

December 2013

# THE SPECTRUM SHOW

ANNUAL 2013

Includes material not in the show!

## SPACE INVADER SHOOTOUT

Which of the Spectrum  
clones can claim to  
be the best?

FLASHBACK 83

GAME REVIEWS

HARDWARE

SPECIAL FEATURES

The magazine of the show dedicated to the Sinclair ZX Spectrum

## Welcome!

Welcome to the first Spectrum Show Annual magazine. Thanks for taking the time to download and read it.

If you didn't know, this magazine is a yearly roundup of the reviews and features that appeared in the monthly YouTube show of the same name.

First let's get the introductions out of the way. I am Paul Jenkinson, a veteran of computing, or as people often call me, a grumpy old bloke who sits about reminiscing about the good old days. I am also the author of several games for the Spectrum including *Kyd Cadet* and *Chopper Drop*.

Now that's done, let's get down to business. This magazine is not (and will not be) a regular occurrence, and will (possibly) be produced when time allows. It will tie in with the show and collect content together based on a given year. It will also feature things that never made into the video show for various reasons.

Some things didn't fit in with reviews, were too short for full features and so were put to one side and left. I can now finally publish these here.

Of course, I am always looking for ideas and help with the shows, especially around hardware.

If this kind of thing floats your boat, get in touch—any help appreciated.

I hope you enjoy this first edition and please get in touch to tell me either way (see below).

The shows continue on YouTube...



## HELP WANTED!

If you want to help with articles, reviews or features, please contact me.

[www.randomkak.blogspot.com](http://www.randomkak.blogspot.com)

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## NETWORK YOUR SPECTRUM

A new local area network solution for the Spectrum is being developed by Sinclair as part of the new interface soon to be available.

The Interface 1, required to run the new Microdrives, will not only feature an RS232 interface but the ability to network up to 64 Spectrums together.

## COMPILER DISPUTE

Softek and Silversoft are in dispute over a game with both companies making claims and counter claims.

*Slippery Sid*, a game based on Snake and sold by Silversoft, was written using the Super C compiler. However, the compiler was written by Softek.



Because of this, Softek are saying they are entitled to royalties from any games sold. They claim this legal detail is included in the instructions. It also claims that the because the compilers binaries are included in the compiled game, that it is illegal to sell it without payment.

Silversoft state the compiler was purchased mail order and that there was no mention of royalties in the advert and therefore any claim is invalid. They threaten to take this matter as far as is required to avoid paying any money to Softek.

## FIRST TAPE MAGAZINE LAUNCHED

Argus Press launches what they claim to be the first computer magazine on cassette.

Called *Spectrum Computing*, it obviously aims at Spectrum users and will be compatible with 16 or 48k machines.

The magazine will include reviews and software and will be available from WHSmith and John Menzies for the price of £2.99.

## ROM INTERFACE ANNOUNCED

Psion and Sinclair are jointly working on a new ROM system for the Spectrum that will see games loaded via cartridge rather than tape.

An interface will be required and Sinclair say this is expected to be about £20.

Psion claim to be preparing six titles to be launched along with the interface, and hope it will stem piracy which they claim is taking nearly £3m a year from the company.

## ARISE SIR CLIVE

Clive Sinclair has been awarded a Knighthood in the Queen's birthday honours. He said it was completely unexpected and a wonderful surprise.

At 42 he is said to be the founder of the worlds largest volume manufacturer of personal computers.



## 5000 SPECTRUMS SOLD

Sinclair announce that they have now passed the half a million Spectrum sales in the UK and Europe.

They have been selling on average, about 6.500 per month since the machine first

came into the market and Sinclair hope the arrival of the Microdrive and later the ROM unit to keep sales high.



## STOLEN SPECTRUMS



Three thousand spectrum have been stolen from a warehouse in Hornsey with an estimated value of £380,000. They were being stored there by distributor Prism ready for shipping to retailers.

Four people faked an accident outside of the warehouse and as an employee came to help them

the gang produced a saw-off shotgun and forced their way in.

Two lorries were filled with the machines and driven off before police could arrive.

Luckily the thieves were not too bright and later tried to sell the stolen machines to retailers. Unfortunately, the retailers were the same the ones due to receive the original batch and immediately notified the Police.

The machines were recovered and a number of people are 'helping police with enquiries'.

## MICRODRIVE PROBLEMS

Sinclair's mass storage unit for the Spectrum has had nothing but difficulties since it was launched, with users having to wait months before they get their goods.

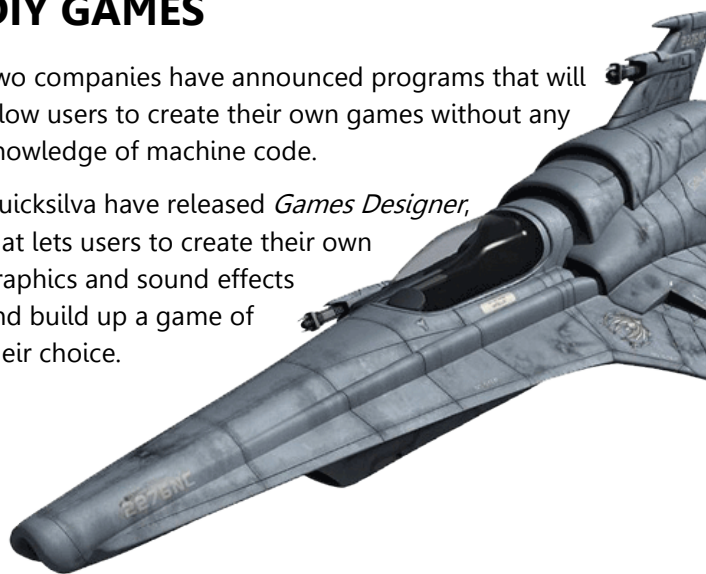
There are still problems with despatch and Sinclair refuse to say how many orders are still outstanding.

Psion, the company who are providing the bundled software have also stated they are being held back because of a shortage of cartridges.

## DIY GAMES

Two companies have announced programs that will allow users to create their own games without any knowledge of machine code.

Quicksilver have released *Games Designer*, that lets users to create their own graphics and sound effects and build up a game of their choice.



The program is written by John Hollis, author of Time Gate and will be the first to be produced by the new company Software Studios, set up by former Quicksilver staff, John and Nick Lambert.

Melbourne House have released *HURG* (High level, user-friendly, real-time games designer), that does the same things.

Melbourne house however, have also launched a competition for the best game created using this tool, with a prize of £3000.

## ACORN VS SINCLAIR

Sinclair have announce their intention to challenge Acorn for the new BBC computer contract when it comes up for renewal next summer.

They have openly admitted it is of interest to them and are in contact with the BBC to see what options are available.

## BUG-BYTE LOOSE MINER

Bug-Byte software will loose the right to sell top selling game Manic Miner. Split in the company will see several employees leave to set up a new company Software Projects.

Amongst the break-away team is Mathew Smith, the author of the game.





# SPACE INVADERS

## They came from outer space.....

The father of all classic arcade games, Space Invaders was created by Tomohiro Nishikado and distributed by Taito in 1978. It was an instant success causing a shortage of 100 yen coins in Japan as youngsters queued to defend the earth against the invaders from space.

Moving to the USA proved a bigger hit grossing \$2billion by 1982 with a massive 60,000 machines eating coins in every bar, diner and club.

The premise of the game is simple; lines of invading aliens move across the screen slowly, descending when they reach the end. The player controls a laser base that fires single shots to destroy them. The aliens fire back and the player can either dodge the shot or hide behind a series of bunkers. These bunkers are slowly eroded by the alien fire until there is no protection.

The player loses a life if the laser base gets hit or the aliens land and subsequently crash into it.

Space Invader clones were to be a major selling point for every video game system of the time including the Atari 2600 and of course the ZX Spectrum. Many companies scrambled to release a version into the bloating market and grab a share of the waiting cash.

But which of the games is the Spectrum Daddy?



# SPACE INVADERS

## ALIEN

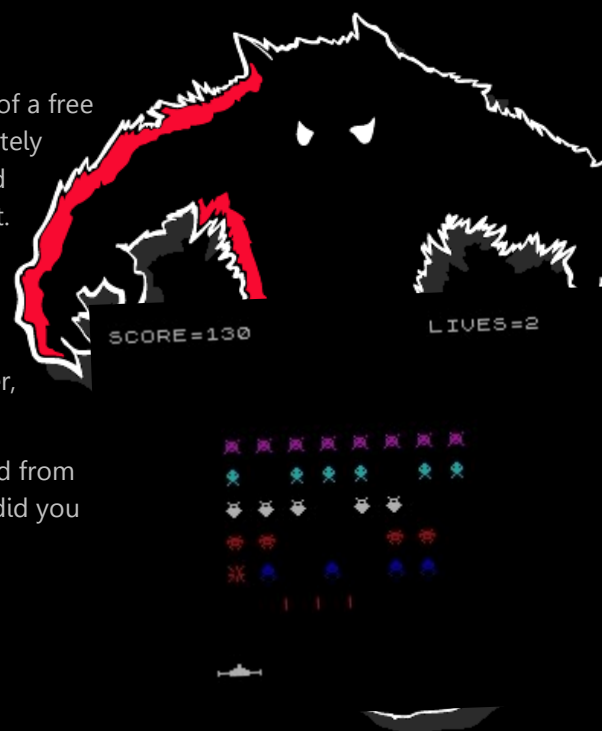
Cascade Games Ltd (Part of Cassette 50)

Cassette 50 was well known for only selling in moderate numbers because of a free watch given away with the package. The games included vary from moderately rubbish to complete and utter rubbish. Alien falls into the first category and although it is written in BASIC, it's actually playable; for a short time at least.

The movement is character based both for invaders and the laser base and they are both character-sized graphics (8 pixels square). There is no animation and the invaders plod across the screen with simple bleeps from the Spectrum's speaker. The bonus saucer never made an appearance either, which reduces this games score.

The sound in general is pretty poor, using just the standard bleep command from BASIC. A brave effort in BASIC, and as it comes with 49 other games, what did you really expect?

**Score: 1/10**



## BASE INVADERS

1983—Workforce

This version of the game features pleasingly large and well animated invaders, even if they do differ from the arcade machine. Each row has it's own colour which makes for a good colourful look. In contrast, the laser base is disappointingly small, sticking to a standard character square. The aliens move along silently which does detract slightly.

The only sound in this game can be heard when one is destroyed, your laser base is destroyed. On the plus side, we do get the bonus saucer here, and again we have some sound to accompany it.

The movement appears to be character based, but with the large aliens (3 characters wide), it is less noticeable. The protective shields are extremely large and unlike the original, but at least they offer some protection from the colourful enemy fire.

A very annoying feature is the rising set of beeps (like

you get in BASIC) before and after each game. These take an age to get through when all you want to do is get back to killing aliens.

Talking of annoyances; each time an alien is destroyed, the game stops, plays the sound effect and then continues. This can become very distracting .

**Score: 3/10**





# SPACE INVADERS

## CLASSIC INVADERS

1990—Alternative Software

Initial thoughts on this game were that it was painfully slow, I mean really, really slow. The graphics are super smooth though and the aliens suitably well animated. All elements of the game-play are present but the speed is just too painfully slow.

The speed issue is not by design though, it is just bad programming. This is proven when your laser base gets destroyed. In the early phases the animation and sound stutter and are slow but later phases, the things

with fewer aliens, zips along. This means that the game speed itself also improves the more aliens you kill, so by the end it is quiet challenging.

The sad thing is though, once clear of the first sheet its back to the snail-paced full screen of aliens again.

Sound is minimal, only playing when the laser base is destroyed, so the whole game experience is let down. Classic Invaders has so many possibilities and yet fails to deliver on all fronts. The score is mainly for the smooth graphics and the playability in the later stages.

**Score: 4/10**



## INVADERS

1982—Artic Computing

Now this is the version I grew up with and to think it was released in 1982, before many of its predecessors, is amazing when you consider just how good a game it is.

It has large, smooth, well animated and colourful aliens that make the blip blip noise as they move.

There are just the right amount of bases and the overall game-play is well balanced and enjoyable. The only downside I can think of is the lack of a firing sound, the sound that became famous and instantly identifiable the world over.

This game also offers variations from the normal game with drifting alien fire and mutant aliens where the top layer mutate when hit and then require another shot to kill. Something different to keep the game interesting should you get bored with the standard game.

All this in just 16k! A fantastic version of the classic that will take some beating.

**Score:9/10**



# SPACE INVADERS

## INVADERS

1986—Design Design



Design Design had a reputation for technical excellence and so I was looking forward to playing this game. Sadly it didn't live up to my expectations despite looking utterly authentic.

The aliens were just like the arcade in all their lovely monochrome glory, they moved smoothly and were well animated. The laser base moved well, the bases were right, so why disappointment? There are a few things bring this game below the five out of ten mark that simply cannot be ignored.

Firstly there is no sound. Nothing at all, not even (as with their other game Body Snatchers), when using a Fuller Unit. This obviously means playing in silence – not the best gaming experience. Secondly, there is no score, so all competitiveness is lost and the thrill of beating your high score vanishes, and thirdly when you die, the game resets back to a full set of invaders.

This could have been so much better, even with a few beeps here and there, a simple scoring system and the inclusion of lives. Surely that wouldn't be too difficult? As it is, the game get a below par score.

**Score: 4/10**

## INVADERS

1983—DK Tronics

DK Tronics were one of the early companies producing arcade games for the Spectrum but sadly this isn't up amongst the best of their releases.

Character sized graphics with character movement make the game seem jerky, especially when compared to Artic's game. The invaders are animated but this is killed by the 8 pixel jump they do each step.

The game play is faster than usual and can end up quite frantic, so some points there. The sound is grating and sounds like hundreds of tiny feet running around; maybe that was the idea! The invaders change colour as the drop down, but this 'feature' cannot save this game from a low score.

**Score: 4/10**





# SPACE INVADERS

## INVASION

1982—JK Greye

J K



Greye produced some of the great ZX81 titles including *3D Defender* and of course *3D Monster Maze*, but their early games for the young Spectrum market did not make nearly as much impact as those 81 titles.

Invasion has character sized invaders that stomp across the screen in awkward waves that is only usually found in BASIC programs that are not fast enough to move that many images in a single stroke. Although colourful, the animation is poor and the sound is reminiscent of someone breaking wind in short bursts over and over again. Comical the first three times you hear it, but annoying after that!

The laser base looks like an invader and moves in the same 8 pixel jumps as the enemy, making accurate firing difficult. The sound, apart from the fart noise is pretty basic, with standard beeps when you die and nothing at all when you hit an invader.

**Score: 3/10**

## SPACE INTRUDERS

1982—Quicksilver

Quicksilver is another iconic company that later went on to produce some really classic games such as *Ant Attack* and *Buggaboo*. Their skills however seem to be in unique games rather than arcade clones.

This is the first game of Space Invaders so far to have an attract mode, ideal for selling the game in the shops. All of the basics are here and even though the movement isn't to a pixel level, the game is very playable.

The character sized invaders move across the screen a line at a time, with a satisfying stomp as each one moves. The animation is adequate and the overall speed is just about right.

Sound is well used throughout with some nice machine code noises, and the game speed rapidly picks up creating a real challenge.

This is one of the better offerings despite the character based graphics and movement.

**Score: 7/10**



# SPACE INVADERS

## SPACE INVADERS

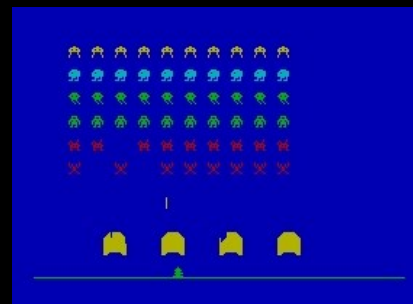
1983—Robert Spahl

This is a new game to me as probably because it was released in Germany. The very first thing that hits you when loading is complete is the blue background. Why is it blue and not black as all other invaders games are, and of course the arcade game which this is trying to imitate.

As soon as the game begins it is plain to see it is written in BASIC but even so, the amount of movement on screen is handled pretty well. The lines of odd shaped invaders, not at all conforming to the real thing, move along in rows on unanimated jumps without a sound.

The game play suffers because of the games BASIC roots and you quickly want to move on.

**Score: 2/10**



## SPACE RAIDERS

1982—Sinclair Research / Psion

The granddaddy of all Invader clones, probably due to it being an official Sinclair game, and one that people would identify with and buy. Not only that, but this is a very good game, much to my surprise.

I don't know why it came as such a surprise, maybe because I have been playing the Artic one for so long I didn't think anything could come close, how wrong I was.

This game has large colourful, well animated invaders marching across the screen in threatening ranks, dropping bombs towards your nice spaceship. The usual laser base has been replaced here with a lovely, smooth moving spaceship that is well matched in both speed and fire power to the invading hordes.

The sound is excellent too, from the stomping noise of the invaders to the firing of your laser, and it all comes together to make a really great and playable version of the arcade classic. Now I can see why so many people rate this game, and I have to be honest, I spent a good 30 minutes playing it, simply because it was that good.

The only bad thing I can say is that the game often stops to play a sound, this is particularly apparent when you hit the saucer. Nothing serious but it does put you off slightly.

**Score: 9/10**





# SPACE INVADERS

## SPECTRAL INVADERS

1982—Bug Byte

Another well-known company and another Space Invader clone. This time Liverpool based software outfit Bug Byte bring us their take on the classic, and a nice game it proved to be.

The invaders are large, colourful and well animated, moving smoothly across screen, although there are signs of flicker every now and again. The stomp sound is replaced by a ra-



ther weak plink plink effect, which just doesn't have the same menacing feel.

The laser base is also animated, loading missiles before firing, and moving smoothly along the bottom of the screen. There is no firing sound which is a pity, and the alien hit sound is equally weak. The effect when you get hit is a bit of shock; the screen flashes red while a white noise sound is blasted at you! Then comes the most annoying part; after each life is lost you are prompted to press a key to continue instead of going straight back to the game with your next life. This slows the game down and lowers game play significantly.

Overall, a nice game spoilt by the interruptions after the loss of each life.

**Score: 7/10**

## SPECVADERS

1983—Hewson Consultants



Hewson, later in their software lives, went on to produce some well-respected and excellent game like *Cybernoid*, *Firelord* and *Exolon*, sadly this early attempt comes nowhere near the quality of those.

The character sized, jerky invaders move silently across the screen in an unconventional formation, dropping fast bombs that are difficult to avoid. There are problems for Issue 3 keyboards too, as all movement and firing is disabled after you lose the first life.

Losing a life also resets the invaders so you lose any progress you might have made.

The sound, which incidentally causes the game to pause while playing, is quite good, apart from the death sound, which is just a series of ever lowering beeps. A bad start to what would become a blaze of glory for this software house, and one that should be avoided.

**Score: 2/10**

AND THE  
**WINNER**  
IS

Joint **1st** place:

Invaders—Artic Computing  
Space Raiders—Sinclair

# GUN LAW

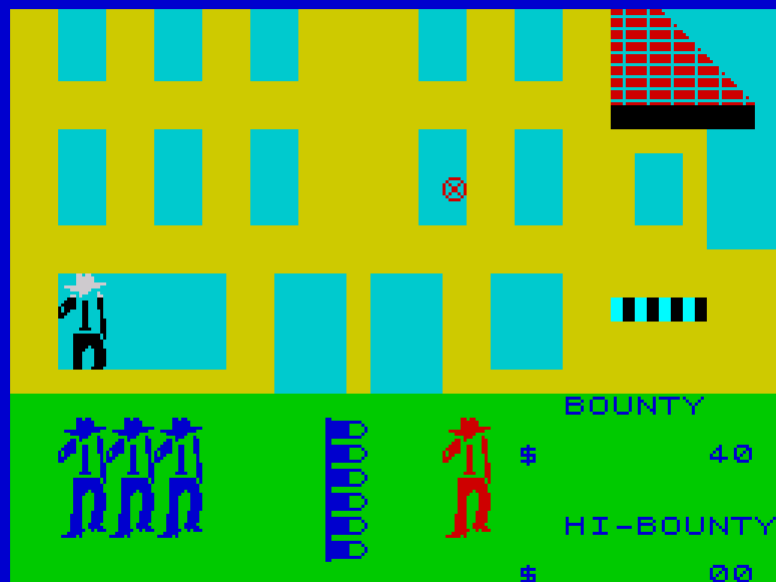
Vortex Software - 1983

## This is a cowboy themed first person shooter...

Take any images of *Doom* or *Quake* out of your head though – remember this is a Spectrum.

You are a bounty hunter, hired to rid the town of an evil gang. This is not done via negotiation or interest groups.. But by good old gun fighting.

The screen is set out allowing you to view one side of a long western street. Various houses and scenery scroll past as you automatically walk along. Pressing a key will spin you around so you can see the other side. This is where the game can be tricky.

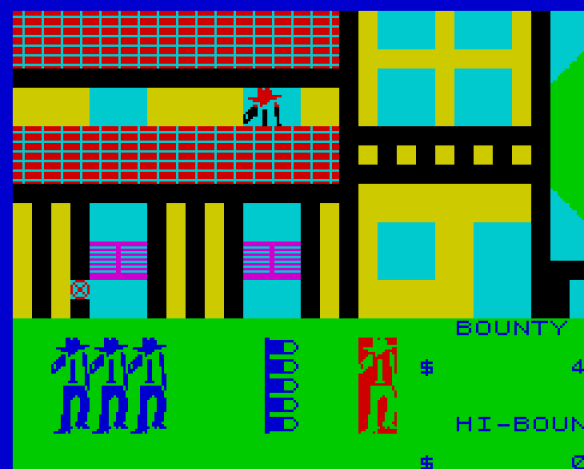


When a member of the game appears, they may not be on the side of the street you are looking for, or if they are, they could be further along.

As the warning sound beeps, you have to quickly search for them, and then decide whether to shoot them or not based on the colour of their hats.

Some will definitely shoot you, other may not—it's a gamble because you have a limited number of bullets. These get replenished after a random amount of time, so it is important not to waste shots.

The graphics are very basic, mainly using character squares for



the areas of colour, but this was 1983. Despite this, the game does look quite nice, and even though the scrolling is character based too, this doesn't distract from the game.

Your crosshair moves in pixels, and moves smoothly along at a rate which is just right to give you that anxious feeling as you line up a head shot.

I like this game, despite its obvious age and can easily spend a good 30 minutes playing. Give it a try.





Maritrini wakes up with a hang-over and takes a phone call from her former employer....

His daughter has been kidnapped and the town is full of monster and zombies - but before he can explain the line is cut.

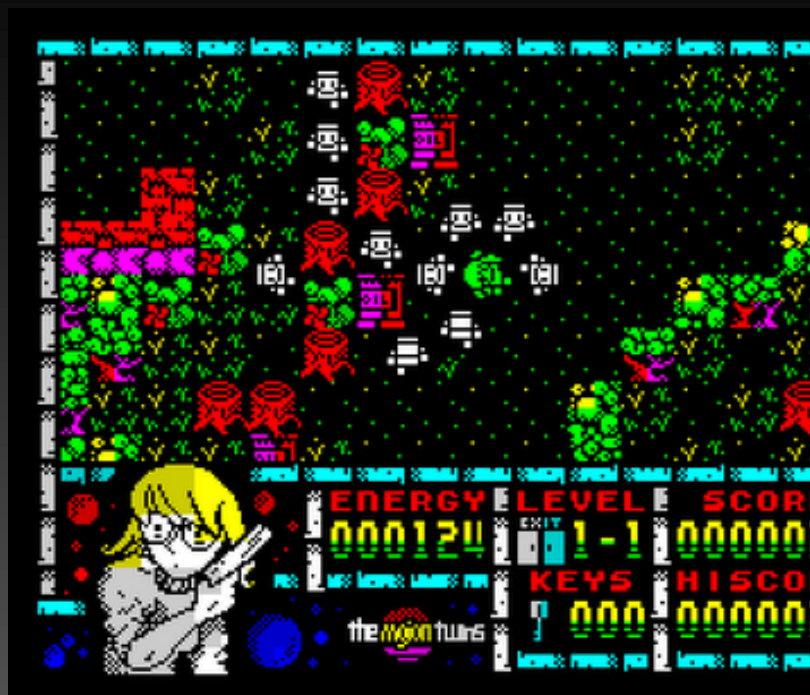
Maritrini sets off to help...

This new game is obviously a slant on gauntlet and includes some really nice mini-intros to each level, setting the scene and expanding the story.

The main element of the game is a typical gauntlet style, overhead run and shoot affair, destroying monster generators, collecting food and finding keys that unlock the next area.

The four way scrolling is character based which sometimes distracts, but it is that way for a reason - to get proper attribute movement.

The main character and the monsters are all pixel



smooth and the game play is about right - although I never managed to get past the second level.

The game area is large and each level consists of four sub levels. Each level has a slightly different graphic look that coincides with the on-going story.



This is a really nice game with some lovely atmospheric music playing as you charge through the levels blasting anything that moves.

If you are a fan of this type of game this is definitely worth looking at.

Even if you're not - give this one a try - it's very well written and plays just right.



# PAINTER

A&F Software 1983

This is pre-Chuckie Egg and A&F were producing a mix of games varying from average to poor....

*Painter* sits way outside of average, happily settling itself into the good category – although it seems to have been missed by quite a few people.

Loosely based on the arcade game *Amidar*, the game sees you controlling Patrick the Painter in his bid to paint a large room filled with paint pots. You have a limited amount of paint and a crazy roller chasing you.



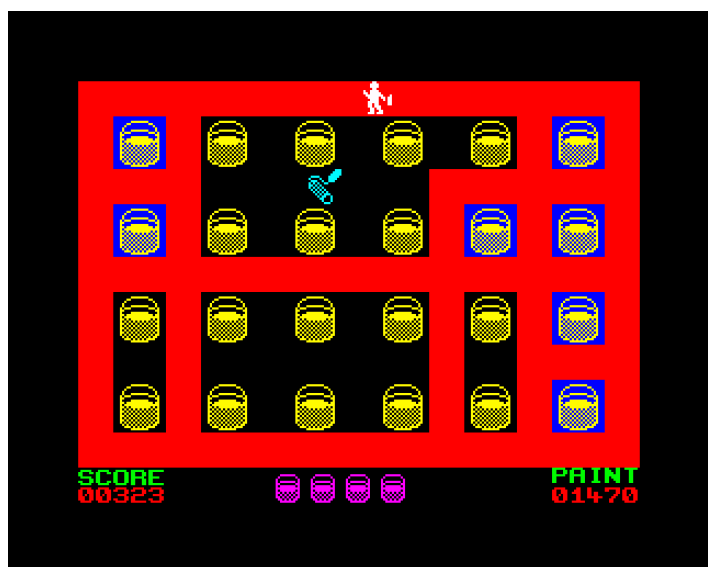
Sound is used well and the gameplay is very addictive, you certainly want to get back for just one more go.

As each level is complete, another roller is added making things much more difficult, and much more rewarding once you complete it.

At times it can become quite frantic, but never frustrating.

This was one of my first purchases and soon became one of those games that I loaded up now and again for a quick round of gaming. It's simple, well written and fun to play.

What more do you need...



Paint can be replenished by surrounding a pot and the level is complete when all the room is painted.

The chasing roller seems to have low intelligence, but this makes it more difficult in a way as you can't predict any patterns..

The controls are simple enough – up down left and right... and the graphics are large, well drawn and smooth.







# WACKY DARTS

Codemaster - 1991



This version of the ever-popular pub pastime takes a wacky look at the sport as the title suggests, but at its heart it's still a good traditional dart game.

After selecting your control type you get to pick the a player to throw against instead of working your way up. After a few games you soon get to know who the poorest player is so starting with him will take you slowly to the higher levels.

Each of the opponents has their own trait, for example the barbarian throws axes instead of darts! This however makes him quite easy to beat..

As you work your way through the players the game gets harder, as your opponents miss less and score more.

Your throw is taken in the usual manner with a moving hand that you have to manoeuvre into

place, taking into account the position of the hand. The further back the hand position is, the higher the dart will fly.

I found this one a little easier to play than other Spectrum dart games, consistently getting good scores once I had got used to the mechanics.

I suppose the control method that best suits you will win in the end though, so patience certainly pays off.

Your opponents are shown side and top down... taking their shots in the style associated with the characters. The commentator rabbits on and the crowd shout things out, this slows the game down though and you will find yourself prodding the fire key just to get back to the gameplay.

I worked my way through three challengers before it became a little tricky to match their scoring.

It was still an enjoyable game though, despite the annoying interruptions.

Another point, like other dart game, there is no hint of possible checkouts which is a pity really as I always ended up looking on the internet for a checkout table. Once I had this, it made for a much better game....

This game, although not taking itself seriously, is still a solid dart game with a reasonable challenge.



# INVASION OF THE ZOMBIE MONSTERS

Ned and his girlfriend Linda, are enjoying a quiet moment together when suddenly an evil being snatches Linda away.

Ned is empowered by a moon ray and sets off to rescue her...

Using his new powers our hero has to battle his way across the city, infested with zombies, so that he can reach his girlfriend, save her and the human race from this evil.

This game is highly polished and quite obviously takes many ideas from the arcade classic, *Ghouls and Ghosts*.

The first thing you notice is the graphics – for a Spectrum, they are really good, and use the limitations cleverly. Although the screen scrolls in characters this is hardly noticeable as your attention is fixed on the main character.

Because of the eight pixel scrolling, the game keeps its colours rather than having monotone graphics or the famous colour clash. This makes it look brilliant.

The game play is the same as the aforementioned *Ghouls and Ghosts* with the hero moving left to right, killing zombies, navigating platforms and collecting power-ups.

At the end of each stage is a boss to battle, and even for a bad game player like myself, the difficulty is perfect, meaning I got to see more of the game.

The Zombies vary from straight walking type, flying, bouncing and even some from outer space...

All can be dealt with a few light balls though and there is nothing that proves too difficult.

This is a great game to play, with an easy learning curve, great graphics, great music and excellent game play – as you may be able to tell – I like this game a lot...

Go get it now.. Its free...

<http://www.relevovideogames.com>



RELEVO  
VIDEOGAMES





# NINJA HAMSTER

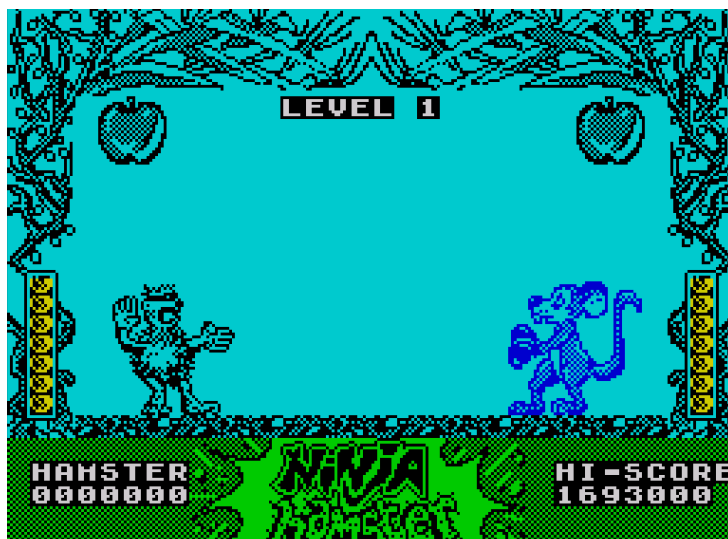
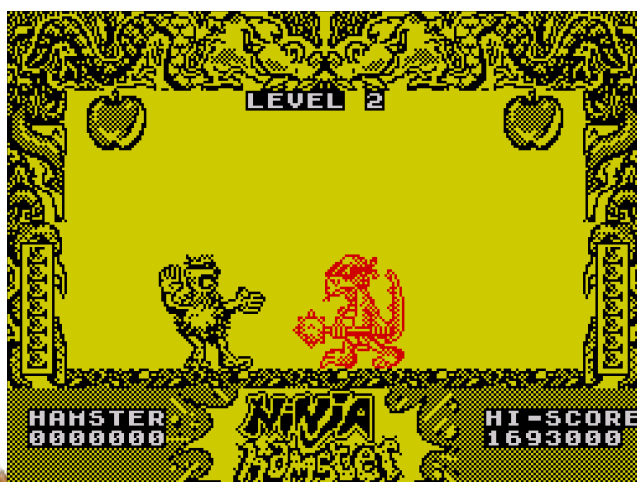
CRL - 1987

CRL developed as a company and went on to produce some, how can I say it nicely, average games, the highlight was probably *Tau Ceti* and the range of adventures based on classic horror stories like *Dracula* and *Frankenstein*.

Amongst them were a few games that struck odd combinations, probably the most weird was *Ninja Hamster*.

This beat-em-up focused on a hamster, out to get revenge by fighting a series of other equally odd characters and took the form of a traditional player verses computers combat game, although there was a two player option.

The range of attacks could be assigned to keys and included low kicks, high kicks, punches, flying kicks...



you get the idea.

The game begins with your hamster up against a rat, or to give him his full name, Sinister Rat.

Each fight has three rounds depicted by an apple that gets eating away upon knocking the living daylight out of the opponent, or he does the same to Hamster.

Health meters on either side of the screen show each characters health and is depleted when a successful blow is landed and rises slowly if there is no contact.

After the hamster despatches Sinister Rat, up comes Lizard Of Death to try his hand. The opponents get progressively difficult, forcing you, as Hamster, to use the blocking moves more and take different approaches to attacks.

If you are a good player, unlike myself, you can get to fight Mean Monkey, Barmy Bee, Crazy Cat, Perilous Parrot, Mad Dog and finally Loony Lobster.

This is a good game that I suspect will take on a different light when in two player mode. As it is though, its got nice graphics and sound, controls are responsive, and the difficulty just about right.

If you like your fighting games, ignore the fact it's a hamster, and give it a go...



Wot you  
lookin at?

# Joysticks At Dawn

The evolution of the interface standard



For what ostentatiously turned out to be a games machine when launched in 1983, the Spectrum strangely did not come with a joystick interface.

There could have been many reason for this, the most obvious is cost. Sir Clive wanted to keep the cost down to try and break the market currently held by the BBC Micro. The other main reason is that Sinclair Research wanted the machine not to be seen as just a game playing toy.

For whatever the reason, the 16k Spectrum and later the 48K version had no means to control games other than the rubber keyboard that we all came to love and hate in the same measures. From this grew what is now, at least for us older players, a standard set of keys from which to control games.

Originally, because Sinclair added arrows or cursors to the 5,6,7 and 8 keys, these were used by game developers despite the almost impossible positioning. Other games just used strange layouts, but eventually the standard was set, and the now familiar O,P,Q,A and Space was to be the norm.

It wasn't long before companies realised that the machine was heading towards games in a big way, and that being able to control the games via a joystick just like the arcades, would be a much desired choice. From this was born the first wave of joystick interfaces. Using the not yet standard 'Atari' type joystick connectors, the initial batch emulated the cursor keys to be compatible with as many games as possible. The problem with this was that all the games did not use this combination of keys for control. There was still no standard and the stage was set for a standards race.

Being expensive, nearly 25% of the cost of the Spectrum itself also did not help, and so a few companies went for a cheaper alternative – the mechanical joystick. Several of these were produced and consisted of a plastic, clip on joystick, that when moved, pushed down the cursor keys. I



can not comment on how successful this was in use, but needless to say they did not sell in any great number despite being much cheaper.

Another less known approach was the Games Board. A thin Spectrum shaped plastic cover that sat over the whole keyboard. Within this, over each key was a hole, and the user was supplied with a number of 'plugs' or 'pegs' that could be placed there. The idea was to stop the player being confused by which key to press, if the number of options was reduced. In effect the keyboard was reduced to a few round pegs sticking up from a plastic cover.

What was needed was a proper standard that all games could follow and all manufacturers could implement.





# Joysticks At Dawn

What was needed was a proper standard that all games could follow and all manufacturers could implement.

Growing slowly in popularity was the newly released Kempston Joystick Interface. This took a different approach to control, ignoring the keyboard completely and using a series of IN commands. Supplied with easy instructions on how to add control to your own BASIC games, this soon began to be the more popular choice. Gamers, short of money and quality releases, typed out magazine listings and could add joystick control in a few minutes.

Following suite, manufacturers released a flood of 'Kempston compatible' interfaces, and more importantly, a flood of games using the same IN commands for control along side the usual keys.

This was all looking good except for the truck load of games made before this new 'standard'. These of course did not work and so the next small innovation was about to arrive – the dual interface.

Essentially two interfaces in one, the dual approach allowed the use of both Kempston and cursor type joysticks by simply plugging your stick into the relevant port. This was short lived, partly because games were becoming more complex, requiring more keys, and also the growing number of games that didn't comply to either standard. Some games companies were slow of the mark here, and it took about 14 months before nearly all released games were Kempston or cursor compatible.

Perhaps the ultimate of these new interfaces was the Kempston Pro. It has 3 ports, one for its own format, one for the Sinclair MkI/cursor and one for the new Sinclair MkII joysticks. Not only that, but it had a ROM slot, allowing the newly released but short lived ROM games to be used.

With all these emerging standards something had to be done to make life easier for the player - it was time for the next invention, the programmable joystick interface. Allowing the user to 'program'

the interface to react as though a key had been pressed seemed the answer to everything, but the Kempston standard was far ahead by now. Sinclair produced their own standard, as did a few other players in the market, but none could match Kempston in popularity.

## Wires and plugs...



Many methods were used for the 'programming' part, ranging from small machine code headers loaded before the game, to wires and plugs and even plastic code cards as seen in the Protocol 4. Because of the extra electronics, these tended to be more expensive at a time when the Kempston design was becoming cheaper – there was no real competition.

Next came the period when it seemed every manufacturer was trying to fit as much into the interface case as possible. Sound amplifiers, reset switches, sound chips, load/save switches and more. With the price of the Kempston circuitry dropping all the time, the reverse soon began to happen. Joystick interfaces were added to every other add-on and the standard had been set and Kempston had won.



# GAME CREATION SOFTWARE

If you were not gifted with the logic and patience required to write machine code games you had three options.

First you could just use BASIC – but as time moved on, this route was just not acceptable anymore.

Secondly you could use a compiler to convert your BASIC game into machine code. This had varying degrees of success but was limited due to the technicalities of the compilers and the fact they often could not work with certain BASIC commands.

Lastly, you could buy one of the new game creation packages that were slowly arriving, and if you believed the hype that came with them, you could have your own machine code game ready to sell in hours.

The three main contenders were Games Designer from *Quicksilver*, HURG from *Melbourne House* and Arcade Creator from *Argus Press*.



## GAMES DESIGNER

*Quicksilver's* entry allowed you to create everything needed to make your own game.

It used an easy to use menu system that allowed you to access every aspect of the game and to play or save the game for later use.

There were several pre-set game styles to use which were limited to variations of Invaders, Asteroids or Defender. In other words you could shoot upwards, sideways or in any direction.

Once you have decided which type of game to make, you then had to implement your idea; design the sprites, set the sound, create attack waves etc...

Sprites were edited using the standard grid editor and each sprite could have 4 frames of animation.

You had to make the player ship, bullets, aliens – or whatever you wanted to shoot) and explosions. There was no option for backgrounds. Enemy attack patterns are created by drawing lines with the keyboard to layout the route your attack wave would follow.

The configuration menu allows you to set the game format (as mentioned previously), background and foreground colours, FX and sounds. The FX section allows you to switch on the scrolling star field and set the direction.

GAMES DESIGNER ©1983 J. HOLLIS

```
1.....PLAY GAME
2....SELECT NEW GAME
3.....ALTER SPRITES
4.....CONFIGURATION
5.....MOVEMENT
6.....ATTACK WAVES
7....LOAD FROM TAPE
8.....SAVE TO TAPE
```

SELECT FUNCTION: **1**



## GAMES DESIGNER—cont...

The sound option allowed you to set sounds for various actions. Sliders allowed you to change various frequencies and filters to produce a range of sounds that somehow all sounded the same – and could often be found in other *Quicksilver* games.

The most complex part was defining how each attack wave worked. Which sprite to use and what movement pattern to implement. This was the meat of the game and set out how it all fitted together.

You could play the game at any point to check how things were looking.

Once you had spent hours doing all of this you could then save out the game.

Now comes the really bad part – you could not play the game without first loading the game designer package. This obviously meant you could not sell your games.

A bit of a waste of time then....

This package is fun to play about with, but because of the limitations its use is limited.

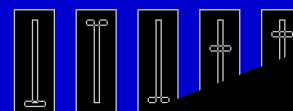


GAMES DESIGNER ©1983 J.HOLLIS

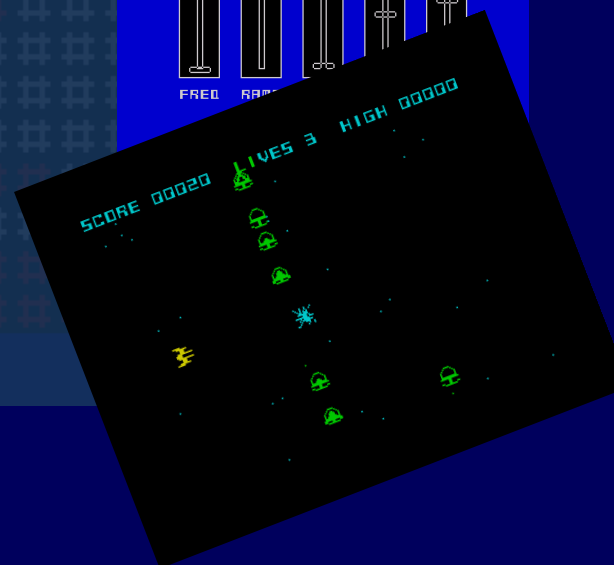
NO.	ANIM	SCORE	PAT	MAN	SPD	NEXT						
0	...	8	...	10	...	0	...	15	...	0	...	2
1	...	7	...	15	...	1	...	25	...	4	...	3
2	...	5	...	15	...	2	...	15	...	0	...	1
3	...	7	...	20	...	0	...	25	...	4	...	4
4	...	7	...	20	...	4	...	25	...	4	...	6
5	...	5	...	20	...	0	...	35	...	6	...	7
6	...	7	...	30	...	6	...	25	...	5	...	5
7	...	5	...	30	...	0	...	35	...	3	...	1

SHIFT FOR CURSOR CONTROL

GAMES DESIGNER ©1983 J.HOLLIS



FREQ. AMP. PHASE



## H.U.R.G.

Another option for budding game designers was HURG from *Melbourne House*.

The advertisement claimed you could design your own games in minutes... but that wasn't strictly true..

The demo games that came with it were hardly brilliant., which set the tone for the rest of the program.

The menu system used was tricky to get to grips with, using the cursor keys to move up and down and zero to select an option.

Some options had multiple levels and there was no quick way to get back to the top level, you had to just keep selecting Back To – what ever the previous menu was.

Creating a game involved the usual things starting with the option to load your own background in the form of a screen, or just leave it blank.

The game variation section was just slots that you could use to save specific settings in case you wanted to make another game with the same logic.

MAIN MENU

- RESET HURG
- LOAD GAME
- EDIT GAME
- PLAY GAME
- SAVE GAME

COPYRIGHT © 1984 BEAM SOFTWARE  
WRITTEN BY WILLIAM TANG

CREATE SHAPE NORM

1 2



- SHAPE
- BLANK
- STORE
- MIRROR
- ANIMATION
- EDITOR
- NEXT STAGE
- EXIT



## H.U.R.G. Cont...

The player and sprite sections had the same functions;

You can build the player sprite and animate it, set movement limitations and speed and setup collision rules. The editor had useful options like mirror or to use an existing shape – this helped when animating something and saved you having to draw it again.

When each section was complete you had the option to move to the next stage, which was helpful as it guided you through the full process. The same process was used to create the player bullet (if you chose a shooting style game) and other game sprites.

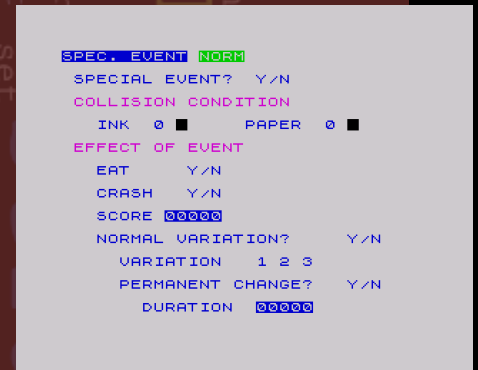
The movement patterns were easy to create and you could have up to eight different ones.

Once all this was in place, and for the record adding a player ship, bullet and one alien took well over 2 hours, you could try out your masterpiece.

Having spent so long with this package the results were less than inspiring.

I did not create a title page or set out the rules for the next frame or stage of the game, I just wanted to shoot something, sadly even this caused issues. No matter what I did I could not get the player to shoot anything! If I set the bullet to exist it appeared straight away, If I didn't I couldn't shoot it!

The final nail in the coffin was the fact that games created with HURG could not be run alone, they could only be used from within the main HURG system.



# ARCADE CREATOR

*Argus Press* released this package in 1986, two years after HURG and three years after *Games Designer* – would that time finally give us a decent application?

The standard menu provides the usual set of tools that every game designer needs..

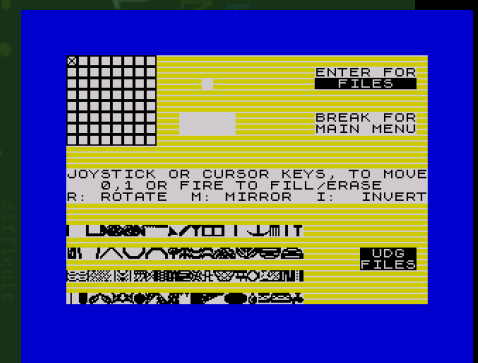
A UDG editor that allows you to build graphics for the backgrounds or platforms. There is no animation or special features (like collapsing floors or conveyor belts), just fixed 8 pixel squares.

The sound generator was quite nice and could be used to make some interesting noises. You can save up to 8 of these for use in the game for things like firing, explosions etc.

The sprite designer was painfully slow to use and took ages just to create a player ship.

Once that was done you could then add it to the sprite list and put in some animation. Again this was a very slow process.

Next we come to the screen designer and at this point I got the feeling the program was geared towards platform games. Here you can pick any of the four banks of UDG you created earlier and build up you screen.



## ARCADE CREATOR cont...

Nowhere on the menu could I see a way to play or test the game, just the option to load or save.

Upon further investigation it seems this is how it works. You have to create your data and then save it to tape. To actually put it all together you have to load another program. This second program leads you through the process of putting all that game data together by using a series of fixed questions.

You can specify things like bonuses, scoring, number of aliens etc. before choosing your images you want to use for things like the player, explosions and aliens. This is a long process, especially after you have spent a good hour or more creating all the data in the first place, and you still haven't seen how the game looks yet.

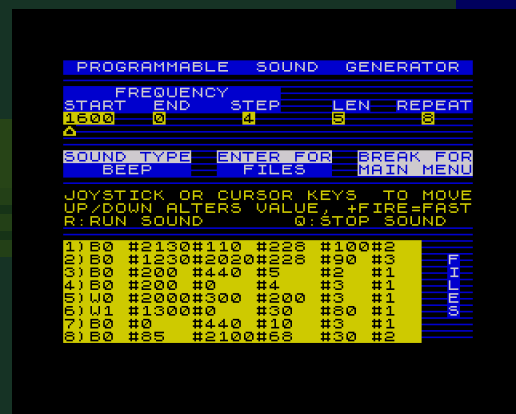
Finally when you have finished all the questions you can save the data to tape. At this point you can finally load it back in as a stand-alone game.

But the thing is... if there is anything just a bit wrong, you have to go back to the editor (another three minutes loading), load in your data (some more minutes) and then edit it, save it, re-load the builder, go through all the questions again, save it and then you can check it again. A huge amount of time!

After what seemed like a lifetime and getting nowhere, I decided to see what the demo game looked like, to make sure it just wasn't me doing thing wrong.

When it loaded it reminded me of a game seen on one of those 'worst ever' game compilations. Every aspect was terrible!

It was at this point I decided not to continue with this program, it just wasn't worth it, even if you could play the games on their own, no one would bother because they were so bad.



*You can see all of these programs in action  
plus see the modern games creation tools in  
episodes 5 and 6 of The Spectrum Show.*





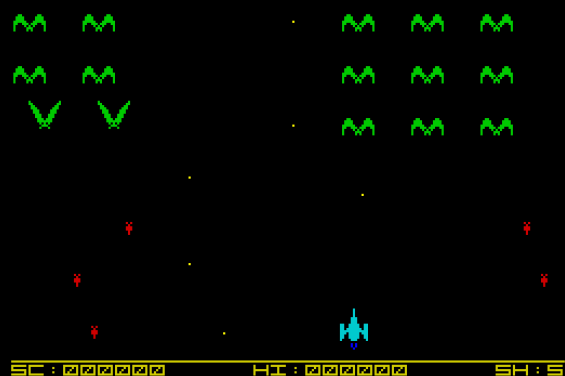
# ASTRO BLASTER

Quicksilver 1983

The original arcade game was released by Sega in 1981 and is a typical space shoot-em-up featuring different attack waves, asteroids and motherships. It also had the added complexity of having to monitor fuel and temperature. Too much heat and the weapons are disabled, too little fuel and the ship explodes.

Quicksilver's version, Astro Blaster, does not have all of these features, however many of the levels are present.

ASTRO BLASTER : BY JOHN EDWARDS

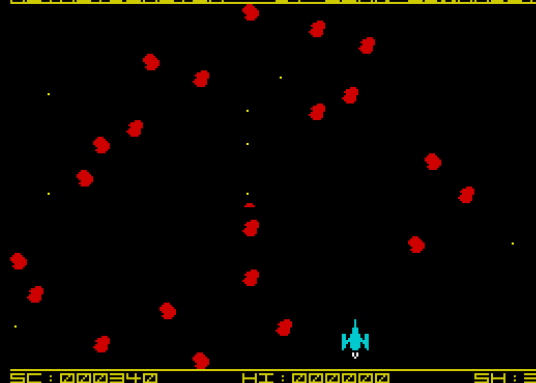


There are waves of aliens that fly horizontally across the screen, occasionally dipping down and continually dropping bombs.

Because of the screen layout, the room from the aliens to your ship is much smaller than the arcade, making it difficult sometimes to get beneath to line up your shot.

Clearing the first two waves moves you to the next level where you have to navigate through a red asteroid storm, just like the arcade original. The difference here though is that in the arcade, shooting some of the asteroids would refuel your ship. In this version, you just have to dodge them. Not all of them can be

ASTRO BLASTER : BY JOHN EDWARDS



shot too, so the best policy is to keep moving and shooting.

If you manage to survive this level, then the large mothership appears, spewing out a storm of missiles, again similar to the arcade. This level can be tricky if you don't get your shots in early and destroy the thing before it fills the screen with bullets. Most of the time you can anticipate where it will appear (middle of the screen) and flood this area with laser fire to quickly dispatch it.

Once the mothership is destroyed, it's back to the aliens again with different sprites but the same attack patterns.

The graphics are smooth but the enemy only have two frame animation, although you are too busy killing them to really notice. Sound is almost continuous because of the firing, and suits the game well.

Control is responsive and you have a choice of keyboard or joystick.

For an early shoot-em-up, I like this game, and it's one I return to every now and again just to blow up a few green aliens.

A nice game then, especially for 1983.

# Thrusta

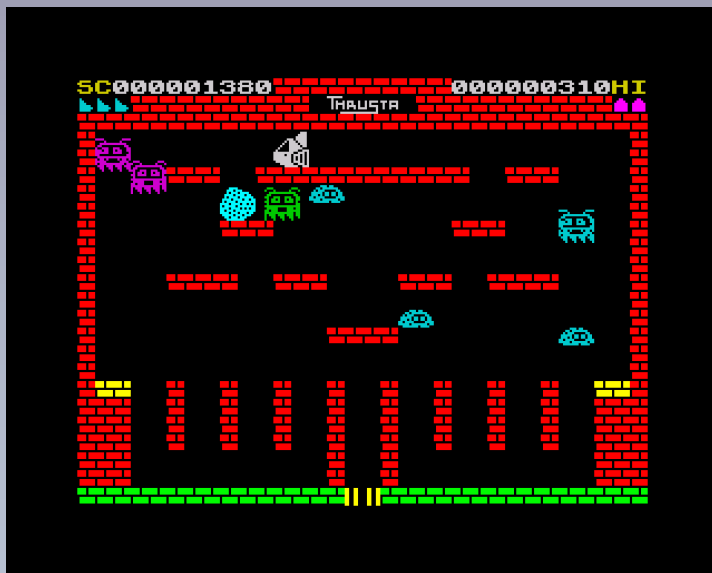
Software Projects 1983

Released in 1983, Thrusta was one of the first batch of games produced by the Liverpool based software house most famous for *Manic Miner* and *Jet Set Willy*.

The early games, including *McKensie*, *Ometron*, *Orion* and *Push Off*, for me Thrusta was probably the best and most original.

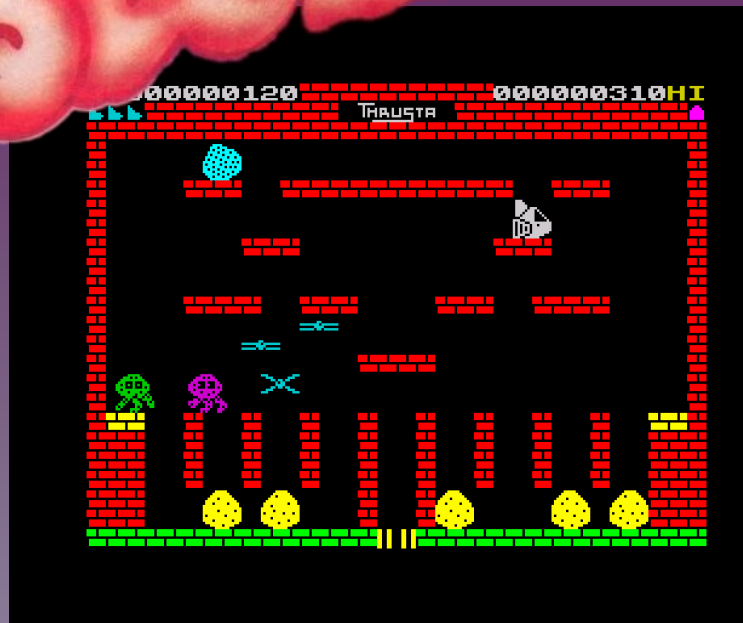
The game sees you controlling a low powered space ship out to destroy aliens in their nest before they can grow up and pose a threat to some civilisation or other.

Your craft can shoot the nest guards but not the aliens themselves. Who on earth sent a ship like that to tackle such a mission?



With this limitation you obviously have to find another way to destroy the aliens, and someone has thoughtfully provided a large rock that can be pushed around and dropped on the young creatures. The rock is also magically replenished once it has smashed into the heads of the aliens, ready to be used again.

The guards move around randomly and the aliens move in different patterns depending on the level you are on. The



guards and aliens change per level keeping the game fresh and the challenge is constant throughout.

The guards can become a real pain, especially if they trap you on the upper level. You have to be patient, bide your time, and soon enough your chance will come.

With careful planning you can kill three or four aliens at the same time on some levels as they often line up just below one of the platforms. Getting the rock into place is the challenge, and this what makes the game different. On some level, only certain platforms are useful, and to get the rock into position, you have to carefully manoeuvre it, all the time avoiding the guards.

Your ship is affected by gravity, so you have to use your thrust to move around, and controls are responsive.

The sound is good and the graphics are large, colourful and well animated.

The game is fun to play and can suddenly shift from calculated rock dropping to hectic shooting quickly. The only thing I don't like is that the laser you have often has no effect on the guards causing you to die despite having shot them several times.

In my opinion this is the best of the early bunch, and certainly well worth a look.



# ANTIQUITY JONES

Paul Jenkinson 2012

In a dusty room, deep beneath the university, Jones was tidying away some papers when he suddenly became aware of someone else in the room. Turning slowly, the silhouetted figure of a tall, long coated man stood in the doorway.

"So what is it this time?" asked Jones, spitefully.

His last trek for these people had ended in near disaster, and he had been left for dead by the very organisation that had recruited and paid for the expedition.

"Nice to see you too." The man said, entering the dimly lit room.

"No one invited you in."

"No, no they didn't. I will of course leave if you want me to, but then again Mr Jones, you are addicted to this game we play."

"It may be a game to you.." Jones spat back, rounding on the man.

"Easy.. easy... I'm going. I'll let someone else take the glory for finding the Chalice of Koo-Ram Kar."

That's part of the introduction for Antiquity Jones, a game released in 2012 by Paul Jenkinson.

The game was created using AGD (Arcade Game Designer) and proves what a versatile



tool it is. The game is certainly release quality with some great graphics, sound and playability.

The idea of the game is to find the chalice across multiple screen. The main character can jump, climb and swing from ropes to make his way to the final temple.

Of course this being the jungle, there are creatures in abundance, and Jones has to avoid these or risk losing health.

His health slowly runs down as he travels around, but luckily can be replenished at set points in the game.

This introduces another dimension to the standard platform game and makes progress a dash for health.

Once the Chalice has been found, his health is frozen (unless hit by an enemy) and so he can carefully make his way back to the lorry on the first screen.

There is some nice music on the intro screen and a choice of controls.

Once into the game, the graphics are well drawn and animated, especially the way he jumps, and move very smoothly. The scenery, initially a jungle, does change and our hero finds himself in a desert and a cave system.

Sound is minimal but put to good effect, and the whole game is great fun to play.

A great game!







# The Great Pretender

The Rotronics Wafadrive

The Rotronics Wafadrive was released as a direct competitor to Sinclair's Microdrive, offering large storage and fast access, something to replace the painfully slow cassette medium.

As with the Microdrive, it never really managed that task, and the Rotronics system never reached the sales numbers the Sinclair units did.

It is a large device that connects directly to the spectrum via the edge connector and offers a direct pass-through for other peripherals. Also included in the unit, as well as the dual drives, is a centronics printer port and an RS232 serial port.

The dual 128k drives used the same continuous tape loop system like the Microdrive, but used lower quality tape. This inevitably led to higher return rates. The wafas came in four flavours, 16k, 32k, 64k and 128k, with speed differences between them. The 128k wafas were slower due to the seek times on a tape loop system. The drives also worked at two speeds, the faster one used for seeking and the slower one for loading.

Compared to Microdrives the loading speeds were slower, a 32k game took around 40 seconds compared to 12 on the Sinclair unit. These speeds must be taken with a pinch of salt however, as the speeds vary a lot depending on the wafa, and if there is any other data on the tape.

Commercially, there was very little software released for it, *Sherlock*, *Mugsy*, *Heatrow*, *Nightflight 2*, *Starbike* and the



*Seibad trilogy*, *Bear bover*, *Loopy Landry*, *World cup*, and *The Artist* are the only ones that come to mind.

Supplied with the unit was a word processor called *Spectral Writer* and a utility wafa containing transfer, formatting and header reader tools.

Initiating the on-board ROM (by typing NEW \*) caused the Spectrum memory to be paged out and the Wafadrives OS paged in, offering new commands to format, verify, catalogue save and load. The disadvantage of this was that it took up 2k of RAM, meaning any large 48K games would not work if they used all of the available memory.

Loading and saving your own games was easy enough, but transferring commercial software proved very difficult, almost always involved writing your own BASIC loaders.

The syntax was not compatible with the Sinclair ones, meaning anything saved or loaded had to be changed.

LOAD \*"a:miner" would load a program called miner from the A drive.





# The Great Pretender

The Rotronics Wafadrive



Having tried many games, including early 16K ones like *Frenzy* and *Galaxians*, after 3 hours I still hadn't managed to get a game onto a wafa.

Doing this with protected software would be impossible, even using a multiface device would involve modifying the loaders to take into account the new syntax.

Finally, after another hour I managed to get Bug Byte's *Birds and the Bees* transferred across. This 25K game, normally takes about 2 minutes and 25 seconds to load from tape but using a 32K wafa the game loads in 1 minute dead.

Demand for the unit was not high and the price soon began to drop from its opening price of £129 to just £14.99. At that price it should have been a huge success, but because of a lack of support from games companies, the unit went the same way as the Micro-drive.

## SPEED COMAPRISONS

Test	M/Drive	W/Drive
Load 35k game	12 sec	40 sec
Format	35 sec	90 sec
Transfer rate	121 kilobaud	18 kilobaud
Worst access time	8 sec	23 sec

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## SPECTRUM ART



Someone say the Spectrum has rubbish graphics?



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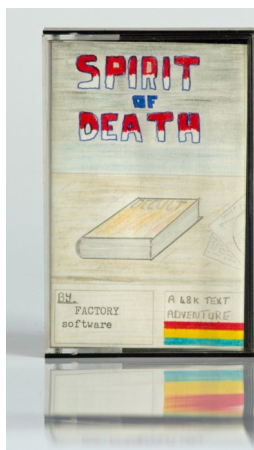
ArtField-2008  
retro-computers festival  
<http://zxparty.nedopc.com>



# The Dream Breakers



Those of you who know the Spectrum scene may recognise the title as a parody on a slogan once used by, in my opinion, one of the worst software houses ever to advertise. The company was CRL, or to give them their full name, Computer Rentals Limited. Their advert, emblazoned with 'The Dream Makers' caught my eye at possibly the worst moment in time, let me explain.



In early 1984, March to be exact, (I kept a diary), I had just finished what I considered to be my first 'real' game. Having spent months knocking out poor Invader clones, and text adventures that didn't even allow you to pick up objects, I at last completed it. The whole project had taken little over a few weeks, but to me, it was a brilliant achievement. A fully fledged text adventure, fast parser, pick up and dropping of objects in any location, and all

in blistering BASIC. Although written in this language, the game held up well compared to the adventures on the scene at that time, even though it didn't have a save or load routine.

After having taken it to a local computer shop, who took every available opportunity to tell me they were going to market their own games, (probably just to impress me), the game was returned with a shake of the head. Trudging back home downhearted, I flicked through a magazine and there it was, inviting me to send my game to them and make my dreams come true.

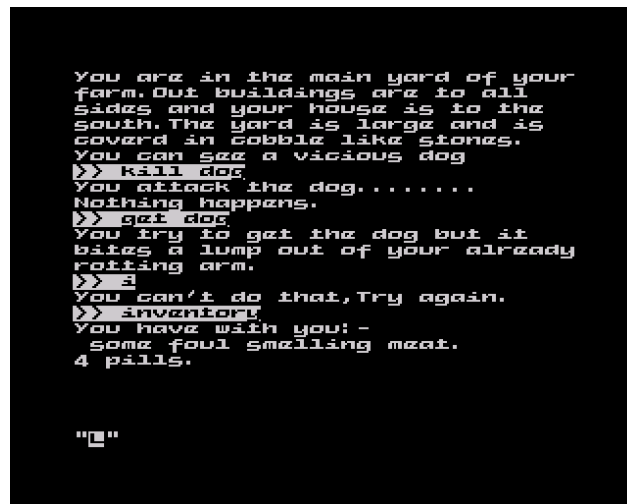


I quickly phone CRL on 15<sup>th</sup> June 1984 and was told to send it straight away. Having packed it up with great care and enthusiasm, the parcel was handed

over the post

office counter the next day, and my dreams were about to become reality.

Having read an article about sending games to software houses, and not wanting to annoy them too much, I waited for the golden letter. Then it happened. The 26<sup>th</sup> June 1984. Waiting for me when I returned from work, was a small brown parcel on the mat behind the door. Quickly I ripped it open and out fell a letter from CRL. I was ecstatic, but it didn't last long. Following the letter



came a cassette box, the wrong cassette box, not my cassette box. I read the letter that was addressed to Mr. David Head, and found out that his game, 'Raiders Of The Lost Ark' was not suitable for publication due to copyright reasons.

Even though I was annoyed, deep down I knew my game was still in with a chance. I called them and was told to return the package and they would forward my letter and game back. This I did, and again the waiting started. In fact, it went on and on. By mid July, I got so bored of waiting that I had written another, better, game! Having still heard nothing by the 29<sup>th</sup>, I phoned them up.

"We are sorry about the delay, but the secretary is off and everything is running late. I will get onto it and you will probably get a letter by the middle of next week."





# The Dream Breakers cont...

Meanwhile, work started on yet another game.

3<sup>rd</sup> September and I called again. This time the office manager informed me he would definitely get a letter to me within a week. More waiting... the 13<sup>th</sup> came and went, and still nothing.

On the 18<sup>th</sup> of September, I called them again. The voice informed me that he was aware of the problem and that it was 'being dealt with'. By now I was getting a little frustrated, having done everything they had asked, including paying for the return of someone else's game.

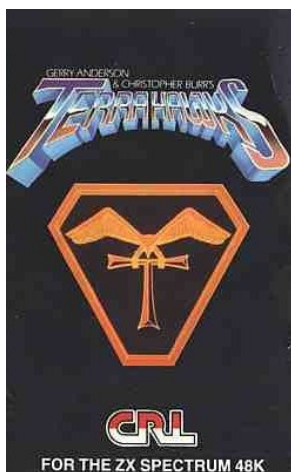
October began in much the same way. Me waiting about, writing other games and still wondering what the hell was happening to my dream. On the 15<sup>th</sup> of October I rang again, this time talking to a Mr. Ashly Hilderbrandt, and this time a little bit of the truth came out. My game was, apparently, somewhere in the middle of England. They had returned my game to David Head and were now trying to get him to send it back, but without much success.

Upon my return home from work on the 17<sup>th</sup> October, I was astounded to see a large padded envelope lying behind the door. Further examination revealed a business card, a compliment slip with that bloody slogan on it, and Mr. Hilderbrandt's message; "Many apologies for the delay and problems." accompanied by 4 CRL games.



Those games were; *Glug Glug*, (possibly the only half-decent game they did), *Test Match*, *Terrohawks* and *War Of The Worlds*. Now don't get me wrong, I was pleased with this, but that was not the point. I wanted my game back, I wanted my dream back.

More time passed, and news of the new Sinclair + machine began to filter through to the public. Still no news of my dream as October drew to a close. Dark Star, the new *Design Design* game was released on Saturday 27<sup>th</sup> October and was played to death over the weekend. On Monday yet another padded envelope had appeared on the mat, and this time there was a letter. It laid out the storey of my game, although to this day I do not believe that all this could have happened to me.



Having sent my game to the wrong person, the person, Mr. Head, then proceeded to move house. CRL tracked him down only to be told that my game had been lost during the move. LOST ! My dream was shattered and I never sent another game to anyone.

They did send me, as compensation (or maybe a way to try



and stop me bugging them), three more games; *Warlock Treasure* (which wouldn't load), *Magic Roundabout* and the *Highway Code*.

I decided to let it go, and give up on my dream.

Maybe these things did happen, maybe they didn't. Who can tell, but if Mr. David Head is out there, maybe he would like to confirm this.

Am I judging CRL too harshly? After all, they broke promises and dreams, and caused a young boy to lose his belief in the seemingly magical world of Spectrum software.

Every one's dream was to become a successful games writer, some made it, some didn't try, and some got ripped off and messed about. There was nothing that could be done or can be done, but this is my story, and I hope that others didn't suffer the same fate. I have hated CRL ever since, and none of their software has ever tempted me to think otherwise. If I had wanted the games I would have asked for them, (I certainly wouldn't have bought them), all I wanted was my game back and the truth.

I remember some time later, reading the Ashly Hilderbrandt had moved away from CRL, taking up another high position with some other company.

If you are out there Ashly, do you remember these events? Probably not! The sad thing is, I do.



# THE REAL PACMAN

There are loads of games for the Spectrum that are either direct copies or imitation of the great arcade game Pacman. Some of them are good, others forgettable, but they all have one thing in common—they are interpretations.

The age of emulation is now with us and there are some truly wonderful systems out there that let you play real arcade games on your home computer. All of them require a little more processor power than the humble spectrum, however some clever chap by the name of Simon Owen has found a way to emulate Pacman on your Spectrum.

No interpretations, no guessing and no re-writes, this is the real Pacman!

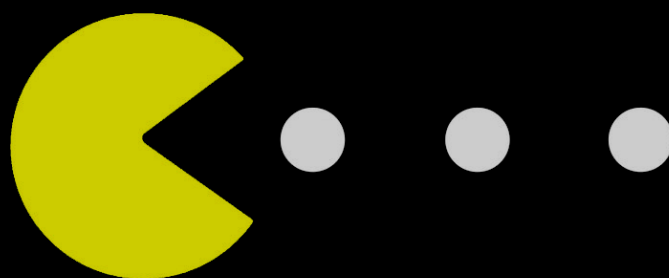
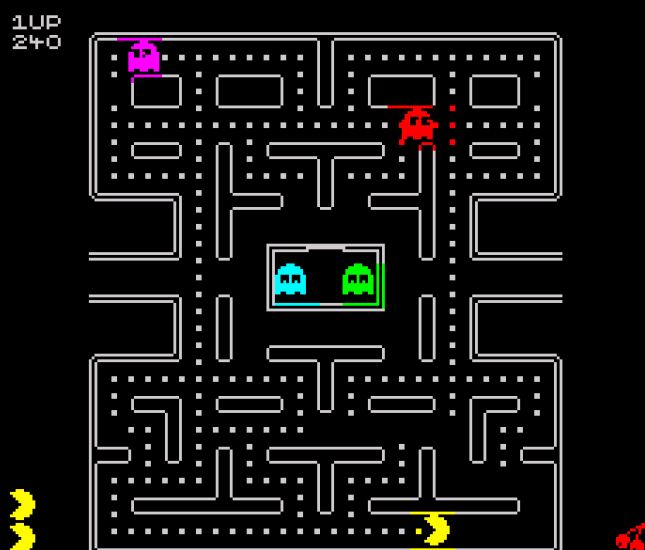
The ROMS of the arcade machine are used to create a TAP file, that when loaded into a 128k Spectrum, gives you the full game, complete with sound and optional colours.

So, what do you need?

First go to Simon Owen's website (<http://simonowen.com/spectrum/pacemuzx/>) and download the program that does the conversion. Then get the Pacman arcade ROMS (Google is your friend).

Run the batch file and instantly you will have .tap file ready to play.

Fire up your 128k Spectrum (or emulator) and you'll be playing the real Pacman.



## TOP SELLING GAMES - 1983

Orbiter  
Penetrator  
The Hobbit  
Horrace Goes Skiing  
Jetpac  
Pssst  
Manic Miner  
Ah Diddums  
Ant Attack  
Lunar Jetman

Silversoft  
Melbourne House  
Melbourne House  
Psion / Sinclair  
Ultimate PTG  
Ultimate PTG  
Bug Byte  
Imagine  
Quicksilver  
Ultimate PTG





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