
The history and development of ...


MetaMorphosis
Kill
Eat
Evolve

Metamorphosis: topics

1) «ARACNE», Leonardo Vettori's original idea

2) From bare bones ideas to the REAL THING, featuring Kees van Oss

3) How «ARACNE» became «Metamorphosis» thanks to the «OUT OF MEMORY» nightmare·

4) The evolution of the game through beta testing by with F·Gori, M·Belardi, M·F·Moretti

5) The forgotten element· The music by P·Pimenta and M·Fanciulli

6) Kees·van·Oss' State Engine

7) The YOUTUBE TEASER and latest improvements

8) The future of Metamorphosis

«ARACNE», Leonardo Vettori's original idea

GRAPHICS

Why develop a game for the ZX Spectrum in 2020?

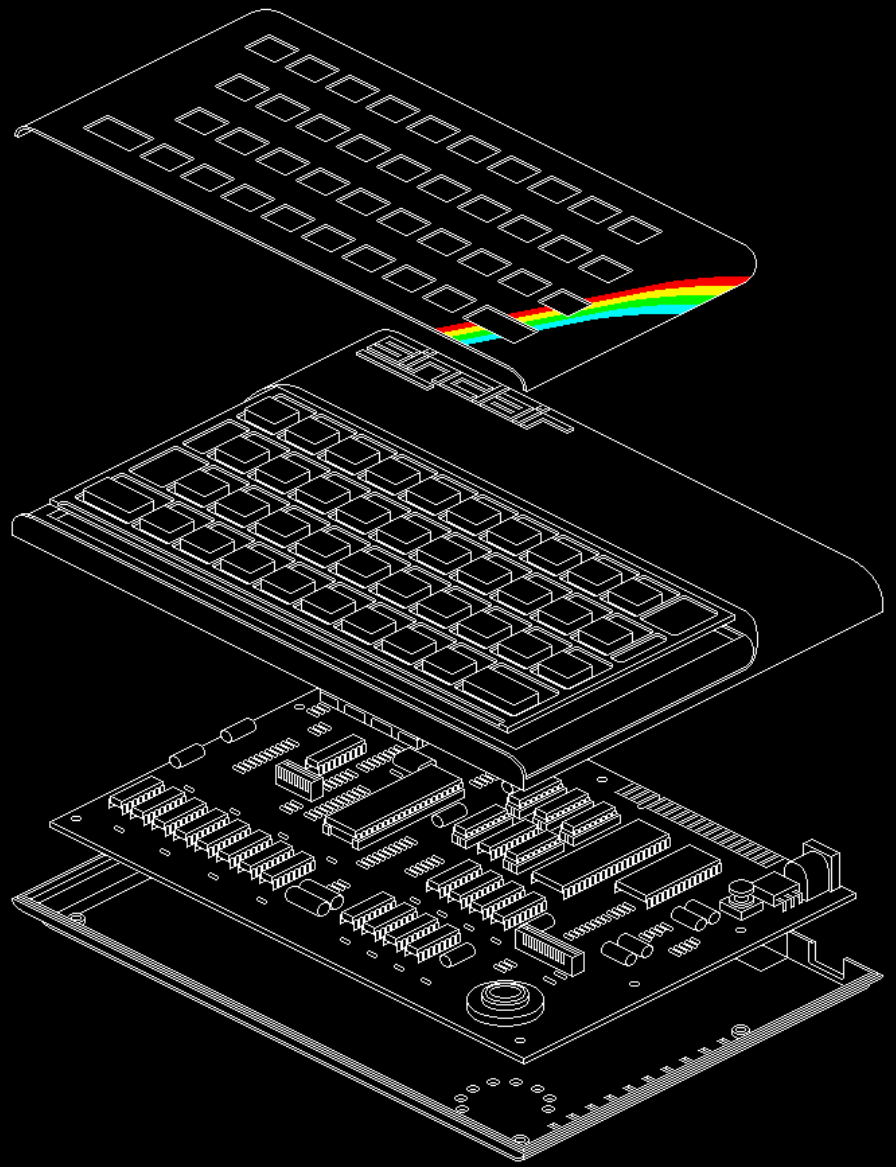
1) Because retrocomputing is good, and it's good to find out the limitations of the Spectrum and push it to its limits.

2) Because I am a "Commodorian" and I wanted to experience different "emotions".

3) Because Johnathan Cauldwell has provided us with a fabulous tool that everyone should try at least once.

Working with the ZX Spectrum limitations

NAME	ZX SPECTRUM
MANUFACTURER	Sinclair
TYPE	Home Computer
ORIGIN	United Kingdom
YEAR	April 1982
END OF PRODUCTION	1984
BUILT IN LANGUAGE	Sinclair Basic
KEYBOARD	QWERTY rubber keyboard (40 keys) with up to 6 functions per key!
CPU	Zilog Z80 A
SPEED	3.5 MHz
RAM	16k or 48k (42k available to programmers)
ROM	16k (Basic & OS)
TEXT MODES	32 x 24
GRAPHIC MODES	256 x 192
COLORS	8 with two tones each (normal and bright)
SOUND	1 voice / 10 octaves (Beeper)



Feeling different «emotions»

I am a Commodorian and have always felt that the ZX Spectrum was significantly below the capabilities of the Commodore 64.

After my experience on "Metamorphosis" I have no more doubts.

I am absolutely convinced.

Feeling different «emotions»

The C64 has sprite management, sound management and scrolling is not difficult to implement.

The Speccy has none of this.

The games for C64 are colorful and fast and, on average, are better than those available for Spectrum.

Feeling different «emotions»

C64

ZX Spectrum

Feeling different «emotions»

C64

ZX Spectrum

Feeling different «emotions»

Now you are probably thinking...

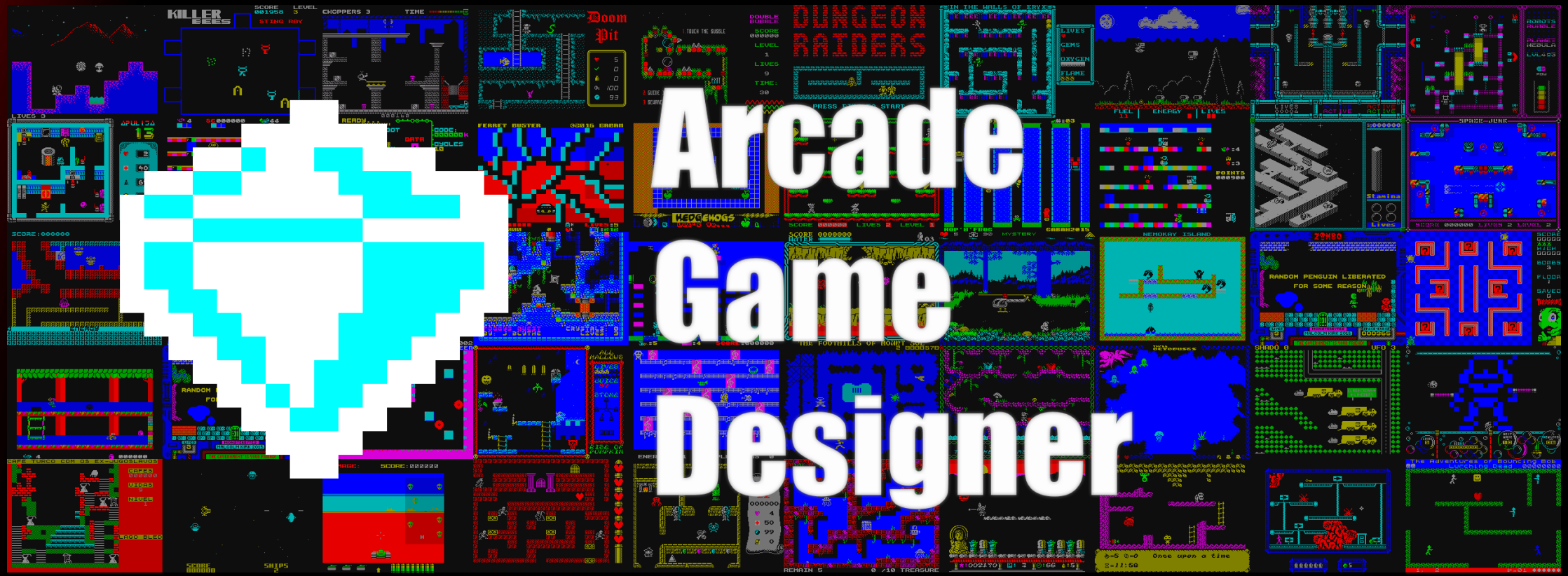
"... since you're a Commodorian why don't you mind your own business and make a game for the Commodore 64?"

Because I am also a lover of retrocomputing and I am convinced that from a graphical point of view programmers could have done a lot more on the Speccy in all these years

ZX Spectrum does not deserve it.

MPAGD by Johnathan Cauldwell

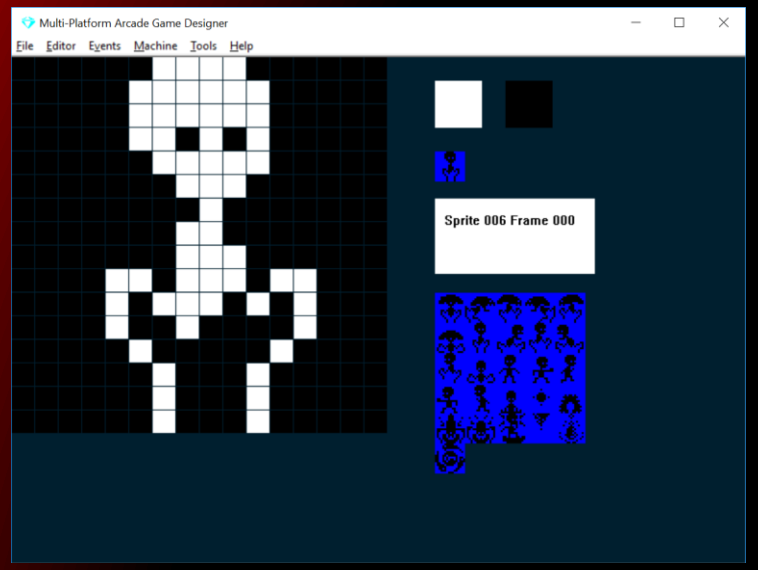
Johnathan Cauldwell has provided us with a fabulous tool that everyone should try at least once.

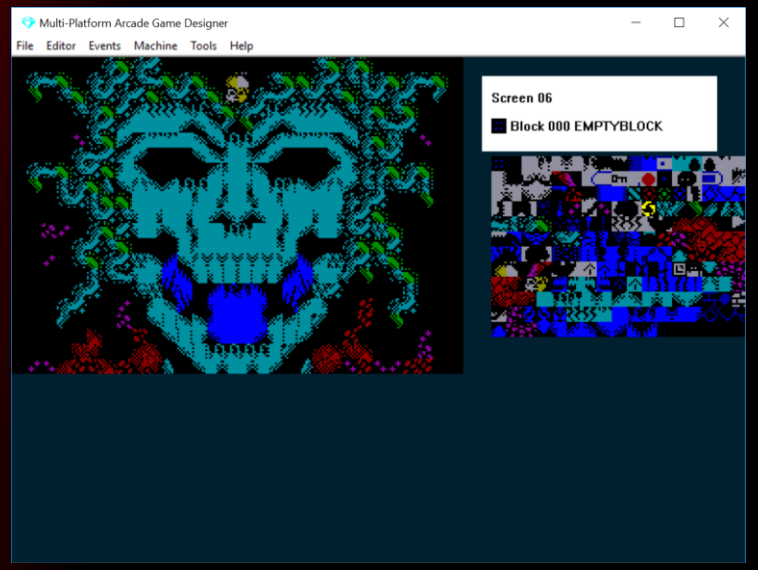


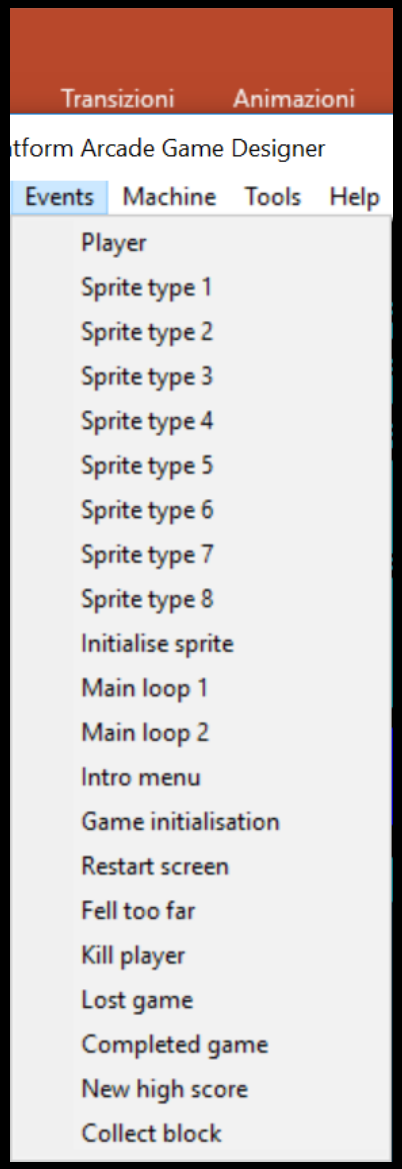
MPAGD by Johnathan Cauldwell

My name is Jonathan Cauldwell and back in the late 1980s I began writing games for the ZX Spectrum. Several of them were published, the most famous of which were probably **Egghead** and **Egghead to the Rescue**, distributed on Crash powertapes in 1990. The ZX Spectrum died as a mainstream game machine in 1993 but if you owned one of these computers in their glory years, chances are you've played at least one of my early games. I can only apologise for that and hope that the experience didn't scare you for life…

MPAGD by Johnathan Cauldwell







events.a05 - Blocco note

File Modifica Formato Visualizza ?

```
;-----------------------------------------------------------------------
; ENEMY SPIDER
;-----------------------------------------------------------------------
; SETTINGA = Strength
; SETTINGB = Movement delay (jump/direction change)
;-----------------------------------------------------------------------

EVENT SPRITETYPE5

;-----------------------------------------------------------------------
; Check Mario-style jump on top
; Strength is copied to stumbled sprite type 8
;-----------------------------------------------------------------------

  LET L 2                           ; Childspider
  LET M 11                          ; Set image
  REPEAT 3
    IF COLLISION L                  ; Check if hit enemy
      OTHER
       LET I AIRBORNE
        LET J Y
        LET K SETTINGA
      ENDSPRITE
      IF I 0                        ; If enemy not in air
        IF AIRBORNE > 0             ; If in air
          IF JUMPSPEED < 128        ; If juming down
            IF Y < J                ; If hitting top
              STOPFALL
              JUMP 4                ; Jump
              OTHER
```

How did you get the idea?

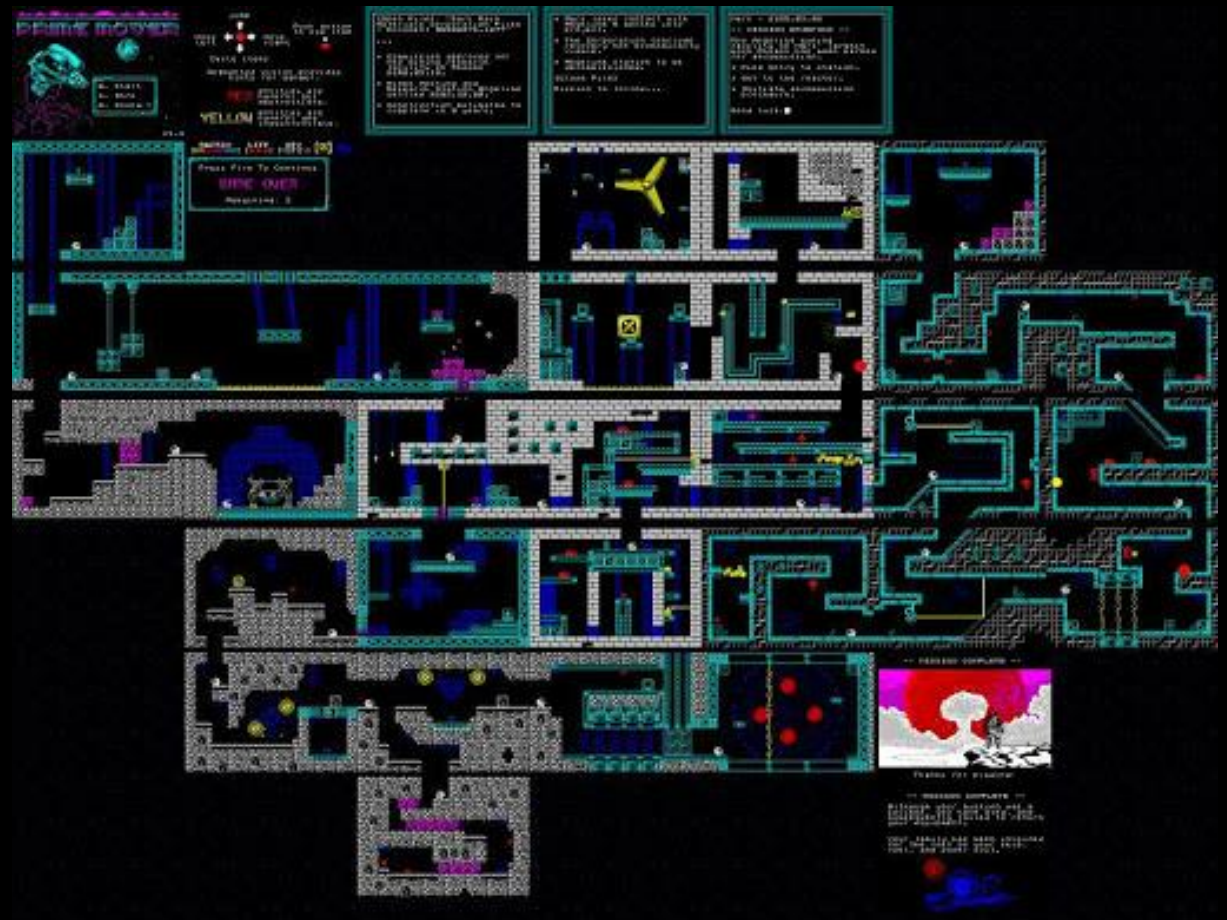
1) I desired to make completely different graphics from the ones a ZX Spectrum player is used to

2) I wanted to make a modern game for the Spectrum and make it fit in 48K

... Design different graphics than usual..

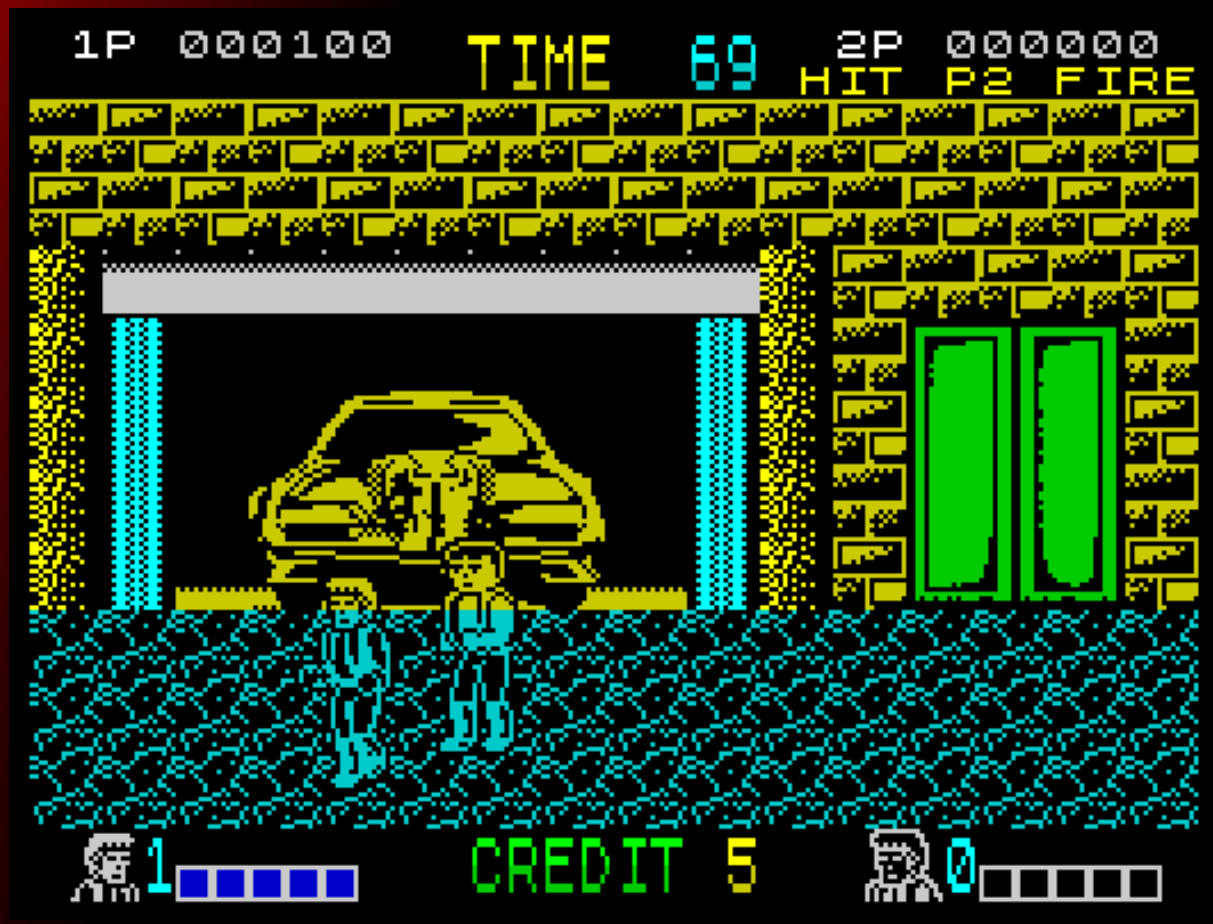
70% of the games are monochromatic or almost, having colored sprites on a black background.

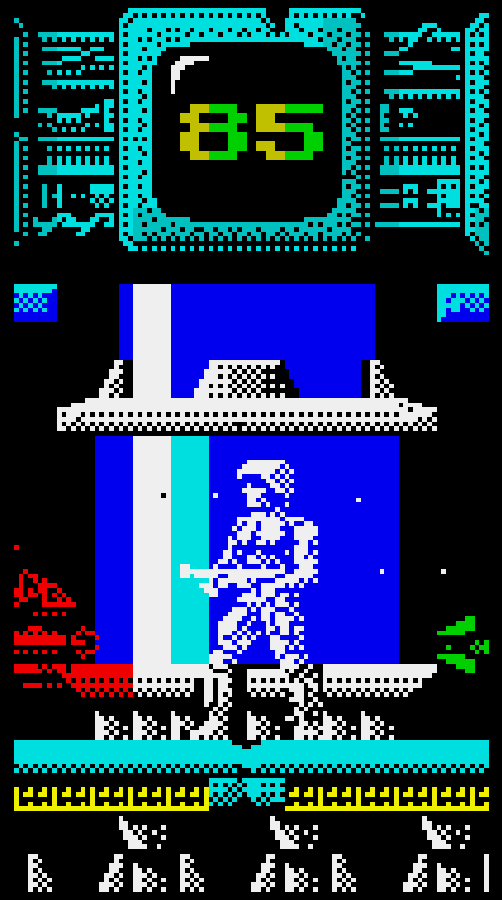
... Design different graphics than usual..



Game maps from the 80s (not just for Spectrum) are more frequently than not made up of rectangular screens. They have no particular shapes.

... Design different graphics than usual..





For us Commodorians the problem of color clash is simply inconceivable. We just can't look at it without making our eyes bleed.

… Design different graphics than usual··

… so I defined the following rules for my game:

1) A colorful background

2) Build a very particular and complex map so that once the player has fully discovered it, he would appreciate its aesthetic and artistic value as well·

3) Stay away from the evil Color Clash as much as possible

I wanted to make a modern game

Many of the recent games designed for old computers do not look modern; rather they look like simple CLONES of games from the 80s with old and not innovative gameplay and ideas. I admit that there isn't much to innovate after 40 years.

Sometimes a few DEMAKES appear but they are nothing special to me.

I didn't want to design another anonymous clone or another adventure "take the keys and objects to go forward". I wanted to break most of the rules and come up with new ideas; I wanted to pick the deepness of a modern console gameplay, squeeze and bring it to the ZX Spectrum.

So I decided to make a different "combat game" taking inspiration from the GOD of combat games. My game per excellence is ...

I wanted to make a modern game

... Because it is beautiful, fast, simple, essential, spartan· !!
DOOM is PURE VIDEO GAME·

I wanted to make a modern game

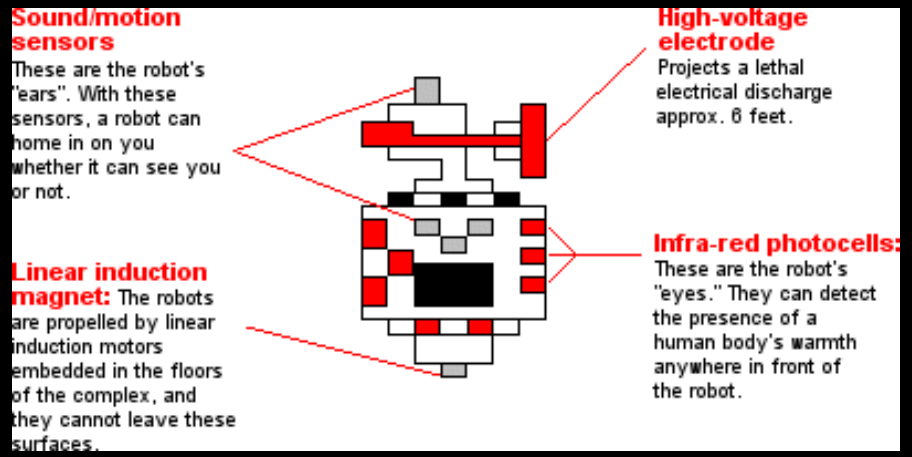
I could have taken the "combat spirit" of the game and "translate" it into an 8-bit 2D computer visuals.
The first 8-bit combat games that came to mind were Mario Bros (the first one) and Bubble bubble.

I wanted to make a modern game

... Anyway, the enemies of Mario Bros or Bubble Bubble are not unpredictable; they can have a random component in their strategies but not much more: they vary their motion but do not look smart.

I needed unpredictable enemies, still making them appear to have a strategy and not move around randomly !!

I wanted the player to be afraid of their behavior. A good reference for this are the beautiful robots of Impossible Mission. When you enter a room, the robots look all the same but if you look closer you can spot each of them behaving differently.



I wanted to make a modern game

…· It was clear I needed to design an artificial intelligence that would make them behave like wild "animals"·

They had to run away if they found an enemy stronger than themselves, and attack if they found a weaker enemy ····

I had to "give birth" to Creatures that "live" and "evolve" and "die" in their own ecosystem, conceived as a dynamic ecosphere·

In an ecosystem, no one is good or bad: it is simply what it is·

The player would have impersonated one of those creatures·

Metamorphosis development timetable

2020												2021	
	February	March	April	May	June	July	August	September	October	November	December	January	February
	Graphics												

From bare bones ideas to the REAL THING, featuring Kees van Oss

CODER

Our first contact

Ciao. Listen.
1) You are bloody fast and you know what you are doing....
2) I like doing graphics and conceive games but I don't like to code.
3) Shall we do it together?
I have an idea in mind, and it does not require too much effort but I need to explain it to you in detail.
The game is simple and linear; it has just few rules and I'd like to port it to every system.... (Well, almost all of them) and it is not going to take you too much time at all.
You have already seen my previous game "Nucleo 448" made with Bayliss (2 weeks of joint work) and we realized something good.
I am not asking you to help me: I am asking you to do it together.
Think about it.

27 March 2020

Our first contact

Sure I will help you with coding! It sounds like a good plan.
It is important to have a complete overview of all game rules, per sprite type and in general which makes it easier to program.
This way we can think about how to implement it before we start programming.

27 March 2020

Our first contact

1) “it doesn’ t require too much effort”

2) “The game is simple and linear”.

3) “it is not going to take you too much time at all

4) “It is important to have a complete overview of all the game rules”

Nothing went as planned

27 March 2020

The first overview of all gamerules

ONLY 3 CHARACTERS

AGD manages up to 21 events, 9 of which are sprite events (1 for the main player and 8 for enemies), shots, portals and everything else you can think of. The idea of having the 3 main characters on the screen - both player and enemies-- could reach the limits of AGD.

The first overview of all gamerules

KILL - EAT - EVOLVE

The original goal was simple: kill your own species and eat them.
Increase your energy level to evolve into a human child and escape the maze map.
Only a child would have been able to escape from there and thus finish the game.

The first overview of all gamerules

THE ENERGY BAR

There would have been a simple health bar to represent the player's energy status. Every action and event would have costed ENERGY: jumping, shooting, moving... The player had to be careful of the few resources he had, so no random jumps and no random shots. One had to be careful and thrifty. No SCORING, no TROPHIES and no KEYS TO OPEN DOORS.

The first overview of all gamerules

THE OPEN WORLD

The environment had to be an OPEN WORLD, that is, a map where the enemies move from screen to screen and where the energy level of the enemies is "memorized". If an enemy went to a lower room in the map, the player would have been able to chase and kill him, and so could the other characters.
We planned for no limits, everyone could move where they wanted, if they were able to.

Our first obstacles

ISSUE N·1

NO OPEN WORLD

AGD allows you to place enemies in a room in a certain position but doesn't get rid of them once killed·
In practice, if you kill an enemy and eat it absorbing its energy, you can exit and re-enter the room, find it there again, kill it again and absorb its energy as many times as you want· With this trick you could get the maximum energy since the first screen·

THE MAIN GOAL OF THE GAME WOULD BE LOST·

Our first obstacles

ISSUE N·1

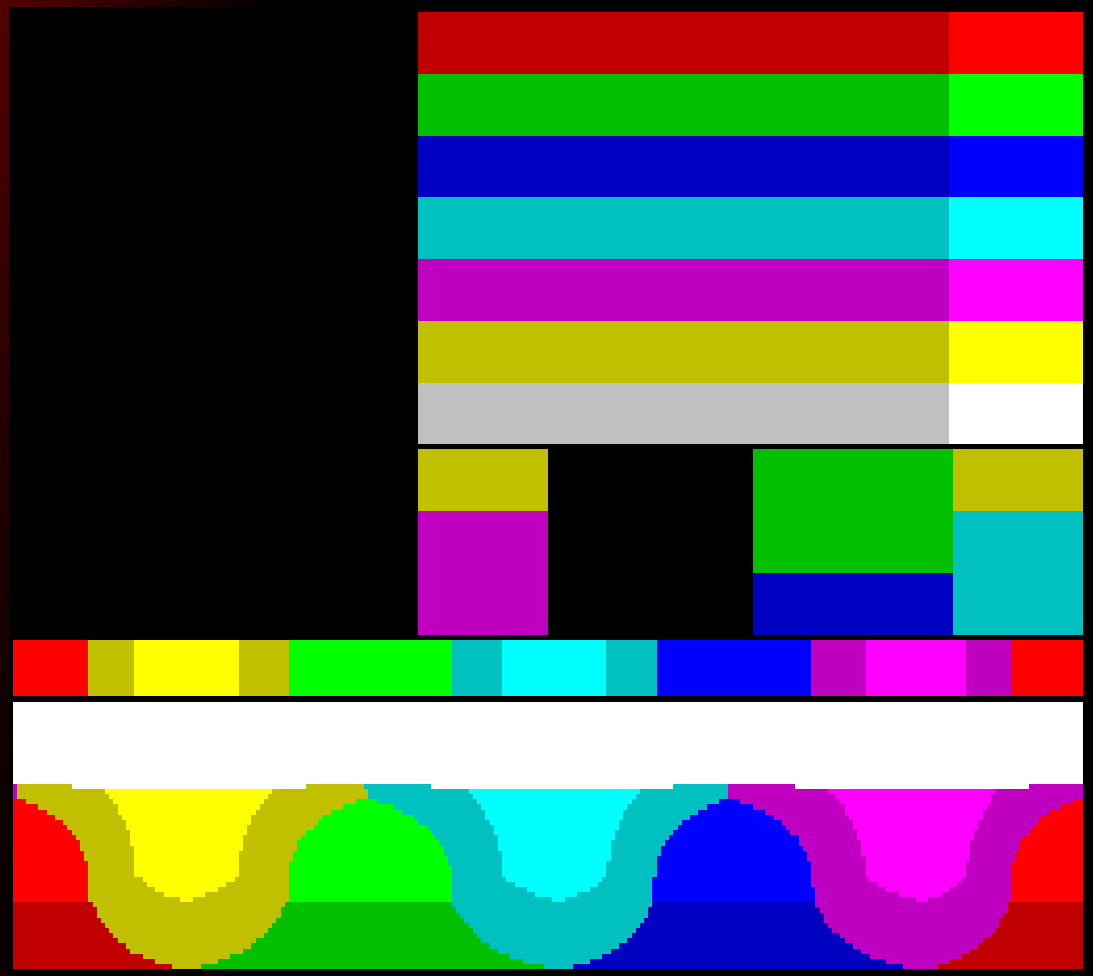
SOLUTION

Divide the map into 3 parts, one for each type of evolutionary state of the player·The first time you can evolve only if you have taken the "KEY" to unlock the needed portion of the energy bar, then you can loose energy and regress to the previous evolutionary form·

A "trivial" cliché that justifies the goal of the game·

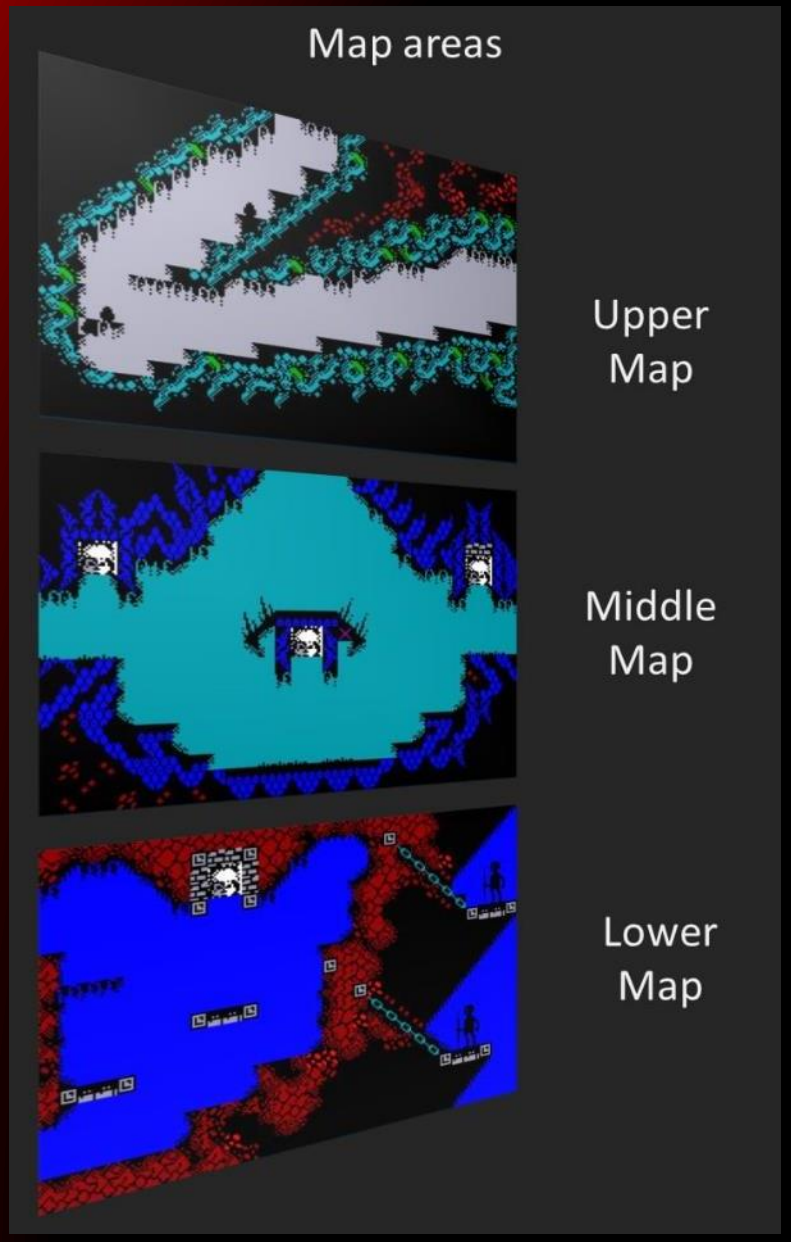
Our first obstacles

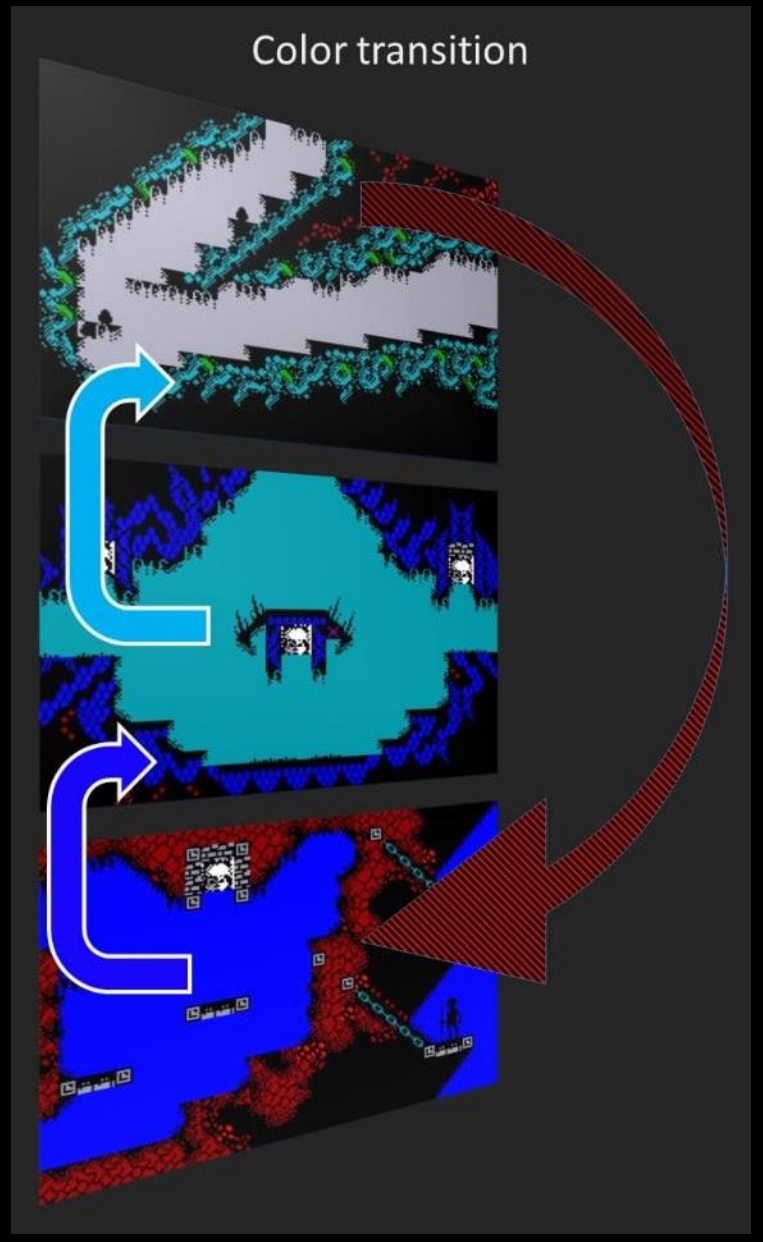
ISSUE N·2



DRAWING 3 DIFFERENT GAME AREAS WITH ONLY 7 COLORS (one of which is useless because it is ...pink!)

Our first obstacles

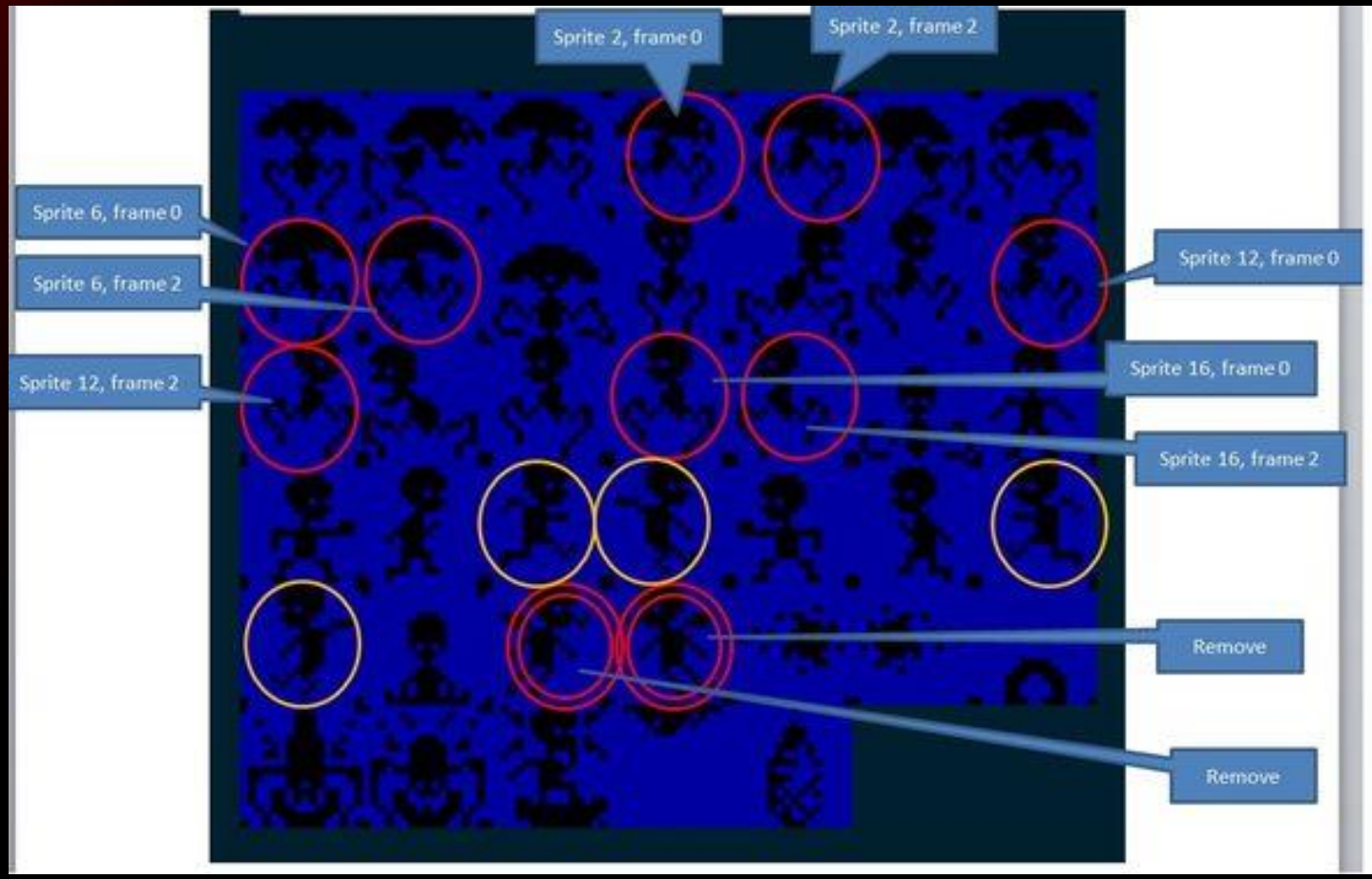




Our first obstacles

ISSUE N·3

3 SPRITE IMAGES, 1 FOR EVERY METAMORPH OF PLAYER AND ENEMIES.



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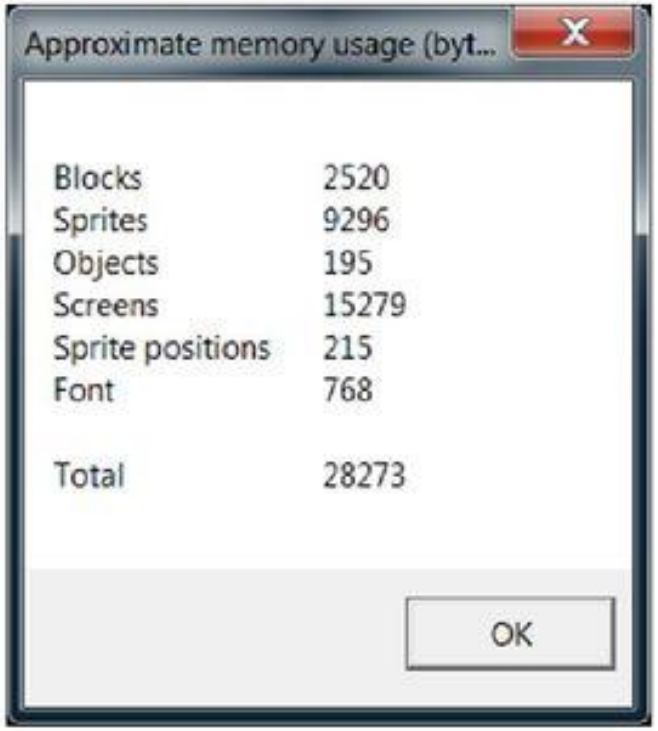


Our first obstacles

ISSUE N·3

3 SPRITE IMAGES, 1 FOR EVERY METAMORPH OF PLAYER AND ENEMIES.

The current sprite image depends on the energy level; if the energy level is within a certain range the image changes into the corresponding metamorph.
Lower energy levels match lower life forms while higher levels correspond to higher life forms.
Each sprite evolutionary status has its own properties like jumping and spitting speed/distance. As a rule, a lower life form is weaker than a higher life form. This means that a sprite can evolve by gaining energy and regress by losing energy.

Evolution/regression of sprites makes the game different.

Our first obstacles

ISSUE N·4

ENEMY ARTIFICIAL INTELLIGENCE

	SPIDER see at 64			SPIDER-CHILD see at 96			CHILD see at 128		
What happens	Where i look	decision	%	Where i look	decision	%	Where i look	decision	%
When it see a worm	Left	Left	100%	Left	Left	100%	Left	Left	100%
	Left	right	0%	Left	right	0%	Left	right	0%
	Left	Attack	0%	Left	Shoot	0%	Left	Shoot	0%
	Left	Jump	0%	Left	Jump	0%	Left	Jump	0%
	Right	Left	0%	Right	Left	0%	Right	Left	0%
	Right	right	100%	Right	right	100%	Right	right	100%
	Right	Attack	0%	Right	Attack	0%	Right	Attack	0%
	Right	Jump	0%	Right	Jump	0%	Right	Jump	0%
When it receive an attack (shoot)	Left	Left	0%	Left	Left	0%	Left	Left	0%
	Left	right	25%	Left	right	50%	Left	right	0%
	Left	Attack	50%	Left	Attack	25%	Left	Attack	75%
	Left	Jump	25%	Left	Jump	25%	Left	Jump	25%
	Right	Left	25%	Right	Left	50%	Right	Left	0%
	Right	right	0%	Right	right	0%	Right	right	0%
	Right	Attack	50%	Right	Attack	25%	Right	Attack	75%
	Right	Jump	25%	Right	Jump	25%	Right	Jump	25%

When it see a spider and can attack it	Left	Left	0%	Left	Left	0%	Left	Left	0%
	Left	right	50%	Left	right	25%	Left	right	0%
	Left	Attack	50%	Left	Shoot	75%	Left	Shoot	100%
	Left	Jump	0%	Left	Jump	0%	Left	Jump	0%
	Right	Left	50%	Right	Left	25%	Right	Left	0%
	Right	right	0%	Right	right	0%	Right	right	0%
	Right	Attack	50%	Right	Attack	75%	Right	Attack	100%
	Right	Jump	0%	Right	Jump	0%	Right	Jump	0%
When it sees and can attack the spider-child	Left	Left	0%	Left	Left	0%	Left	Left	0%
	Left	right	25%	Left	right	50%	Left	right	25%
	Left	Attack	50%	Left	Attack	50%	Left	Attack	75%
	Left	Jump	25%	Left	Jump	0%	Left	Jump	0%
	Right	Left	25%	Right	Left	50%	Right	Left	25%
	Right	right	0%	Right	right	0%	Right	right	0%
	Right	Attack	50%	Right	Attack	50%	Right	Attack	75%
	Right	Jump	25%	Right	Jump	0%	Right	Jump	0%
When it sees and can attack the child	Left	Left	0%	Left	Left	0%	Left	Left	0%
	Left	right	50%	Left	right	75%	Left	right	50%
	Left	Attack	25%	Left	Attack	25%	Left	Attack	50%
	Left	Jump	25%	Left	Jump	0%	Left	Jump	0%
	Right	Left	50%	Right	Left	75%	Right	Left	50%
	Right	right	0%	Right	right	0%	Right	right	0%
	Right	Attack	25%	Right	Attack	25%	Right	Attack	50%
	Right	Jump	25%	Right	Jump	0%	Right	Jump	0%

Our first obstacles

ISSUE N·4

ENEMY ARTIFICIAL INTELLIGENCE

The goal was to create a kind of Artificial Intelligence system for the enemies so that they seem making their own decisions· This has been implemented by making them "look ahead" and check if an enemy is in range· Then, the course of action to be taken depends on the evolutionary state of the enemy·

The algorithm checks an enemy evolutionary state against a weighted table matching with the surrounding conditions (e·g· what direction is the character looking)· Then a random number determines the percentage needed to pick the course of action from the table and applies to the corresponding sprite·

Artificial Intelligence makes the sprites seem to take their own decisions before doing anything

The Gordian problem

ISSUE N·1 (Coding an Open World)

+

ISSUE N·2 (Big MAP)

+

ISSUE N·3 (Lots of sprites)

+

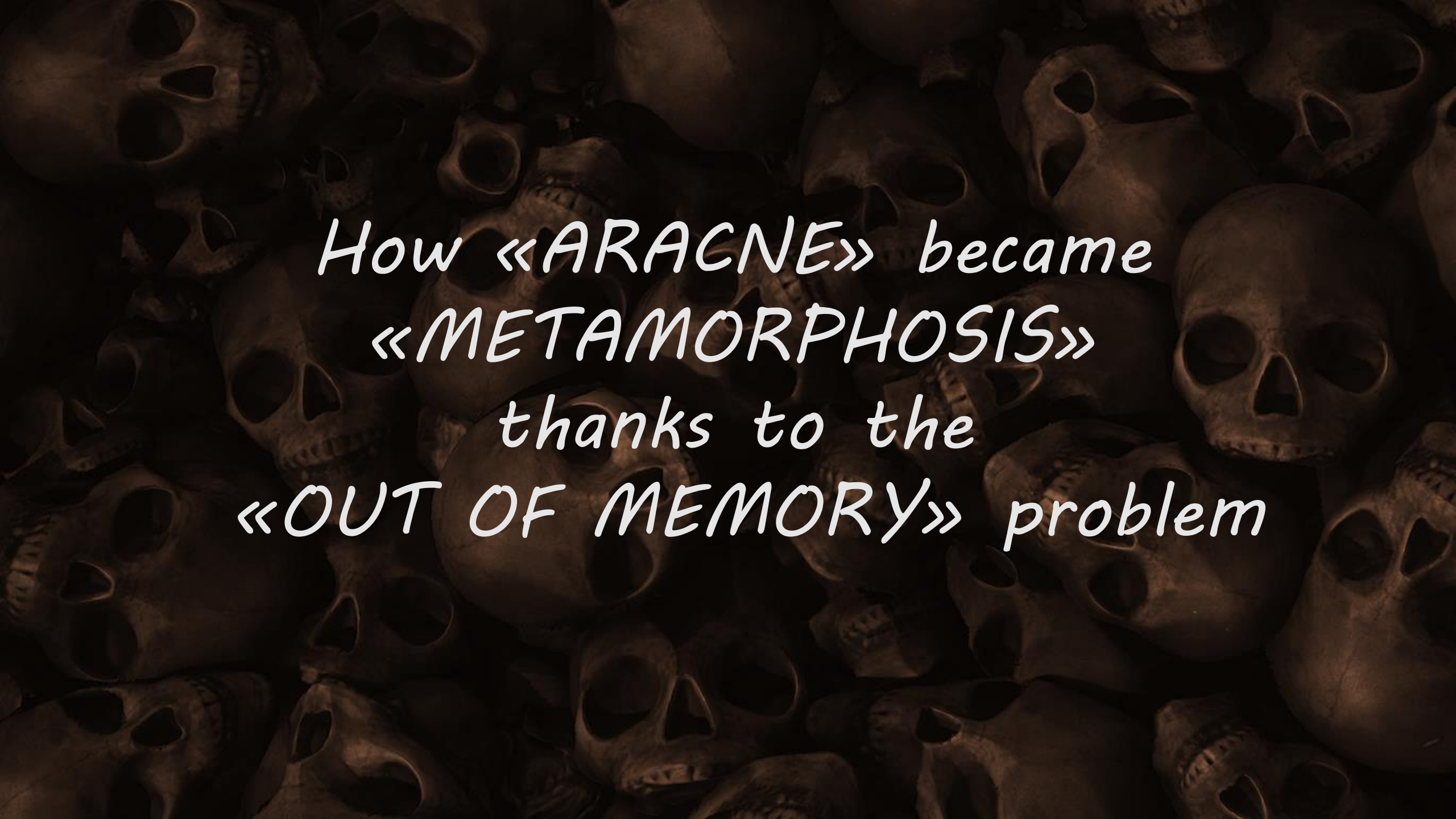
ISSUE N·4 (Artificial Intelligence)

=

OUT OF MEMORY

Metamorphosis development timetable

2020												2021	
	February	March	April	May	June	July	August	September	October	November	December	January	February
	Graphics	Graphics	Graphics OUT of Memory										
		Coding	Coding OUT of Memory										


How «ARACNE» became
«METAMORPHOSIS»
thanks to the
«OUT OF MEMORY» problem

The "OUT OF MEMORY" problem

In the beginning the game was called "ARACHNE" and the map had a shape of Arachne.

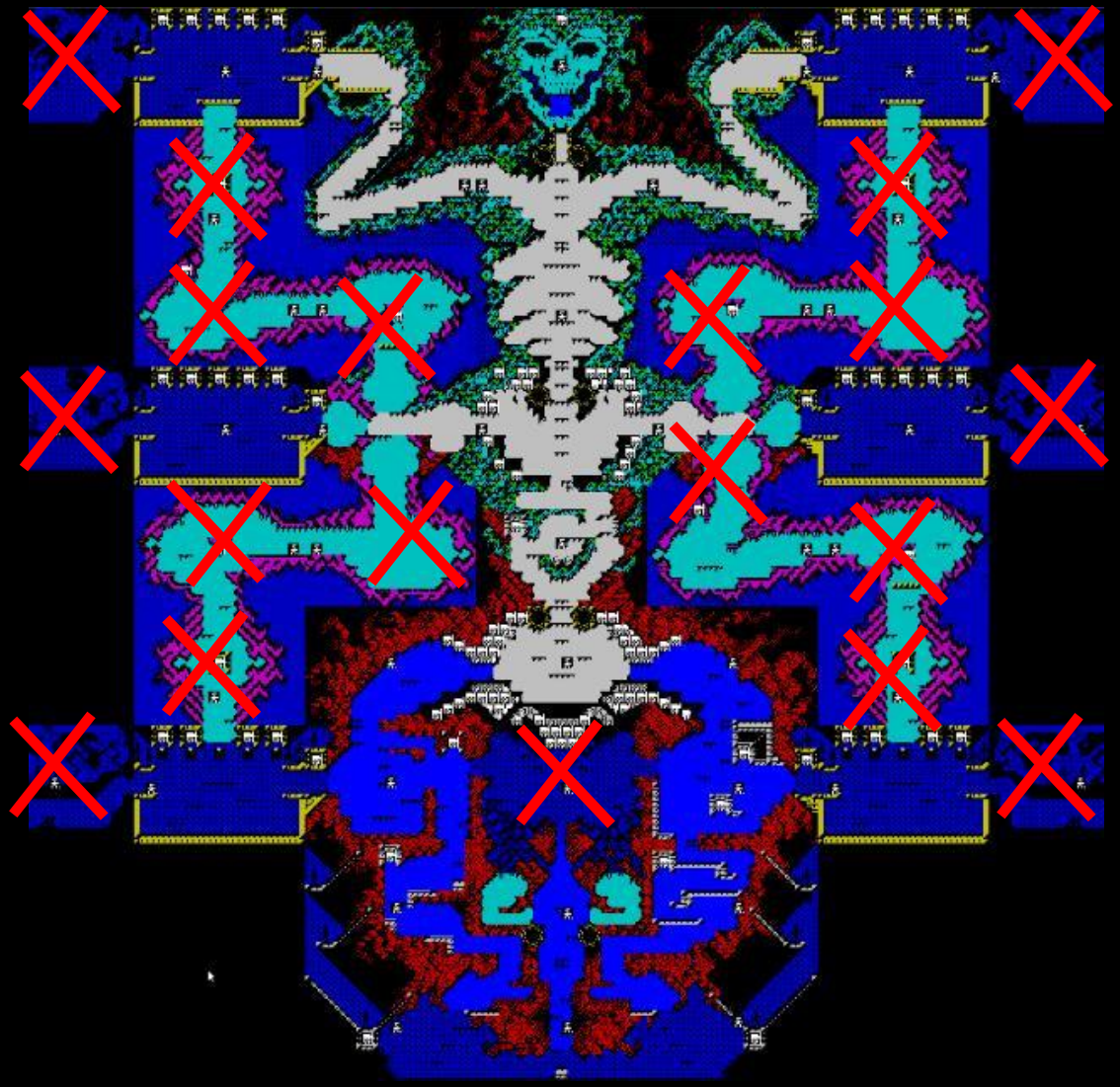
Arachne is depicted as a grotesque monster, half-woman, half-spider who closes people into a cocoon to feed its killer offsprings

The “OUT OF MEMORY” problem

The original map was composed by more than 40 screens and needed 15Kb alone.

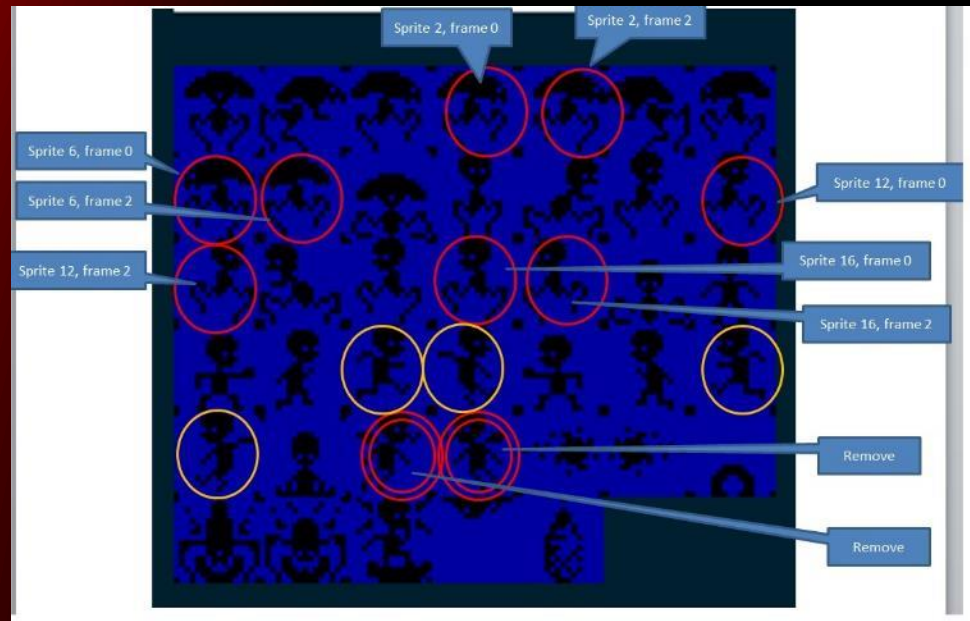
As we had to reduce the size of the map to save memory, we were forced to cut the “legs” of Arachne and keep just the body.
How much do the legs of a spider weigh? Well, it’s 5Kb!

The map did not have anymore the shape of Arachne, so we changed name in “Metamorphosis”



The "OUT OF MEMORY" problem

We removed any cool but unnecessary animation, saving more than 2KB.



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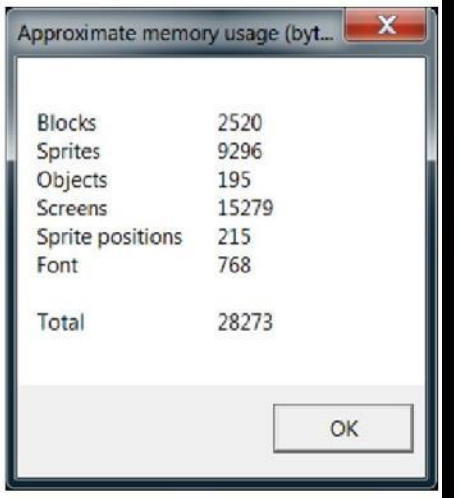

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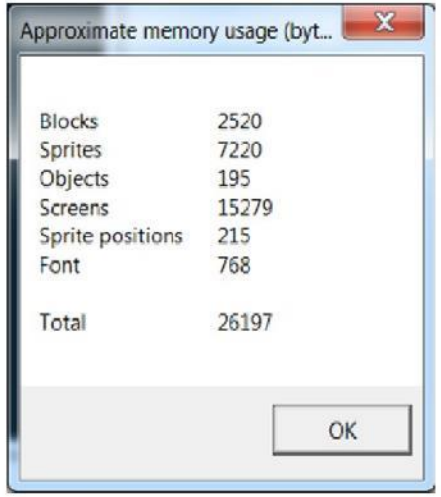


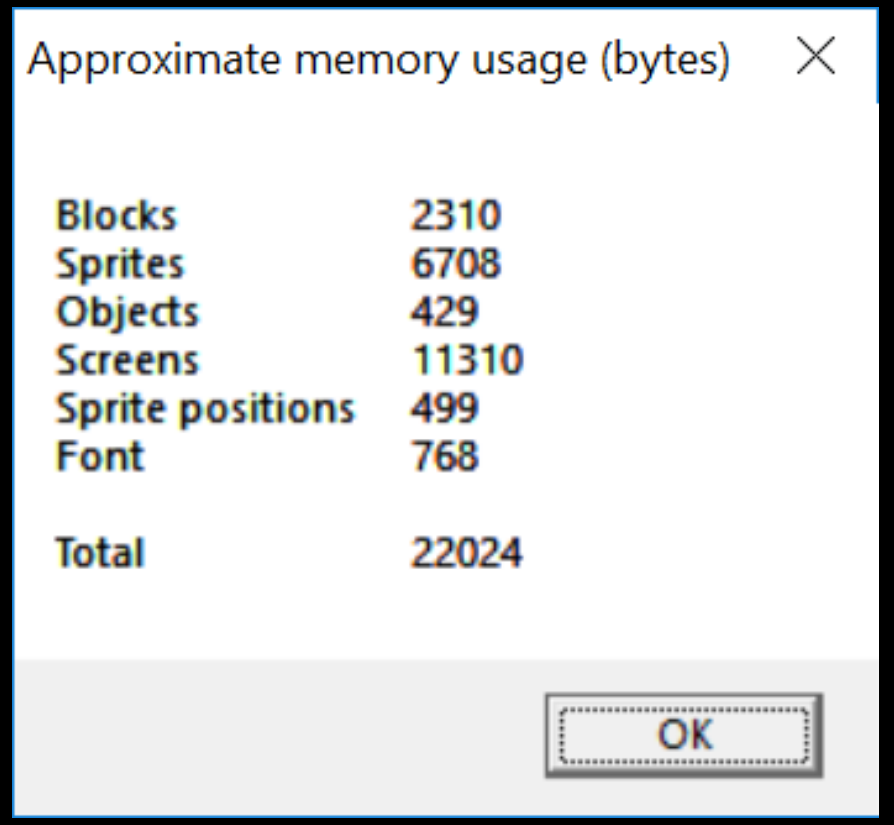
Kees van Oss had to rewrite the code in order to "pick" the right animation frame for the current evolutionary stage of player and enemies.

The "OUT OF MEMORY" problem

The A.I. code had to be optimized trying not to loosewhat we achieved in terms of "animal behaviour".

Kees van Oss had to rewrite part of the code ..... AGAIN.
We shrinked from 29Kb to 22Kb.
Eventually we reached the point of being able to load the game in the ZX SPECTRUM and test it for the first time.

The game worked but we were quite disappointed.



METAMORPHOSIS WAS BORING!!!
WE NEEDED HELP!!!!!.

Metamorphosis development timetable

	2020											2021	
	February	March	April	May	June	July	August	September	October	November	December	January	February
	Graphics	Graphics	Graphics OUT of Memory	Graphics Boring gameplay									
		Coding	Coding OUT of Memory	Coding Boring gameplay									

Here come the Beta Testers

Federico Gori
(ARZAK)
Game guru

Massimo Belardi
Actively supports
the DAGOMARI
museum

Marco
Franchi·Moretti
Pro-Gamer

METAMORPHOSIS WAS BORING!!!

After several days of testing, our Beta Testers came to the same conclusions: Metamorphosis was boring.

"It's a cool concept but there's no goal for the player"

Metamorphosis was designed to be a "combat game", but there were no combats enough!!!.
A proper combat game should have "power ups", "trophies" , enemies, even more powerful enemies, and final bosses. Metamorphosis had nothing of these.

Metamorphosis wanted to break all the rules, but it missed the main goal of any game: being "FUN TO PLAY". It was TOO ROUGH to succeed.

We (Leonardo Vettori & Kees van Oss) had to step back from the original concept and introduce some clichés typical of the adventure genre in order to give the player a final goal and a mission.
Clichés that we tried to avoid since the beginning.

How to turn «METAMORPHOSIS» fun to play?

Federico Gori
(ARZAK)

Lost between cinema, music and video games, Arzak loves to probe the abyss of video games in search of the darkest (and loser) systems that the human mind has ever conceived. What else would you expect from someone who loves laserdiscs??

How to turn «METAMORPHOSIS» fun to play?

Federico Gori (ARZAK)

Introduction of TOXIC DROPs.

The action in Metamorphosis is only "horizontal" because the player and enemies only can shoot horizontally, so Arzak suggested to introduce some obstacles and annoyances affecting the vertical action (i.e. while jumping).

He said: "[…] Toxic drops should not be immediately fatal. On the contrary, they could annoy the player keeping her more concentrated on avoiding the drops rather than fighting against the enemies, and that would put at risk the "combat game dimension".

After that, we had an interesting discussion regarding the "falling speed" of the toxic drops and introducing a random time gap between a drop and the next one.

How to turn «METAMORPHOSIS» fun to play?

Massimo Belardi (QUANTIGIGA)

Max @ Quantigiga lives his 8-bit existence between C64, 3DFX Resident Evil 4 and the upcoming Cyberpunk 2077 … while taking care of his old Olivetti BCS He is also a fine philosopher.

How to turn «METAMORPHOSIS» fun to play?

Introduction of DARK MAZES.

Massimo Belardi (QUANTIGIGA)

Kees van Oss suggested to insert some simple “dark mazes” in the game. Leonardo thought that it might have been a pointless idea, but Leonardo is not a hard gamer so they eventually agreed it was worth a try anyway.

In fact, Massimo Belardi thought it was a “great” idea and fought for make it part the game. When we told him we added 5 small dark mazes he was SO HAPPY!

Dark mazes were also a good addition to gameplay because they are quite “unusual” and because they can be positioned outside the monster body map, effectively extending the game space.

How to turn «METAMORPHOSIS» fun to play?

Marco Franchi·Moretti
Pro-Gamer

Marco aka D&FF in leet D377 after walking for nights in hidden castles full of Nazi Germans and Martian bases, directed the most famous clan on BattleNet's Diablo II known for "ItaBarb", the only barbarian who opposed excessive power of the Teutonic "GermanBarb"· Subsequently, the war drums rose when he participated in the first Italian Lan Party at the Mandela Forum in Florence, fighting in a couple of StarCraft competition rounds against the 1500 best warriors of the Italian realm, being reaped by the winners of the competition· After fighting in the wastelands of Avalon in DAOC and WarHammer OnLine, he moved to Ruby-Ka· Lately he plays the games proposed by a unknown madman named Vettori·

How to turn «METAMORPHOSIS» fun to play?

Marco Franchi·Moretti
Pro-Gamer

Introduction of "COLLECTING KEYS and OBJECTS".

If there was SOMETHING that Leonardo REALLY wanted to avoid from the start, these were:
1· Mobile platforms
2· Collect the keys and items

M·F· Moretti "won" on the second point, when he reminded Leonardo that in DOOM you collect keys, open doors, take objects … Damn DOOM!

However, Metamorphosis doesn't have "mobile platforms" … yet·

How to turn «METAMORPHOSIS» fun to play?

Having received and incorporated most of the suggestions from the BETA TESTERS and after another 3 months of "heavy" testing, Metamorphosis was a completely different game that departed significantly from the original idea.

50% were still rooted in the original concept.
50% consisted of new adventure-style features.

Metamorphosis was no longer Leonardo Vettori and Kees van Oss's game: METAMORPHOSIS WAS A GAME BY EVERYONE IN THE TEAM.

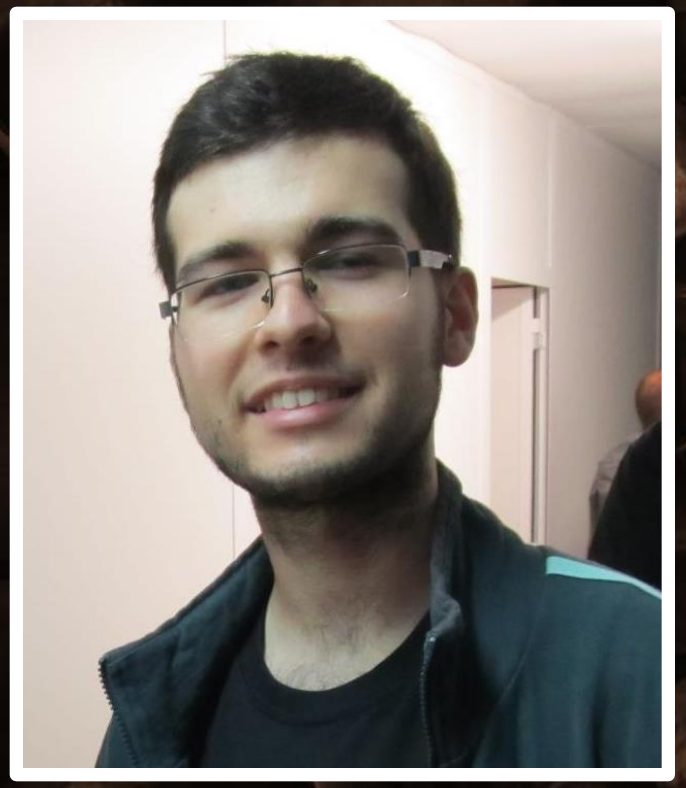
However, one important element was still missing: MUSIC

Metamorphosis development timetable

	2020											2021	
	February	March	April	May	June	July	August	September	October	November	December	January	February
	Graphics	Graphics	Graphics OUT of Memory	Graphics Boring gamplay	Graphics	Graphics	Graphics						
		Coding	Coding OUT of Memory	Coding Boring gameplay	Coding	Coding	Coding						
  					Testing	Testing	Testing						

The sixth element
The music by P·Pimenta and M·Fanciulli

Pedro Pimenta
AY Expert



Marco Fanciulli
SID Composer

The sixth element
The music by P.Pimenta and M.Fanciulli

Due to the fact that L.Vettori is a graphician and K.v.Oss is a coder, most of the available memory has been used for graphics and code.

Music was taken in consideration since the beginning, but only for the 128 Zx Spectrum version of the game, possibly using some existing score.

After the great improvements made on the gameplay we changed idea and thought it was nice to have an original music score.

The sixth element
The music by P·Pimenta and M·Fanciulli

Marco Fanciulli
naïve SID Composer

He firmly believes that men landed on the moon in 1969, and was so fascinated that he's building his own real-size Lunar Module replica to start his journey to the stars... at least, to simulate it!·

Meanwhile, he enjoys developing games for the VCS2600, sometimes composes weird SID music, and organizes retrocomputing meetings·

His 5 years old nephew is a better player than him·

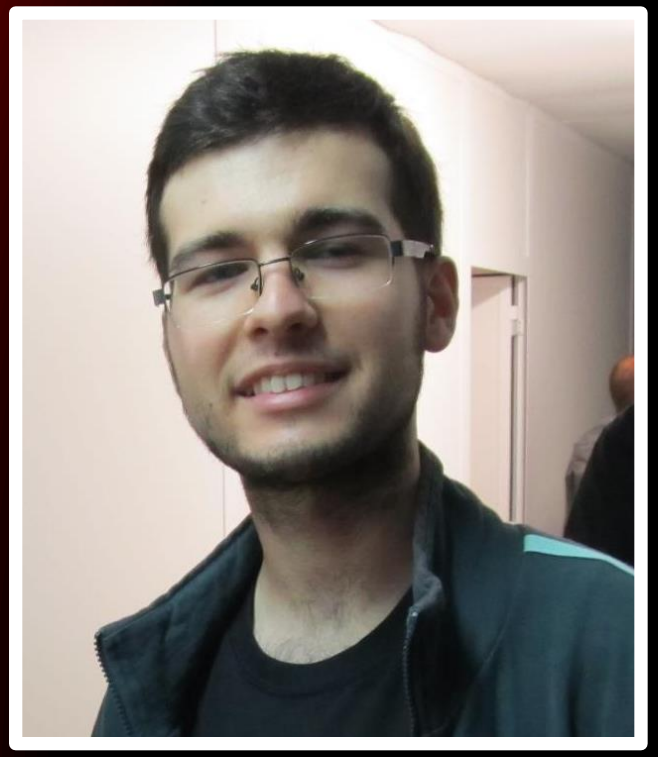
The sixth element
The music by P·Pimenta and M·Fanciulli

Marco (who has been following the development of our game since the beginning) started composing am atmospheric and "bio" music made of strange noises and unusual body sounds, inspired by the biological nature of the game map·

Marco scored his soundtrack with an expertise on SID music and somehow pushed the line in a direction that didn't quite fit the AY-3-8910's usage profile· He soon discovered that his music could not be directly converted for the AY-3-8910 and seek help from experts on that chip·

The sixth element
The music by P·Pimenta and M·Fanciulli

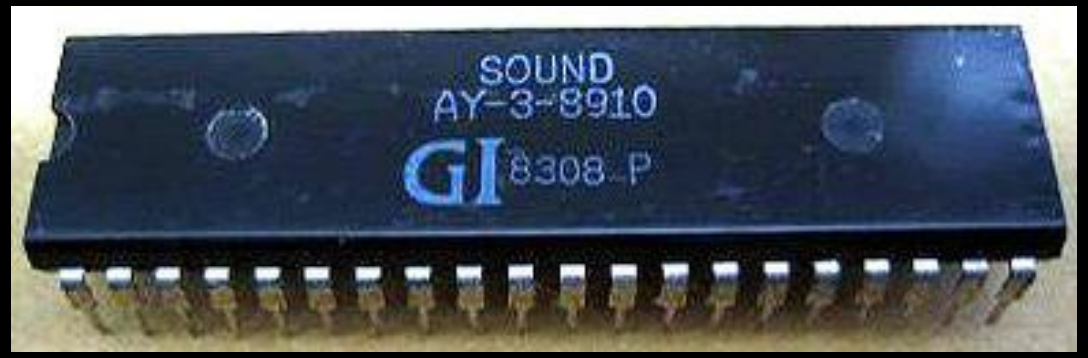
Pedro Pimenta
AY Expert



Pedro grew up with Playstation, and Game Boy Color· He really wanted a Commodore 64, but as he wasn't able to find one, he bought an Amiga 600 instead· Afterwards found a Spectrum +2 on a flea market· Making music since a young age, tried making music for modern games with little success· However, in late 2018 a friend suggested to focus on composing for a Spectrum 48k game· After that, he received another request from Spain and via word of mouth he was one of the most recommended composers around, making music for projects in Germany, England, Brazil, Italy and many more·

The sixth element
The music by P·Pimenta and M·Fanciulli

We contacted Pedro Pimenta asking for help with translating Marco's score to a proper tune for the ZX Spectrum·
He took Marco's music and made his best to achieve the original atmosphere and beat on the AY-3-8910·



Eventually the result was completely different from the original tune because of the characteristics of the chipset!
And it was awesome!

Good things happen!!!

Metamorphosis development timetable

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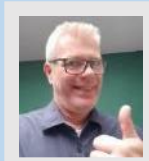
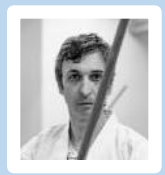
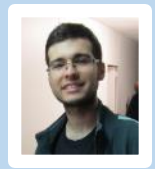
	Coding	Coding OUT of Memory	Coding Boring gameplay	Coding	Coding	Coding	Coding						
  	Testing	Testing	Testing	Testing									
 	Music												


Kees van Oss'
state engine

Kees van Oss' state engine

Eventually, all gameplay elements were defined.
All object were defined.
Everything was defined.

K.v.O wrote a "state engine" to smoothly run the game and have total control of the gameplay.

What is a "state engine" and how does it work?

Kees van Oss' state engine

After a lot of testing and coding, the equations in the code quickly became too complex for efficiently control the gameplay.

It was then that K.v.O added a state engine to the code.

In a state engine, all the actions that must be taken to complete the game are described. The engine starts from an initial state and updates with each action and event uniquely defined in the gameplay. This way you can always check how far in the game the player has arrived and what operations must be enacted in any given screen and in a certain state (for example: show / remove keys, show / remove teleporters, etc.)

Kees van Oss' state engine

Lower part of map				Middle part of map				Upper part of map			
State	Goto room	Action	Result	State	Goto room	Action	Result	State	Goto room	Action	Result
0	23	Enter room	CR batch already visable	13	1	Enter room	Show CR batch	26	1	Enter room	Show CR batch
		Take CR batch	A=A+1			Take CR batch	A=A+1			Take CR batch	A=A+1
1	15	Enter room	Show teleport	14	14	Enter room	Show teleport	27	7	Enter room	Show teleport
		Enter teleport	Goto combatroom			Enter teleport	Goto combatroom			Enter teleport	Goto combatroom
	18	Kill all enemies	Remove teleport Show Object0 A=A+1		13	Kill all enemies	Remove teleport Show Object3 A=A+1		27	Kill all enemies	Remove teleport Show Object6 A=A+1
2		Take Object0	Return to room 15 A=A+1	15		Take Object3	Return to room 14 A=A+1	28		Take Object6	Return to room ?? A=A+1
3	19	Enter room	Drop Object0 in circle A=A+1	16	11	Enter room	Drop Object3 in circle A=A+1	29	9	Enter room	Drop Object6 in circle A=A+1
4	25	Enter room	Show CR batch	17	2	Enter room	Show CR batch	30	2	Enter room	Show CR batch
		Take CR batch	A=A+1			Take CR batch	A=A+1			Take CR batch	A=A+1
5	19	Enter room	Show teleport	18	12	Enter room	Show teleport	31	5	Enter room	Show teleport
		Enter teleport	Goto combatroom			Enter teleport	Goto combatroom			Enter teleport	Goto combatroom
	22	Kill all enemies	Remove teleport Show Object1 A=A+1		24	Kill all enemies	Remove teleport Show Object4 A=A+1		8	Kill all enemies	Remove teleport Show Object7 A=A+1
6		Take Object1	Return to room 19 A=A+1	19		Take Object4	Return to room 11 A=A+1	32		Take Object7	Return to room ?? A=A+1
7	19	Enter room	Drop Object1 in circle A=A+1	20	11	Enter room	Drop Object4 in circle A=A+1	33	9	Enter room	Drop Object7 in circle Show exit level teleport A=A+1
8	21	Enter room	Show CR batch	21	15	Enter room	Show CR batch	34		Enter teleport	A=A+1
		Take CR batch	A=A+1			Take CR batch	A=A+1	35		Completed game	
9	17	Enter room	Show teleport	22	11	Enter room	Show teleport				
		Enter teleport	Goto combatroom			Enter teleport	Goto combatroom				
	20	Kill all enemies	Remove teleport Show Object2 A=A+1		28	Kill all enemies	Remove teleport Show Object5 A=A+1				
10		Take Object2	Return to room 17 A=A+1	23		Take Object5	Return to room 11 A=A+1				
11	19	Enter room	Drop Object2 in circle Show exit level teleport A=A+1	24	11	Enter room	Drop Object5 in circle Show exit level teleport A=A+1				
12		Enter teleport	Goto room 16 A=A+1	25		Enter teleport	Goto room 9 A=A+1				

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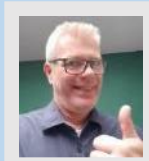
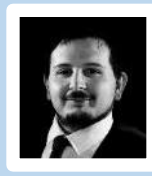
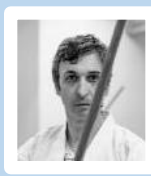
	Coding	Coding	Coding OUT of Memory	Coding Boring gameplay	Coding	Coding	Coding	Coding	Coding State Engine				
					Testing	Testing	Testing	Testing	Testing				
								Music	Music				


YOUTUBE TEASER
and latest improvements

YOUTUBE TEASER and latest improvements

15 November 2020

Time had come to show our work.

Federico Gori directed and edited the Teaser, using the original soundtrack by Marco played on a professional keyboard.

Metamorphosis' teaser got more than 1000 views in 2 weeks.

YOUTUBE TEASER and latest improvements

After the teaser was published, we got a late test by STARMOULDER.
He finished the game at the third try in less than 30 minutes, so he suggested to have a "HELL" version, a lot harder than the "Normal" one.

Starfox Mulder found an INTELLIVISION when he was still in his crib , a 286 in his bedroom in first grade, and spent his first allowance at age 14 to buy a SNES. Since then, most of his money has been invested in game consoles and computers … everything else has been squandered.
He loves the Spectrum more than any home computer, and that says a lot about his sanity.

YOUTUBE TEASER and latest improvements

Last but not least among our beta testers MARCO, 5 years old, enters the stage. And what an entrance! He manages to reach level 2 of the game after one hour, playing on a real Zx Spectrum 48k and having big fun!

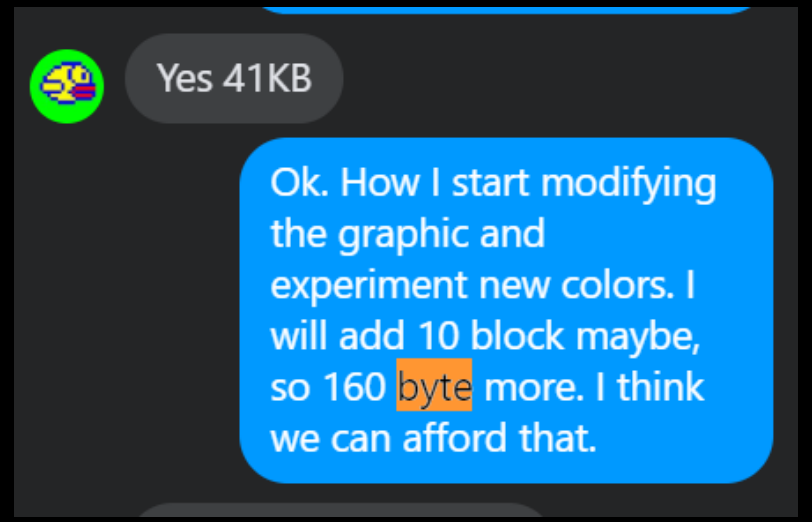
On facebook he reaches almost 2000 views in less than 24h.

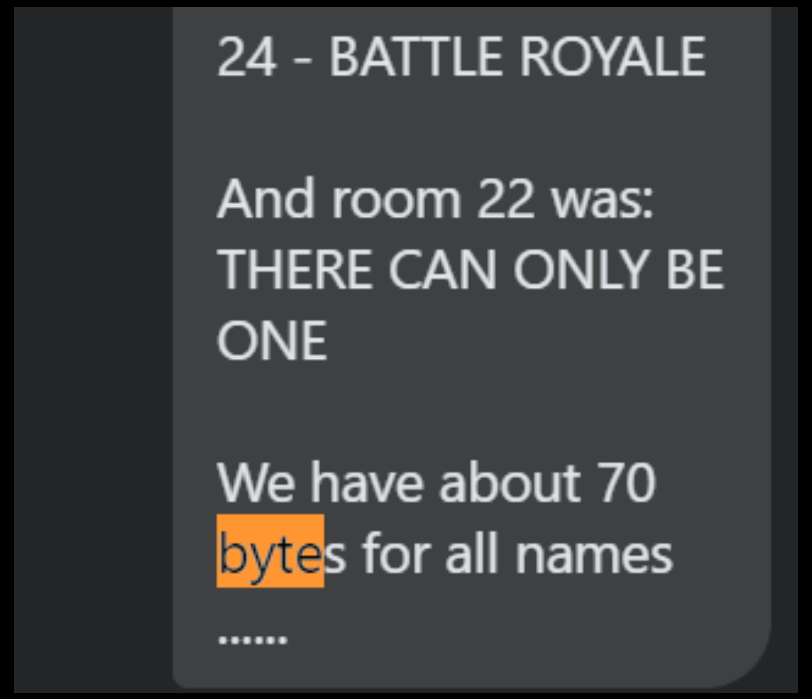
We told you he's by far a better player than his uncle Marco Fanciulli!

YOUTUBE TEASER and latest improvements

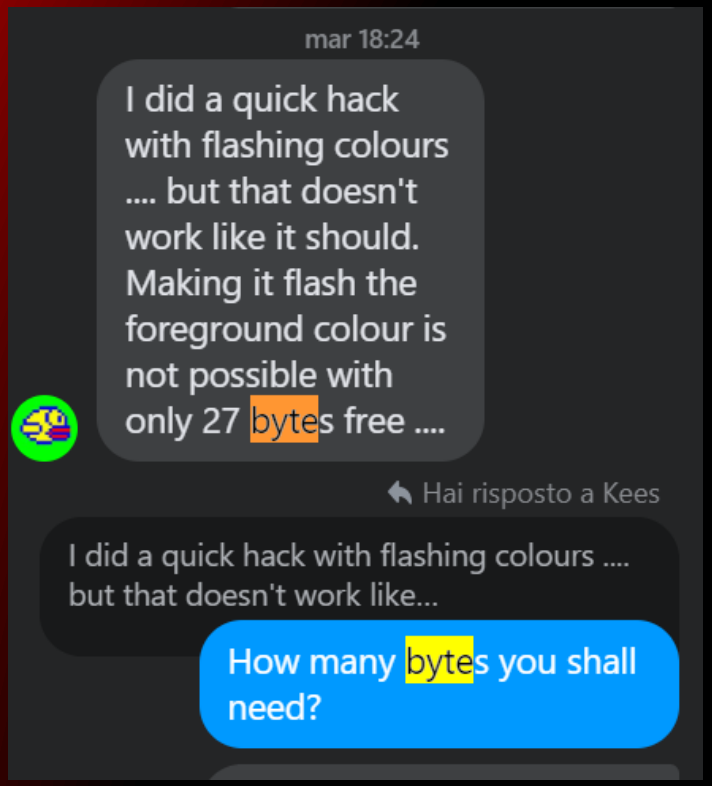
The improvements were coded daily by Kees van Oss following the suggestions of the Beta Testers.

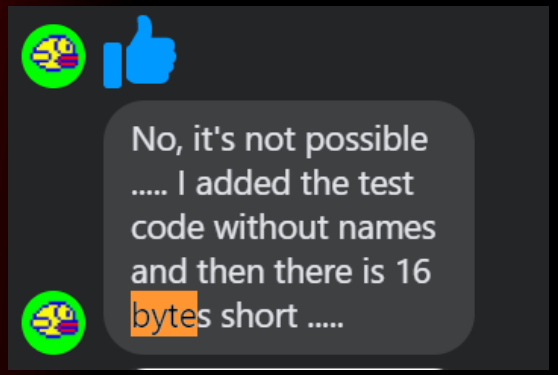
And every day we had to face the same Gordian problem: "Out of memory".
And every time it was just a matter of a fistful of bytes

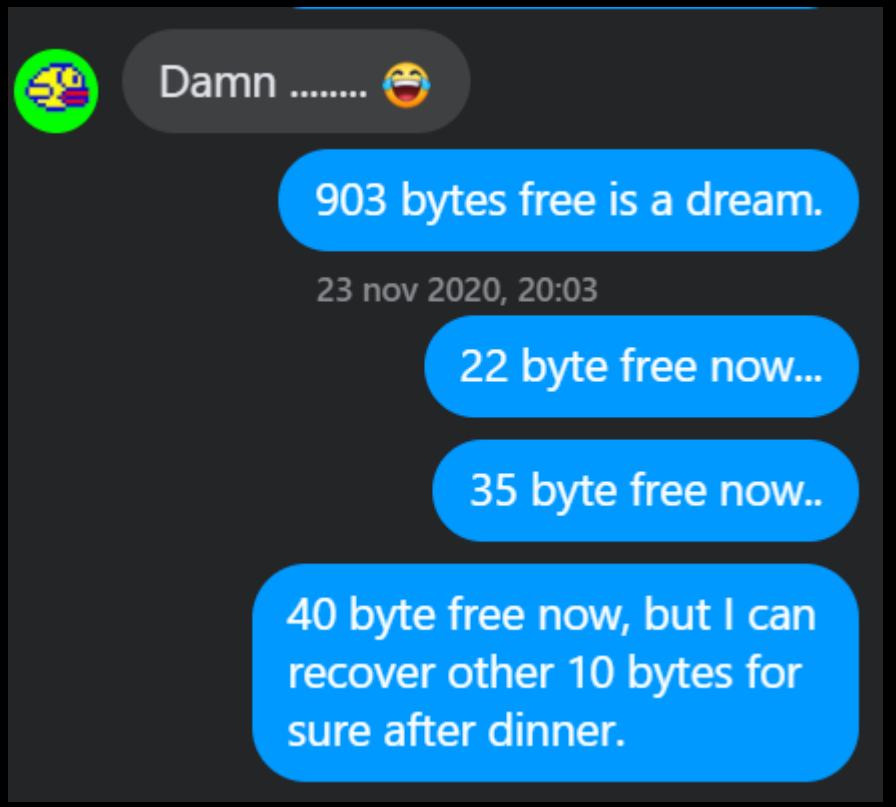


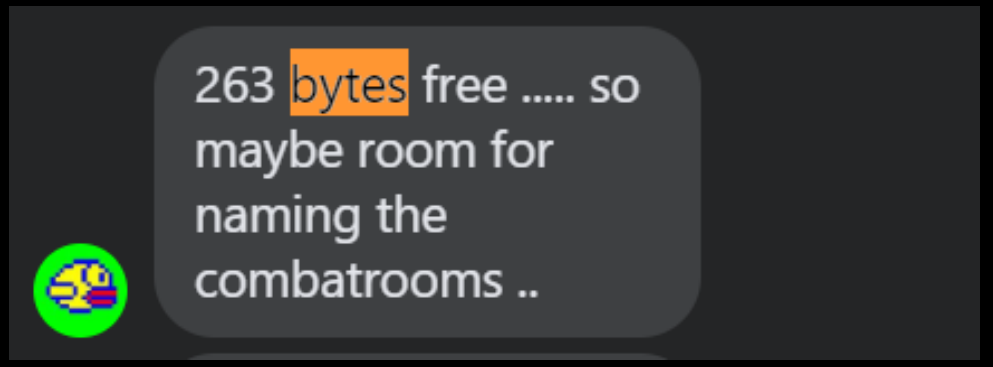


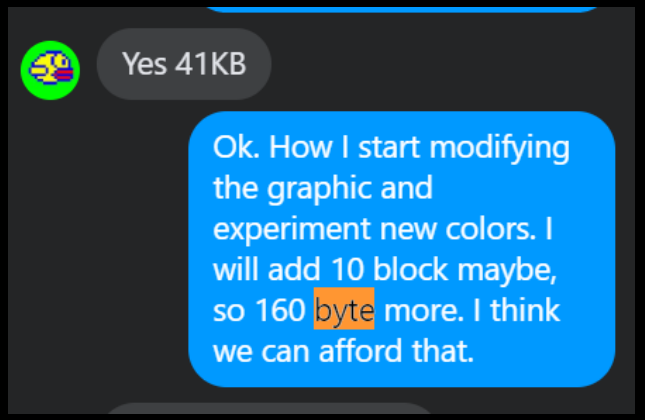
YOUTUBE TEASER and latest improvements

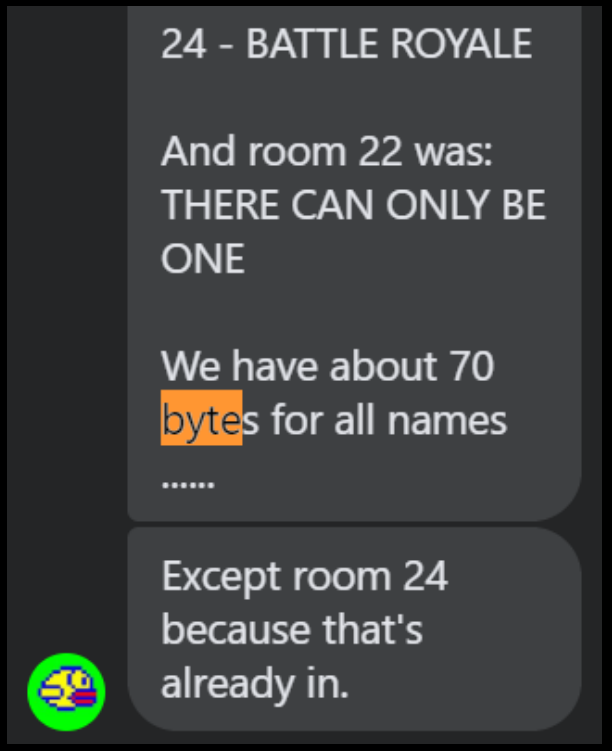




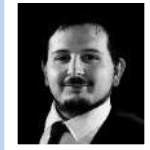








Metamorphosis development timetable

2020											2021	
	February	March	April	May	June	July	August	September	October	November	December	January	February
	Graphics	Graphics	Graphics OUT of Memory	Graphics Boring gamplay	Graphics	Graphics	Graphics	Graphics	Graphics	Graphics			FINISH
	Coding	Coding	Coding OUT of Memory	Coding Boring gameplay	Coding	Coding	Coding	Coding	Coding State Engine	Coding	Coding	Coding	
		  			Testing	Testing	Testing	Testing	Testing				
						 		Music	Music	Music	Music		

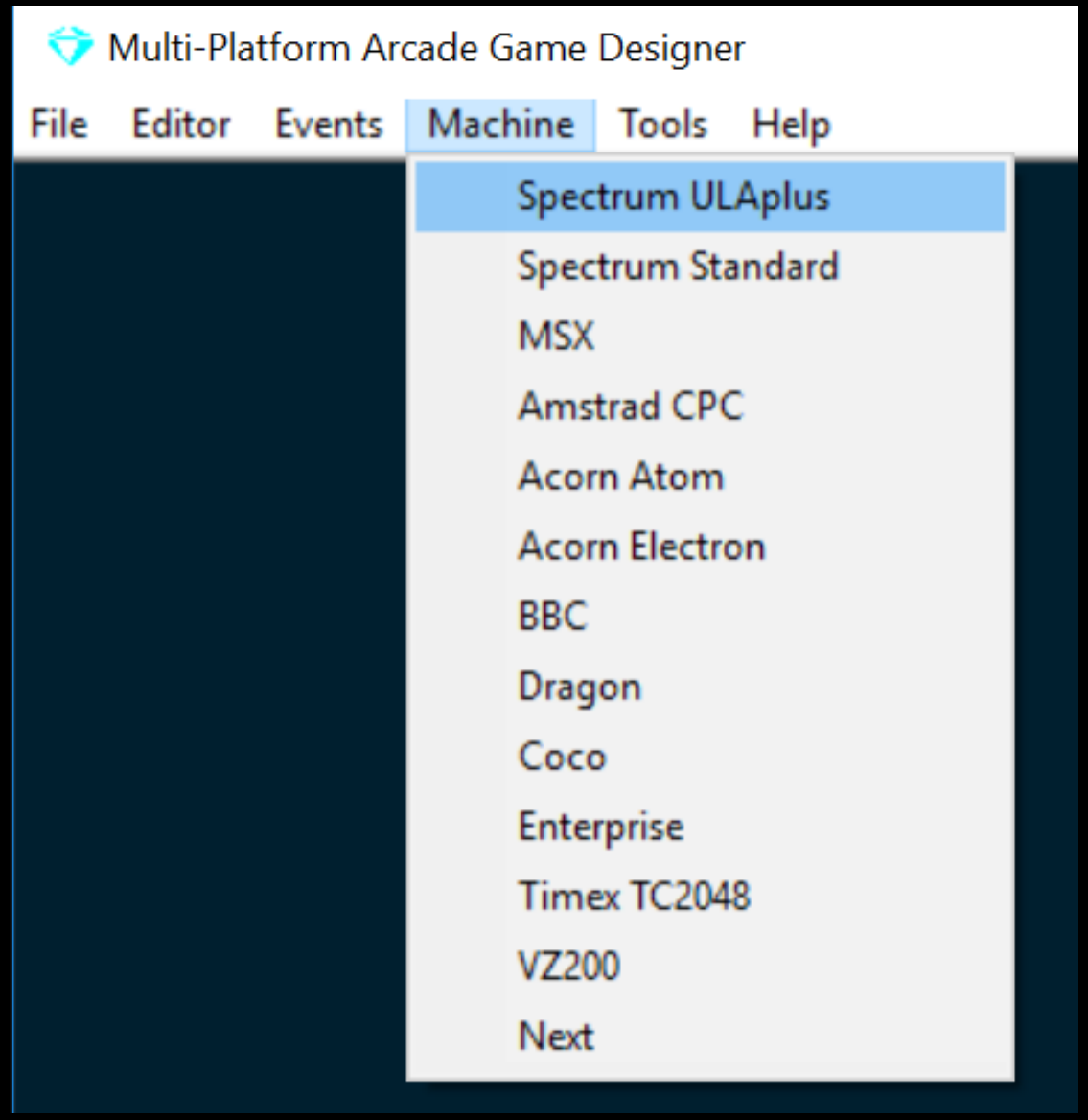

The future of
Metamorphosis

The future of Metamorphosis

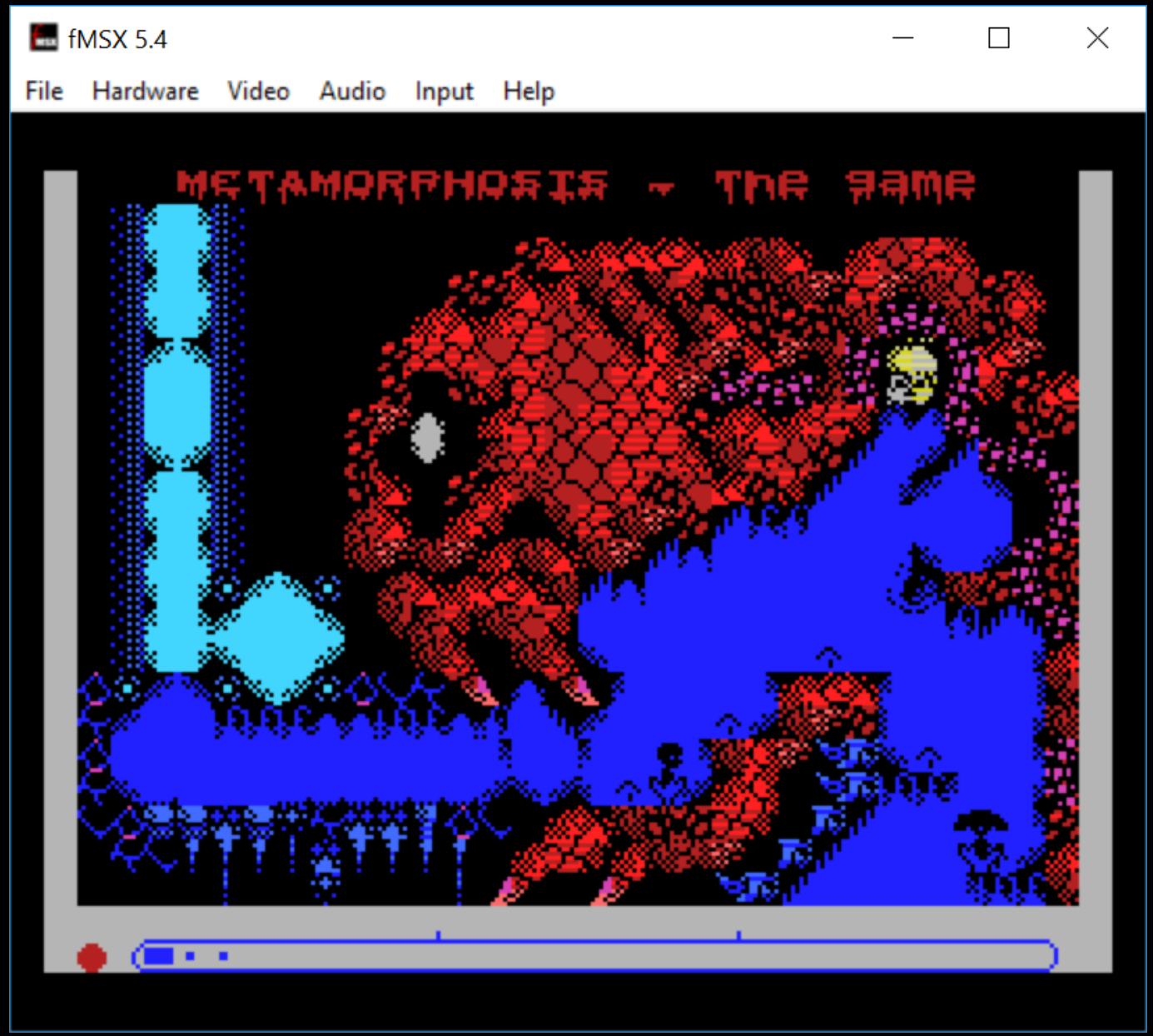
Metamorphosis might have an interesting future going beyond the ZX Spectrum version.

AGD lets you to design games for a lot of Z-80 based machines.

It might be sufficient to change some graphics and a few lines of code to make the game available to most of them.



The future of Metamorphosis



The future of Metamorphosis

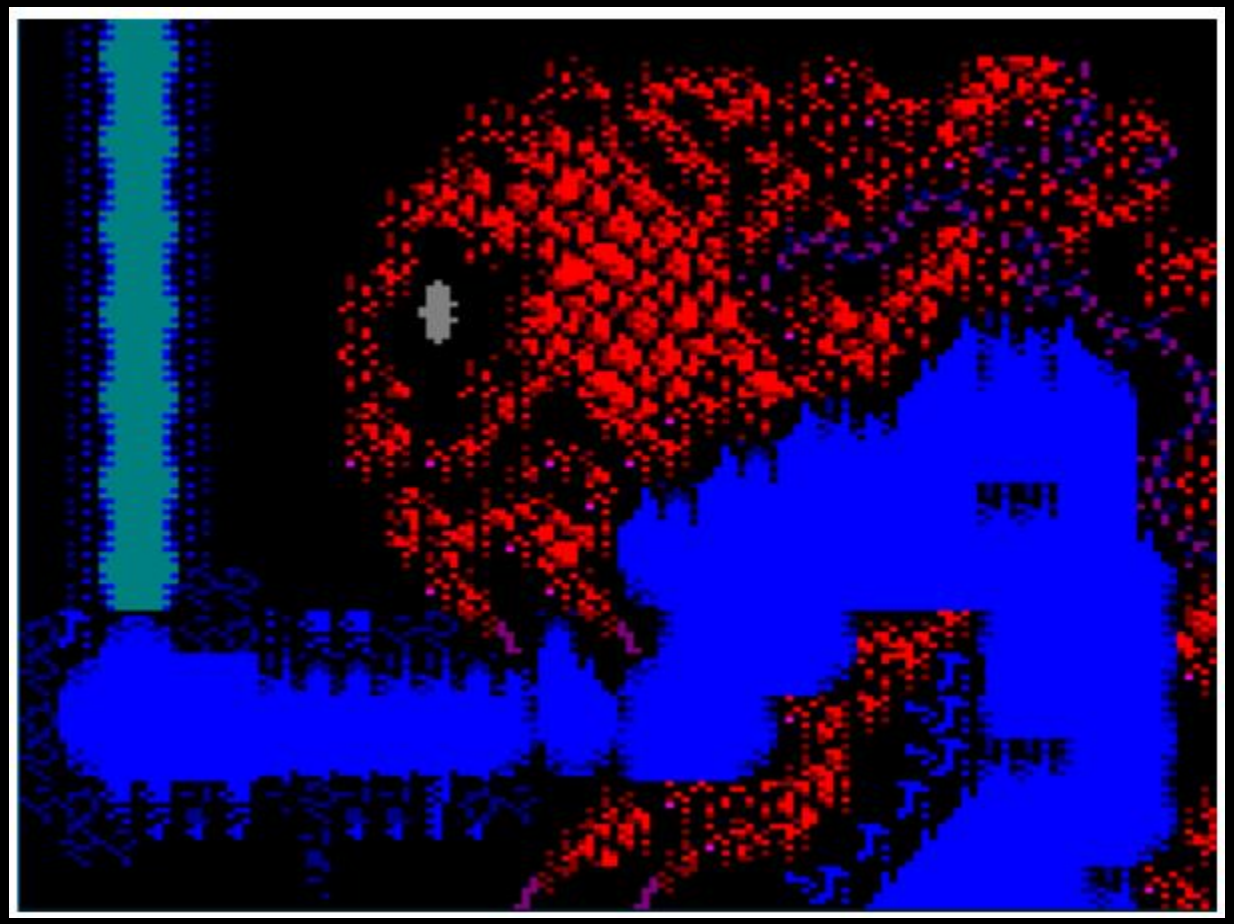
Atom

VZ200

BBC

The future of Metamorphosis

CPC



The future of Metamorphosis

... and what about a Commodore 64 version?

Is there anybody out there that is willing to do it?

The unused score by Marco Fanciulli is waiting for you.




Thanks and stay tuned!!!