little to no interest in the game *Monopoly*.

The Sinclair ZX80 and ZX Spectrum each had their own nonstandard character sets, where letters and numbers were joined by dithered blocks (in the ZX80 and ZX81) or Tetris-like solid block elements. These blocks allowed a sort of drawing to be done in the same way text might be added to the screen. A character set is a lexicon of visual language, where each glyph holds the potential to be read as text, perceived as part of an image, or understood as a cultural symbol. These character systems not only facilitated programming but also enabled a form of visual creation, turning the screen into a canvas of words and figures. Our minds are accustomed to computer user interfaces now, but this was a gradual transition between mediums, much like the transition from the epic poem to the novel.

While there is significant precedent in dadaist and modernist poetry for experimentation with textual forms, digital text was a collision between the page and cinema, reduced to the surface of the grid. All digital media is an interaction with that grid. Higher resolution digital

1. A game with an ideological history that started in capitalist critique and ended in a popular commodity that reproduced the ideology that it had once satirized.

										
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10 GO SUB 9000
30 RESTORE : GO SUB 1000: RAND
0117E GO TO 1500
100 GO SUB 9000: IF CODE =48
OR CODE =57 THEN GO TO 100
104 LET BS=AS: PRINT AT 11,0+13
BS
105 IF CODE =48 THEN GO TO 16
106 IF INKEYS<>"" THEN GO TO 10
107 LET AS=""
108 FOR I=0 TO 200
109 IF INKEYS<>"" THEN LET AS=I
NKEYS: GO TO 112
110 NEXT I
112 BEEP .005/25: IF CODE =48
OR CODE =57 THEN GO TO 115
113 IF AS<>"" THEN LET BS=BS+AS
114 PRINT AT 11,0+13;BS
115 IF INKEYS<>"" THEN GO TO 11
116 LET AS=""
120 FOR I=0 TO 200
130 IF INKEYS<>"" THEN LET AS=I
NKEYS: GO TO 145
140 NEXT I
145 BEEP .005/25: IF CODE =48
OR CODE =57 THEN GO TO 155
150 IF AS<>"" THEN LET BS=BS+AS
155 PRINT AT 11,0+13;BS
160 LET X=VAL BS
500 LET N=INT (6+RAND*1): LET DX
=4: LET DY=0+15
571 LET S=1
572 PAPER 5: GO SUB 700: GO SUB
573
575 LET N=INT (6+RAND*1): LET DX
=0+4: LET DY=0+4
576 PAPER 4: GO SUB 700: GO SUB
577
580 LET B=N
581 PAPER 7: LET N=AS+N: RETURN
582 IF N=1 OR N=3 OR N=5 THEN P
RINT AT DX+1,DY+1;"P" N=5 THEN P
RINT AT DX+1,DY+1;"P"
583 IF N=1 THEN PRINT AT DX,DY;
"P" AT DX+2,DY+2;"P"
584 IF N=3 THEN PRINT AT DX+2,D
Y;"P" AT DX,DY+2;"P"
585 IF N=5 THEN PRINT AT DX+1,D
Y;"P" AT DX+1,DY+2;"P"
586 RETURN
700 PRINT AT DX,DY;" "/AT DX+
1,DY;" "/AT DX+2,DY;" "/
710 RETURN
800 PRINT AT 3,1:"
801 INK 0;"S";M(Y): RETURN
810 LET B=1
811 IF M<0 THEN LET B=M(Y)+M
812 IF B<0 THEN GO TO 860
814 LET B=INT (M/20)
815 IF B=0 THEN LET B=M
820 LET V=ABS (M): LET C=M(Y)

```

Figure 2: BASIC type-and-run code for *Monopoly*, Spectrum ZX81

displays can obscure the presence of the grid, but it is always there.

Box drawing elements in early character sets were used to create primitive print-style layouts of text enclosed in boxes—like menus and alert callouts. Shaded blocks might imply a hierarchy of depth, where a box was ‘raised above’ the rest of the screen. The text user interface (TUI) inherited both from print and time-based media like animation.

These Sinclair computers, with their limited but creative use of block drawing characters, can be positioned as an early example in the lineage of digital text-as-image. This concept was further developed with systems like PETSCII on the Commodore 64 and Code Page 437 on IBM DOS. These expanded the repertoire of visual elements available for creating graphics using text characters. Early computer games utilized these text user interface innovations and used character-based graphics on a grid to create dynamic, map-like images for players to explore. These designs blurred the distinctions between image and text, as well as orientation.

New software development continues for the ZX Spectrum, as ‘Demoscene’ groups push limited hardware to new extremes through creative programming.

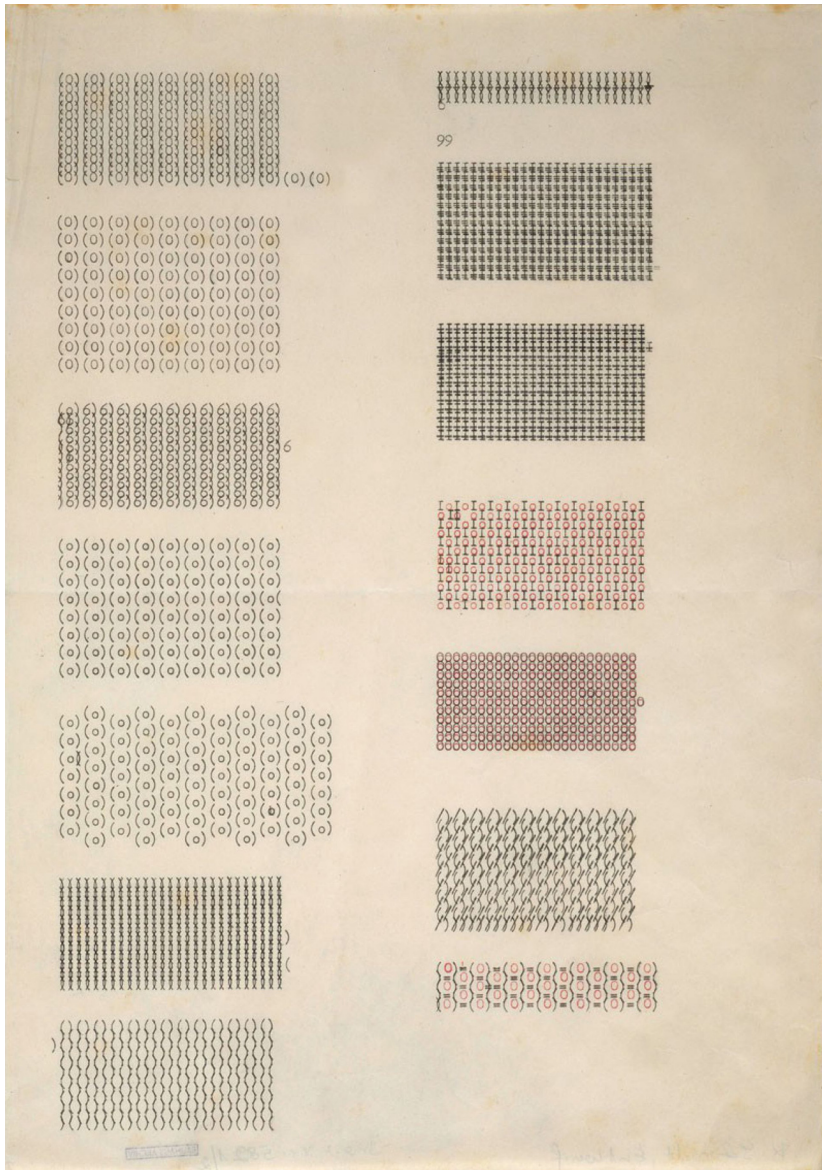


Figure 3: Bauhaus student Katja Rose, *Design for a swatch with typewriter-characters, 1932*, Bauhaus-Archiv Berlin



Figure 4: The Sinclair ZX80 Character Set

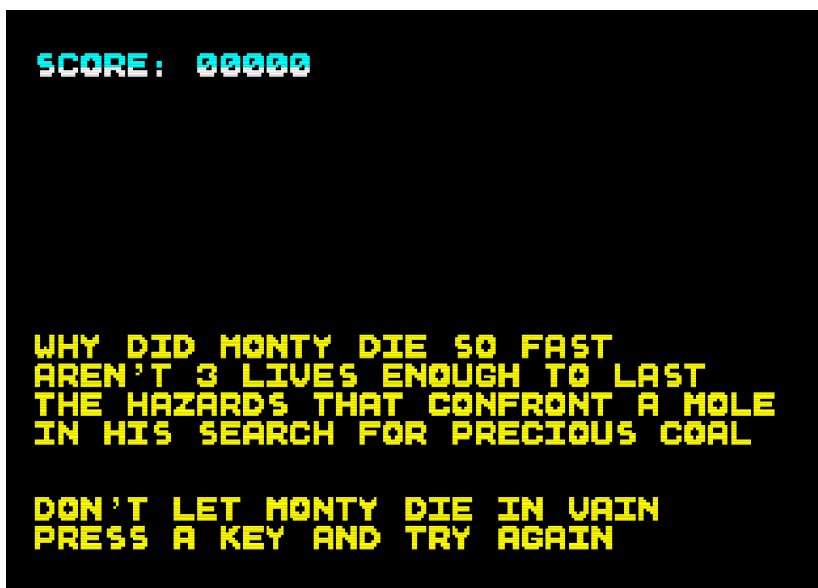


Figure 5: Death screen from *Wanted: Monty Mole*, ZX Spectrum (Gremlin Graphics, 1984 UK) In 1984, teenager Peter Harrap, son of a mine safety officer in Yorkshire, created the first in a series of 'Monty Mole' games. Inspired by the UK miner's strike of the same year, it featured a character based on union leader Arthur Scargill.

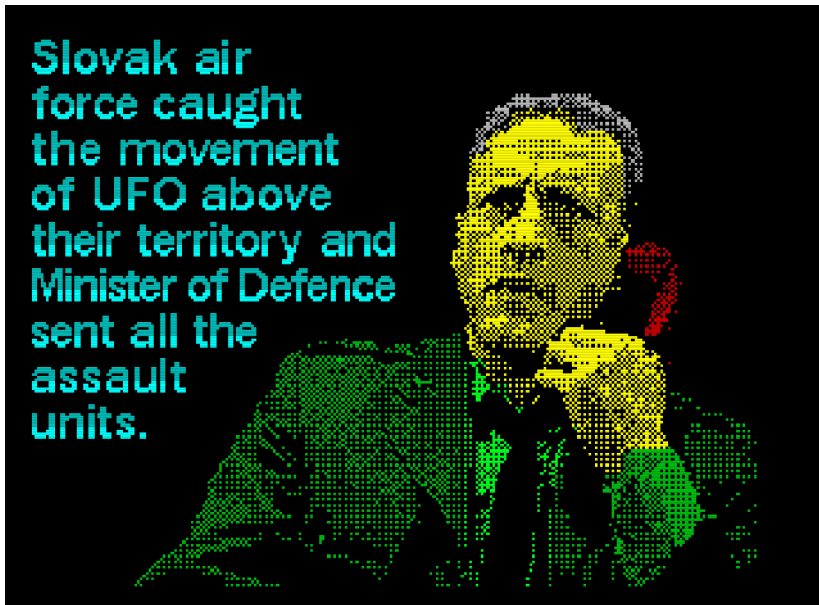


Figure 6: *We Are Alive*, ZX Spectrum Demo (Gembaboy, 2023
Czechia)

2

The manner in which text is read influences our perception of how time flows in relation to space (Bergen and Chan Lau 2012) (Yang and Sun 2018) (Park, Gagné, and Spalding 2024).

A Mandarin writer may describe moving 'downward' into tomorrow, reflecting the direction in which they write—starting at the top of a page and moving downward—the Mandarin word 夏 (*xià*) means both “next” and “down” (Park, Gagné, and Spalding 2024). On a surface level we may say that time itself has no spatial aspect, and these metaphors that ascribe a directional axis to time begin with language and writing, but there are powerful precedents to consider. Falling downward can feel like being swept along by the relentless flow of time, whereas walking forward suggests moving at one’s own volition or marching in sync with others through time. Genealogists talk of lines of ‘ascent’ that move through generations. In *Imagined Communities* Benedict Anderson writes—

The idea of a sociological organism moving calendrically through homogeneous, empty time is a precise analogue of the idea of the nation, which also is conceived as a solid community moving steadily down (or up) history. Nothing better shows the immersion of the novel in homogeneous, empty time than the absence of those prefatory genealogies, often ascending to the origin of man, which are so characteristic a feature of ancient chronicles, legends, and holy books. (Anderson 2006, 26)

Walter Benjamin, who proposed this idea of ‘homogenous’ time, describes the ‘Angel of History’ as being propelled backwards into the future by an explosive disaster, with wings like sails that cannot be closed. While it may be a stretch to say that these bodily sensations of moving through time inform writing systems directly, there is a connection between the phenomenology of bodily movement through time and the structuring of thought through writing. Bringing these ideas of writing as movement through time to image making has many implications for us to consider, especially in digital games.

you

tunnel wall
a sheer face of limestone, left by
the excavators when this was a
mine. there's only so much rock you
can pull out of a mountain before
the whole thing collapses- the
tunnels are evidence of that.

street lamp



Figure 7: *Drift Mine Satellite*, Website (Everest Pipkin, 2023)

Everest Pipkin's 2023 text game *Drift Mine Satellite* spreads its text out like a sparse map, like a series of nested containers, like a story in time. After visiting a decommissioned limestone mine, Pipkin imagined this inhabitable post-extraction space of RV campers. Pipkin's work frequently involves layers of contain-ership and themes of community care. The game itself is spare and confident, mindful of its own energy requirements as one might be mindful of overusing any art material.

3 History, Fantasy, Fabrication

My ‘angel of history’ is the mythological Czech prophetess Libuše, a pagan witch who, in stories, foretells the founding of Prague. In my allegory, Libuše exists in a vertical simultaneity of time, with the past below and the future above. This is often the fantasy backdrop I use when genre elements are needed to make my game-like works fit into the history of games that they reference.

The name ‘Libuše’ might have originated from an ancient mistranslation. Kosmas of Prague first mentioned her in the *Chronica Boemorum* in 1125, but his enumeration of the names of the Přemyslov family (Libuše’s lineage, mythical chieftains of an early Czech tribe) closely resembles what could be a Latin transcription of Old Slavic words intended to deter Frankish aggressors (Karbusický 2009). In this light, the prophetess herself is a construction of language, a glitch of translation.

In 1817, a forged medieval manuscript containing an apparently undiscovered Slavic epic poem attempted to place the name “Libuše” even further back in history than Kosmas’ text. This is not an isolated incident—myths often insert themselves into history through forgery and strategic archival placements (Thomas 2010). In this case, details were added to the myth of rule passing from Libuše to a man, suggesting that ancient Slavic culture had a democratic character before the adoption of Christianity and patriarchy. This was the planting of a myth meant to be used as a foundation for a Czech national culture, but was pronounced a forgery by the first president of the new Czechoslovak state, philosopher Tomáš Masaryk.

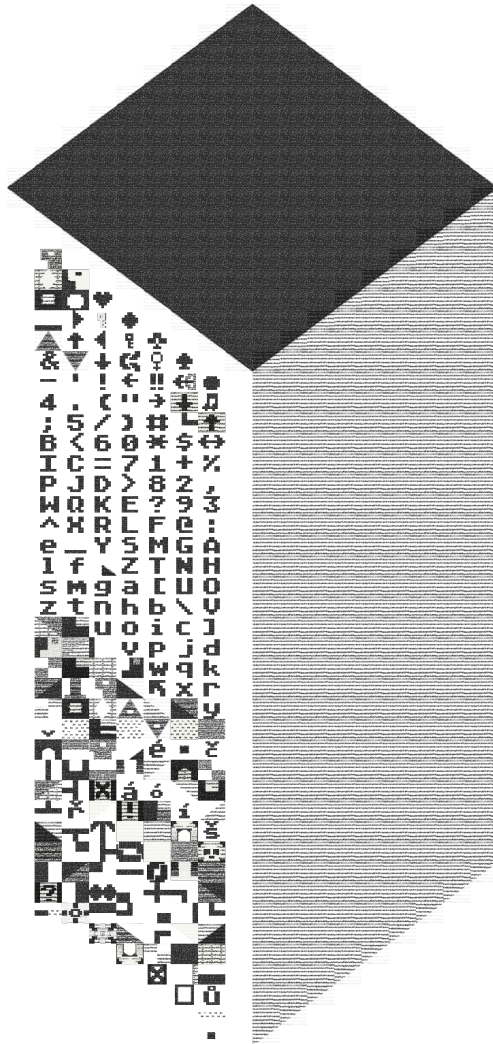


Figure 9: The Libuše Character Set, created for an imaginary computing device (Wiley Wiggins, 2023)



Figure 10: 'The Prophetess Libuse' (Karel Vitezslav Masek, 1893)

In different versions of Libuše's prophecy, she foresaw not just the building of Prague but the mining of the Ore Mountains (Jirásek 1894). This was done historically—initially for silver and later for uranium (Veselovský, Ondruš, and Komínek 1997). In its earliest usage, uranium from the mountains was used to glaze glassworks, resulting in a sheen that fluoresces under ultraviolet light. These glass items are relatively harmless now, and have become popular collectors items, but their manufacture was extremely hazardous and shortened the lives of the workers and craftspeople who manufactured them.

Jirásek's version of Libuše's prophesy directly ties the creation of a national identity to the control of mines—

[...] Libuše halted on the rock high above the river Vltava, and spoke:

'What is hidden in the rocks, in the depths of the earth,
The voice of the gods reveals through my voice?'

She turned to the west, and stretching out her hands she said:

'I see the hill of Brezovy, and in its veins of silver.

He who seeks shall find wealth.

But the neighbour from the west, invited or uninvited, Will
covet the metals in which lies dominion.

Beware, lest from the gifts of your own earth He should
forge fetters to enslave you?'

Then turning to the left, towards the south, she continued:

'I see the hill Hilovy, it is full of gold.

There is strength in gold, and the power of wonders.

But strength fades, and you will grow faint and weary If
the holy fire of love burns out in you.'

Again turning to the left, towards the east, she prophesied
thus:

'I see a mountain with three crests, in its womb it has hidden
For ages the treasure of silver. But since there are three
crests, three times shall its metal Decline, and three times
rise again. It will be a lure to the stranger, as a lime-tree
[linden tree] In flower lures many swarms of bees.

Drones will not master them, only the industry of bees.

Then gold will grow out of silver?'

When she had spoken thus, she turned yet again to the left,
towards the north, saying:

'I see the hill of Krupnaty, and in its depths Lead, and the

cloudy gleam of tin.

But it lies on the frontiers, keep guard there Watchfully on every step.

Where you yourselves yield only one inch, There you will always lose the whole acre.'

When she had thus indicated the hitherto secret beds of the metals, she turned to the thanes and elders, who had listened to her silently and with bated breath, and addressed them in these words:

'The gleam of seven metals burns on your soil, And the fields shine with the gold of grain. Your race will dwell here to all ages And grow strong and blessed, So long as the land of their fathers remains sacred to them For their blood and labour and language, So long as they stand erect before the stranger, honour their ancient code, And act as brothers to their brothers.' - (Jirásek 1894)

With each shift in power, rulers of the Czech lands altered Libuše's prophecy, grappling for control of both the mines and history. The languages that these mythologies were set in—written vernaculars, were perhaps more important than the content of these patchwork mythologies in defining those imagined communities. The prophetess knows the future because she is compelled to utter the words of future writers in the tongue of their choosing. Her words sound not in the past, crowded with the unresponsive dead, but with us in the future. Her prophecy could at times be an argument for primordial communism or for the divine right of kings, for feminism or patriarchy. Allegory, as Benjamin laid out in his work on *The Origin of German Tragic Drama*, is unfixed from its referent. It is "the art of the fragment, the opposite of the symbol, which presupposes the value of 'Nature' preserving unchanging, complete identities and values" (Tambling 2010, p5)

Walter Benjamin's idea of messianic time—a time filled with ruptures that provide opportunities for change—can be paralleled with moments in technological history when new possibilities suddenly emerge. The introduction of affordable computing disrupted traditional barriers to technology and power to some extent but also reinforced existing inequalities. Computers represent more than just tools; they evoke ideas of progress, inequality, hope, oppression, and cultural shift—a symbol of the future now itself old enough to be patina'd with layers of nostalgia and trauma. The narrative of 'technological progress' is mythologized, set aside from its material origins, much like a game



Figure 11: 'Libussa prophesizes the glory of Prague' (Max Švabinský, 1950)

sidesteps the world in which it is inset with heterotopic rules. It's important here, I think, to return to my family and the dim connection between our cultural identity and Libuše. When my ancestors left Eastern Europe, there was no 'Czechoslovakia' and certainly no 'Czech Republic'. Nor did they consider themselves Bohemian. They were subjects of Moravia. The Libuše myth was a Bohemian myth before it was reconfigured to be a Czech myth, and it was done to create a new national identity and pretend, even if the pretending bore no scrutiny at all, that it had always existed. Tribal lands were consumed by kingdoms, then those kingdoms were absorbed into empires, then carved down into nations. These polities that attempt to position themselves as meaningful, eternal, or even biological are fictions. My family didn't consider themselves Czech until the European relations they were in contact with transmitted that identity to them. It was a connection to a lost past from notes, scraps, family bibles, and despairing letters from people who were in reality, strangers. Even the Czech language that my family spoke was a dialect that modern Czech linguists considered anachronistic.

Libuše's prophecy is a tool for digging out time and reshaping history, capable of conveying contradictory messages. The shadowy cavern it excavates overflows with dialectics of progress and loss, in-groups

and out-groups, ideas of gender and hierarchy. The prophecy, in its various forms, reflects the ongoing struggle between the movement of history and the powers that struggle to steer it through language and technology.

Which do you mean, Sihan or Saiph?

>take Saiph hand

You clasp Saiph's strong hand and turn to Sihan with a frown.

"What business have you here?" you ask her coldly.

Sihan tosses her hair and fixes her sharp gaze on you. "I came to see if Saiph is truly a man of action and not only of words," she says levelly. "But I see that, like you, he is counted among the cowards and the weaklings. I have no more to say." She turns and vanishes into the darkness without a sound.

>fire

You linger for a moment in the starlight, tempted to enjoy more quiet words with your love.

Saiph frowns. "Her heart clamors for war with these **newcomers**," your lover says, "and was upset to find I do not share her views. We shall see if your **enemy** has better luck at the **telling**." He looks up to the stars, and adds, "It is a good **night** for it."

>newcomers

"Have you heard the news?" he asks. "Young Ada found traces of a camp less than an hour's walk from here, and more than half a day from their **fires** in the valley. **Sihan** and her friends are already sharpening their spears and preparing for war," he says darkly.

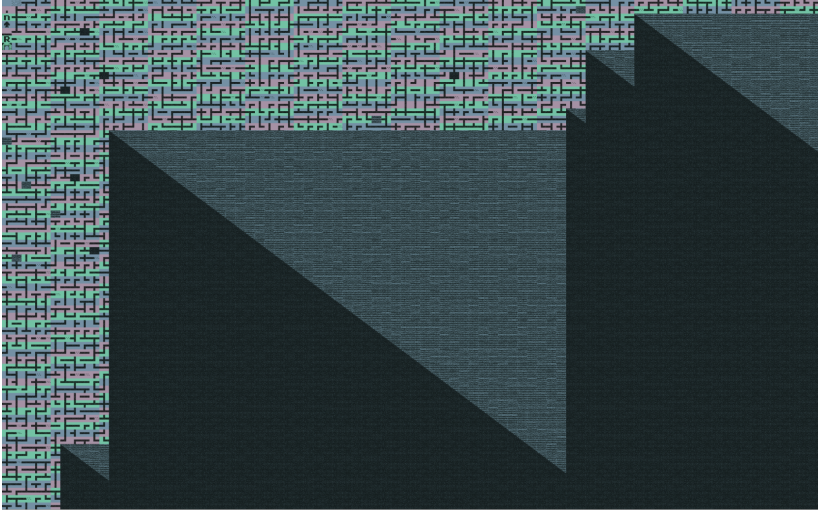
>fires

"The moon has waxed and grown small again since they arrived," Saiph murmurs, holding you tightly. "Why don't they come to us? Why do they hide when we send our emissaries? They must know the **unrest** they're causing in us."

>|

Figure 12: *Whom the Telling Changed*, Z-Machine (Aaron A Reed, 2005)

In the interactive text game *Whom the Telling Changed*, the epic of Mesopotamian hero Gilgamesh is retold as a living story by firelight, with those in the crowd attempting to sway the story to their own purposes.



Abyss Generator, from *Didaktik Gama*, Website (Wiley Wiggins, 2024)

4 Didaktik Gama

Projected on the exterior of the installation structure

For the past two years I have been creating visual art, much of which is algorithmic, sometimes interactive, using a restricted set of image ‘tiles’, similar to the character sets of the ZX Spectrum or IBM DOS systems. I arrange the tiles on a grid to try to form images that break the grid. They can suggest a space, a pattern, or a text. I’ve been continuously experimenting and continue to be surprised by this method of working.

In this project, an imagined computing device from the past performs mysterious work with language and symbols on a grid. This grid exists in a state of confused time and space, where glyphs function both as components of larger images and as maps. These glyphs serve as letterforms that can be written in four directions or animated, and they possess intrinsic meanings as symbols. The ZX Spectrum computer was able to combine high-resolution graphics (such as drawing individual pixels) and low-resolution graphics (character-size blocks) interchangeably. An interesting aesthetic artifact of its memory optimizations was that color information was at the resolution of the character size blocks.

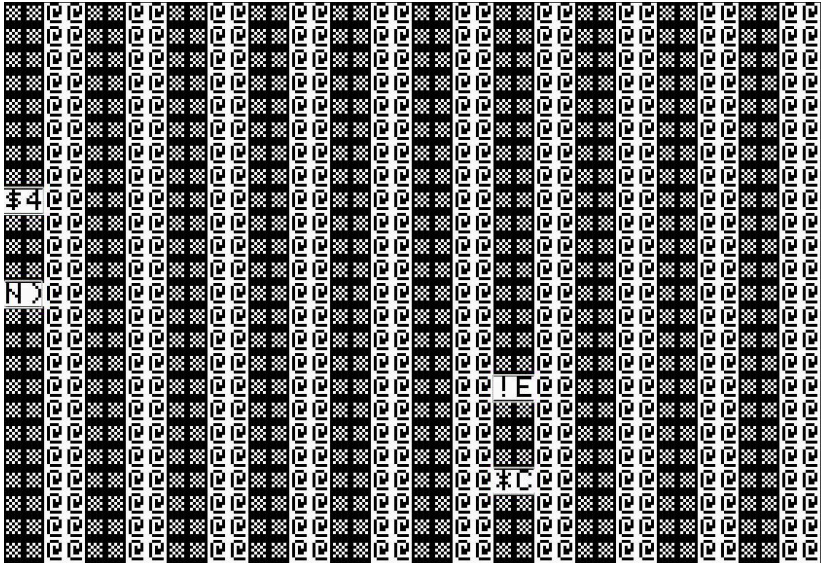


Figure 13: During startup, an Apple II computer displays the contents of its DRAM as characters in video

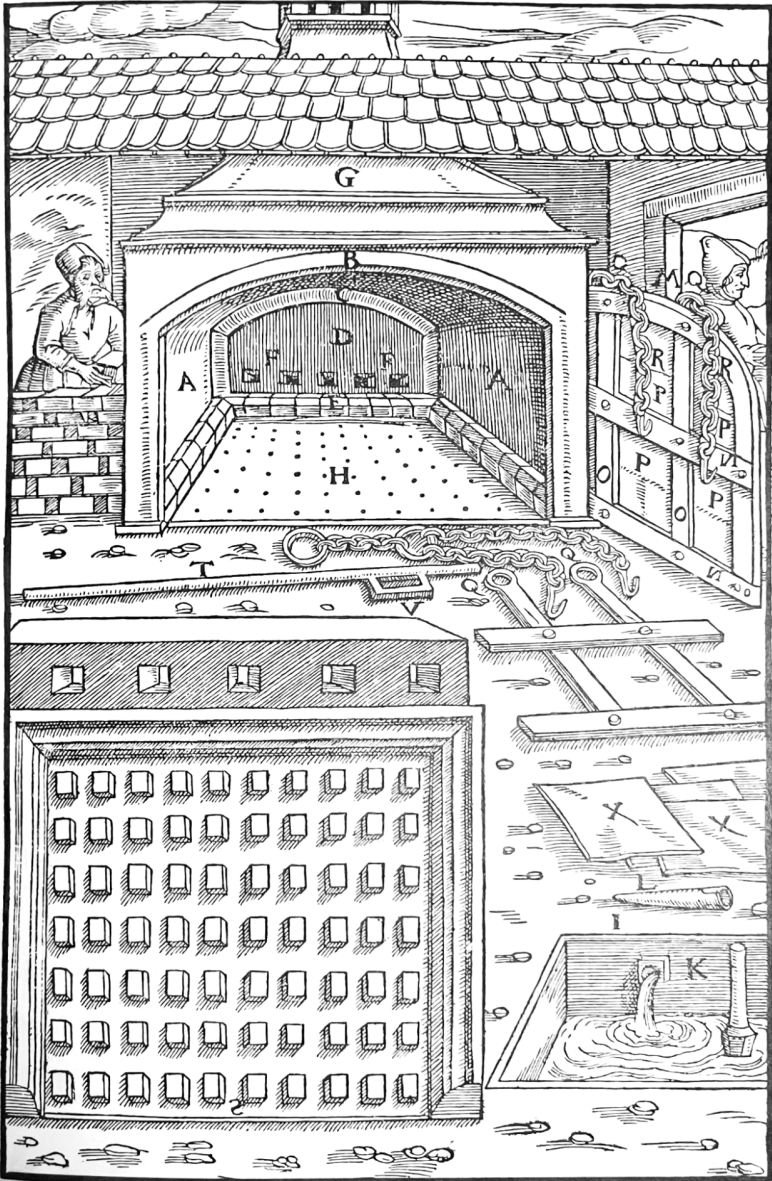
This salt is spread over that are excavated if chalk or other such things derive profit therefrom; and again, that is swept from the bottom, that the remaining sand may separate from it.
This salt is spread over that are excavated or other such things derive profit therefrom; and again, that is swept from the bottom, that the remaining sand may separate from
This salt is spread over that are excavated or other such things derive profit therefrom; and again, that is swept from the bottom, that the sand may separate from
This salt is spread that are or other such profit therefrom; and again, that is swept from the bottom, that the sand may separate from
This salt is spread that are or other such therefrom; that is from the bottom, that the sand may separate from
This is that are or other such therefrom; that is from the bottom, that the sand may separate from
This is that are other such therefrom; that is the bottom, that the sand may separate from
This is other therefrom; that is the bottom, that the sand may separate from
This is other is the bottom, that the sand may separate from
is other is the that the sand may separate from
is other is the sand may separate
other is sand separate
is sand
separate other
may separate other the is
may from separate other that the the is
bottom separate other the This the from ; , that is may
therefrom bottom may other separate the This that the from ; , is that
bottom therefrom such other separate the that the This from ; , are that may is that
therefrom bottom separate may other such that the This the from from ; , are that that is or
spread bottom salt may such other separate the the This that that from from ; , therefrom that is are or
spread therefrom salt bottom profit swept may separate other such This that the the that from from ; , is are that or
profit salt swept spread bottom separate therefrom such other again the that This the that from from ; , may or and are is that
bottom profit spread excavated derive swept may salt such other separate again the that that This the from over from ; , therefrom are and or is
spread salt profit bottom things remaining excavated swept may derive such other separate again This that the the from over from ; , that are or that therefrom is and
salt things derive bottom profit it swept remaining excavated spread chalk such separate other again the the This that over from from ; , , therefrom that are that if is may and or

Figure 14: ‘6.txt’, a poem generated using the text of *De Re Metallica* (Wiley Wiggins, 2024)

For each block there is a PAPER color and an INK color defined, determining the colors of the plotted pixels and their background. I’ve attempted to preserve this in my system, in less elegant ways (some of my glyphs have opaque white pixels that I can easily tint in code, most glyphs are transparent so that I can display a block of color behind them). One day I’d like to build a real virtual computing device that recognizes ideas of “ink” and “paper”, which would require adjustments to this characterset. I am reminded of the work by American Artist on implicit ideas of color in computer interfaces and ideas of race, and I am attracted to the idea of a machine in which field and figure can dance between color interactions letter-by-letter (Artist 2021).

Several software sketches in this installation incorporate algorithmic texts. These poems are generated with simple, human-scale algorithmic methods rather than large language models. This particular method is called Markov Chaining, and involves building simple statistical models from small text corpuses. First a single, long string of words is generated. Words are then randomly removed from this ‘sentence’ in steps, and new ‘mirror’ strings are generated using the removed words. The text for this process is sourced from *De Re Metallica*, a medieval mining text that bridged alchemy and modern metallurgy.

De Re Metallica dates back to the initial period of mining in Joachimsthal. The town was founded in 1516 due to significant silver deposits, leading to the establishment of a mint for the Joachimsthaler “Thaler” coin, the etymology of “dollar.” Initially flourishing from sil-



A—SIDE WALLS. B—FRONT ARCH. C—REAR ARCH. D—WALL IN THE REAR ARCH. E—INNER WALL. F—VENT HOLES. G—CHIMNEY. H—HEARTH. I—TANK. K—PIPE.

Figure 15: An illustration of a copper furnace featuring grid-like structures, from *De Re Metallica*

ver mining, its economic focus shifted with the discovery of uranium by Martin Heinrich Klaproth in 1789 in mining byproducts. The uranium was used to create fluorescent glazes for glasswork long before it enabled the Curies to isolate radium (1898). *De Re Metallica* was translated into English from Latin by Lou Henry and Herbert Hoover in 1912—the former a mining engineer before his political career, and the latter, his wife, a geologist proficient in both Latin and Mandarin. These mines were both the origin of minted currency in the west, and the foundation of a nuclear arsenal. The mines of Joachimsthal, now exhausted, today are a tourist attraction, alongside mildly-radioactive hot springs that some locals still believe to have health benefits.

Every part of a computer, including the disposable plastic of a cheap computer case, originates from materials dredged from underground. The plastic is made from petroleum, and the rare earth elements essential to many computing devices are often the result of US-sponsored slave labor in the Congo (Kara 2023). This is the same extraction site where NATO uranium stockpiles, which countered the Eastern Bloc hoards mined from Joachimsthal, were built.²

Today Congolese cobalt is a primary material used in the rechargeable batteries used in portable computing devices. Cobalt derives its name from the Germanic word “kobold,” A mythological creature that European miners blamed for the toxic effects of the substances they extracted. Kobolds, now popular figures in fantasy gaming, are portrayed as doglike, less-than-human beings that dwell in the darkness of mines and dungeons, entirely adapted to life underground.

The mine and the computer exist in a temporal feedback loop of cause and effect. Extraction digs away into the past as wreckage and construction soar into the future.

These grotesque simultaneities of material history—the slave pits and the liberated playgrounds of *homo ludens*—are crafted from the same prehistoric material. The mine is a wound torn into the fabric of modernity, exposing a stratum of values not accepted on the surface. At the bottom of the pit lies an ideology that devalues life and treasures only raw material, dreaming simultaneously of infinite growth and of eschaton.

Lewis Mumford writes in *Technics and Civilization*—

Until the 15th century AD, mining had perhaps made less technical progress than any other art. The engineering skill that Rome showed in aqueducts and roads did not extend

in any degree to the mines. Not merely had the art remained for thousands of years in a primitive stage, but the occupation itself was one of the lowest in human scale.

Apart from the lure of prospecting, no one entered the mine in civilized states until relatively modern times, except as a prisoner of war. a criminal, a slave. Mining was not regarded as a humane art. It was a form of punishment. It combined the terrors of the dungeon with the physical exacerbation of the galley.

The actual work of mining, precisely because it was meant to be burdensome, was not improved during the whole of antiquity, from the earliest traces of it down to the fall of the Roman Empire. In general, Not only may one say that free labor did not enter the mines until the late Middle Ages, one must also remember that serfdom remained here, in the mines of Scotland, for example, a considerable time after it had been abolished in agriculture.

Possibly the myth of the Golden Age was an expression of mankind's sense of what it had lost when it acquired control of the harder metals.

(Mumford 2010, 67)

Tambling writes in *Allegory*–

In contrast to symbolism, allegory looks at history, which it reads as a ‘landscape’, using a term derived from looking at nature, and working with the idea of ‘natural history’; a term which emphasizes that there is no distinction to be made between history as that which is specifically human, and the history of nature. Benjamin’s specific terms ‘petrified’ and ‘primordial’ suggest that history is not marked by beauty, nor by spontaneous growth and movement towards progress. It is marked from the beginning by decay, not what Romantic symbolists dream of: immediacy and natural, organic growth. Allegory sanctions no idea of an originary Garden of Eden, or record of unity. Instead of timeless truths, there is the ‘untimely’, the history that stands outside the chronological narrative of progress that makes up ‘official’ history. ‘Natural history’ records sorrowful, or unachieved, states.

(Tambling 2010)

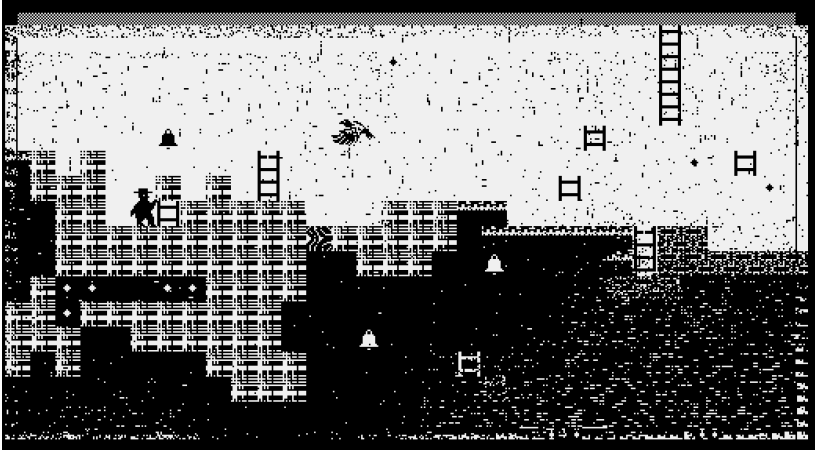


Figure 16: *Hole Digging Game*, Windows/Macintosh (Loren Schmidt, 2022)

Mining, digging and extracting are verbs that players are well accustomed to in videogames, long before cultural monoliths like *Minecraft* came along. The play space of my exhibit features a collection of *before* and *after* games. Games from history that first began to dig away at a grid, and modern games that have found various unique positions to the history of games, fantasies of extraction and of writing in space and time.

Loren Schmidt's *Hole Digging Game* (2022) builds on a game mechanic familiar from foundational games like *Lode Runner* and *Solomon's Key* (Both of which were released on the ZX Spectrum and the Nintendo Entertainment System). Blocks of the game's environment can be removed and relocated. Where this mechanic was both a method of accessing resources and defending from attackers in *Lode Runner* and *Solomon's Key*, here the element of danger is removed, and we are left with something that feels more like gardening. The game is slow, atmospheric, and meditative. As with Schmidt's other games, it rewards experimentation and allows for different levels of attention.

Technological 'progress' isn't a line that goes up towards utopia, it's an ever growing disaster that casts out fragment realities—tiny windows

that hint at possible escape routes but close almost as soon as they open and the wrong choice is made. Games are created in these fragments. Games attempt to structure play. Play is a space of learning and it can also be a space of subversion. Games can help us imagine alternatives to the trajectory of history, but we need to acknowledge the material conditions they emerge from in order to even gauge which direction we are being blasted—in order to phrase a thought, to make a map mark, to spread a pattern in new directions.

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Title (title/mod)	Platform	Player	Resource	Amount Collected
Mega Man 2	NES	valence	Item/Weapon Energy	?
Mega Man 2	NES	valence	Item/Weapon Energy	?
Mega Man 2	NES	valence	Item/Weapon Energy	?
Zelda II	NES	valence	Blue Magic Jars	5 Jars
Faxanadu	NES	teeber	GOLDS	12744
Deadly Towers	NES	wiley	Ludder	250
The Battle of Olympus	NES	valence	Bay Leaves (HP)	8 Bay Leaves
The Battle of Olympus	NES	valence	Olives (Currency)	60 Olives
The Legend of Zelda	NES	teeber	Rupees	69 (nice)
Blaster Master	NES	teeber	HOV (Hover Jet Fuel)	12
Clash at Demonhead	NES	teeber	Money	31350
Castlevania II: Simon's Quest	NES	teeber	Hearts (Currency)	174
Metroid	NES	teeber	Health/Missiles	569 Health (net) / 84 Missiles
River City Ransom	NES	wiley	Money	999
Ninja Gaiden	NES	dustmop	Lives	12 (2 death, start with 3, end with 13)

5 Video Goldmine

Inside the installation space *Video Goldmine* (Batlab/Wiggins, 2024) is a three-channel video documenting the performance of work in a selection of videogames, narrated with a passage from Lewis Mumford's *Technics and Civilization*.

Participants in this performance were members of the Telemelt games research group: Valence, Teeber, Batsly(Andrew Reitano), Wellzish, Wiley(Wiley Wiggins), and Dustmop(Dustin Long). Optimized video player system created by Andrew Reitano, narration by Wiley Wiggins.

6 Illumination

Inside the installation space

Illumination A pair of uranium glass items (handed down by the artist's mother) flourescing under UV light, a Geiger counter component, microcontroller, and prefabricated consumer lampshade. The Geiger counter measures radioactive impulses from the glass and surrounding environment. Uranium glass is slightly more radioactive than natural background radiation, and well within safe ranges for humans to come in contact with. The manufacture of these antique glass works involved long-term exposure to toxic pitchblende, however and shortened the lifespans of the workers who produced them. While the counter shows that the glassware is within safe ranges of radioactivity, its presence suggests otherwise.

7 Pages from Grotto

Grotto is an experimental, multiplayer, persistent, web-based game framework, developed by Wiley Wiggins and Paul Stiverson. *Grotto* reads genealogy data in GEDCOM format and creates a rudimentary dungeon game where every person in a family tree is represented by a room. Currently the only active instance of *Grotto* is a 1000+ room dungeon representing the family of Wiley Wiggins, located at <https://mudroom.rip>.

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About Wiley Wiggins:

Wiley Wiggins is an interdisciplinary artist and curator working with digital games and playful media. His multifaceted career includes roles as an actor, animator, interaction designer, and board member of the Juegos Rancheros arts nonprofit. During his time at Juegos Rancheros he produced the Fantastic Arcade international games festival in Austin, Texas.

Wiggins holds undergraduate degrees with honors in animation and design as well as a Master of Fine Arts degree in Media Art from the University of California, Los Angeles, where he studied as a resident of the UCLA Game Lab.

His speaking engagements include the Game Developers Conference (GDC), South By Southwest Interactive Conference (SXSW), International Game Developers Association Summit (IGDA), and the Society for Literature, Science, and the Arts Conference (SLSA). His work has shown at Craig Baldwin's *Other Cinema*, Soap Gallery Japan, La Casa Encendida Madrid, and the 2014 Whitney Biennial.