Digital Versions, Clones and Original Ideas: Game Code Listings in Finnish Computer Magazines, 1978–1990

program listings, computer magazines, game history

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Tero Pasanen (1978–2022) in memoriam

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The article provides a broad overview of game code listings that have been published in Finnish computer magazines. The time frame encompasses the emergence as well the eventual end of their publication. The article maps how extensive of the publication of the code listings was, the variations between the publications and reporting who authored the listings. In addition, the article

answers the question regarding why the program listings were created and published. The research material consists of about 1300 program listings, over 450 of them games, from 11 Finnish computer magazines. From a theoretical perspective, the article associates itself with previous studies on game history, home computing history as well as cultural software studies.

Introduction

In January 2016, Finnish president Sauli Niinistö, visited a children's coding school at the Helsinki Library 10. Niinistö sat down at a computer and learned how to move a turtle on the screen via coding. According to *Iltalehti* (Pudas 2016), 'Niinistö said after the coding session that the most important thing in coding is placing the space in the right place'. Niinistö's visit to the coding school was part of the programming and coding boom of the 2010s, during which coding skills were viewed as a general civic skill as well as a form of IT competence. These skills were seen as important not only from the perspective of working life but also for the use, modification and understanding of IT services. The widespread development of coding skills could be seen as a national and international political goal. The ability has been considered both as a user's capacity to program applications for digital devices and, in a broader context, as a skill to consider diverse things as processes that can be broken down and controlled (Tuomi et al. 2018).

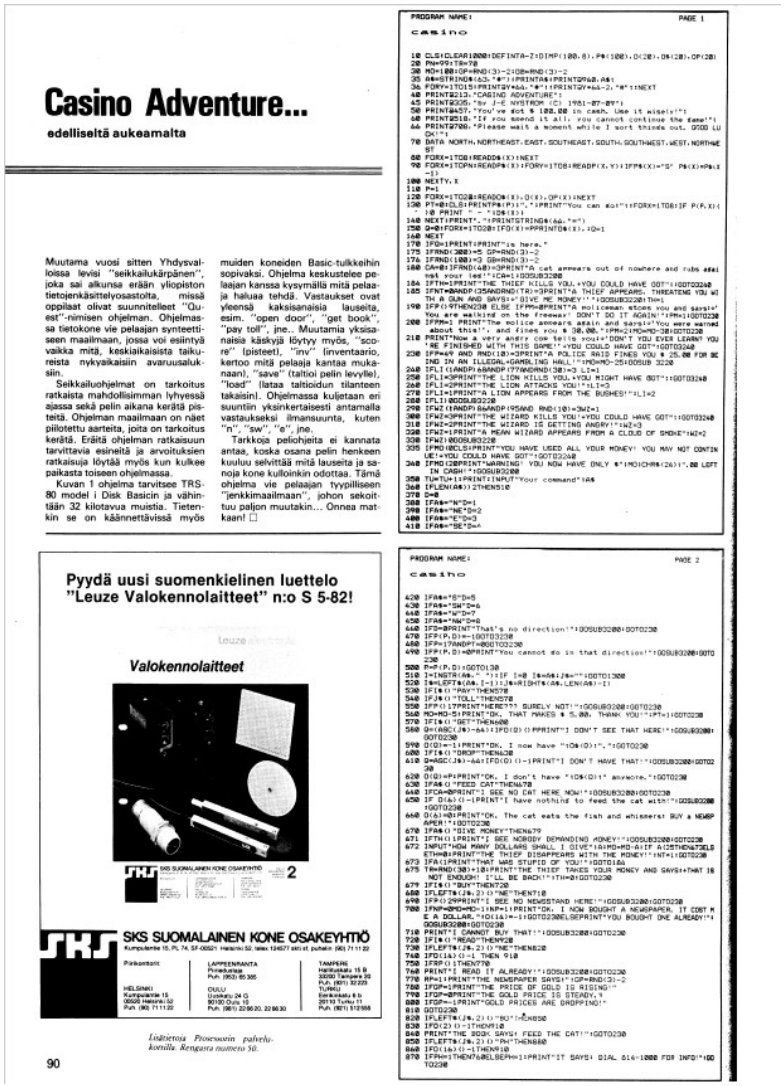
Recent discussions about coding are not unique. Several decades earlier, coding (or computer programming) had already been envisioned as a future civic skill (see, e.g., Saarikoski 2006). The earlier history—and the central role of game programming therein—is easily forgotten in current discussions. The goal of this article is to examine the earlier history of programming more closely, focusing on game programming as a hobby and associated publishing activities surrounding the topic.

The first wave of information about broader hobbyist-led programming came about nearly forty years ago. The use of microcomputers became more common in the early 1980s in Finland and many other countries, while the average age of users dropped. Computers for personal use, which were pre-assembled and cheaper than ever before, had been entering the market since the late 1970s. However, it was the release of new devices, such as the Commodore VIC-20, Commodore 64 (C64), Sinclair ZX-81 and Sinclair Spectrum, which served to expand the home computer user base in the early 1980s. In addition to these devices, many other machines appeared on the market, most of which were incompatible with each another. At that stage, even though computer

sales numbers were still only in the thousands or tens of thousands, the new information technology that spread to homes, schools and workplaces reached far more people than before. The increasing prevalence of computers and software was linked to discussions about the information society and the skills it required from its citizens (see, e.g., Saarikoski 2004).

As the use of computers became more widespread, so too did the need for knowledge about them. Computer clubs served as places for exchanging information and software, but they didn't reach or interest all enthusiasts. Consequently, various printed publications began to target the growing user base and information about computers and coding spread through guidebooks and magazines. These magazines were published by device importers, user clubs and associations, as well as commercial publishers, whose publications ultimately reached the most readers.

The computers needed programs to function, and a significant part of the appeal of home computers was that users could program them themselves. Magazines began to publish program listings, as they were inexpensive and met the needs of readers by developing their programming skills and expanding the range of programs available to them (see also Haddon 1988; Saarikoski 2004). As the program listings were often submitted by the readers themselves, their publication formed an interactive relationship between the magazine's editorial team and its readers.



Casino Adventure...

edelliseltä aukeamalta

Muutama vuosi sitten Yhdysvalloissa levisi "seikkailukärpänen", joka sai alkunsa erään yliopiston tietojenkäsittelyosastolta, missä oppilaat olivat suunnitelleet "Quest"-niminen ohjelman. Ohjelmassa tietokone vie pelaajan synteettiseen maailmaan, jossa voi esiintyä vaikka mitä, keskiaikaisista taikureista nykyaikaisiin avaruusaluksiin.

Seikkailuohjelmat on tarkoitus ratkaista mahdollisimman lyhyessä ajassa sekä pelin aikana kerätä pisteitä. Ohjelman maailmaan on näet piilotettu aarteita, joita on tarkoitus kerätä. Eräitä ohjelman ratkaisuun tarvittavia esineitä ja arvoituksien ratkaisuja löytää myös kun kulkee paikasta toiseen ohjelmassa.

Kuvan 1 ohjelma tarvitsee TRS-80 model i Disk Basicin ja vähintään 32 kilotavua muistia. Tietenkin se on käännettävissä myös muiden koneiden Basic-tulkkeihin sopivaksi. Ohjelma keskustelee pelaajan kanssa kysymällä mitä pelaaja haluaa tehdä. Vastaukset ovat yleensä kaksisanaisia lauseita, esim. "open door", "get book", "pay toll", jne.. Muutamia yksisanaisia käskyjä löytyy myös, "score" (pisteet), "inv" (inventaario, kertoo mitä pelaaja kantaa mukanaan), "save" (tallioi pelin levylle), "load" (lataa talltioidun tilanteen takaisin). Ohjelmassa kuljetaan eri suuntiin yksinkertaisesti antamalla vastaukseksi ilmansuunta, kuten "n", "sw", "e", jne..

Tarkkoja peliohjeita ei kannata antaa, koska osana pelin henkeen kuuluu selvittää mitä lauseita ja sanoja kone kulloinkin odottaa. Tämä ohjelma vie pelaajan tyypilliseen "jenkkimaailmaan", johon sekoittuu paljon muutakin... Onnea matkaan! □

Pyydä uusi suomenkielinen luettelo "Leuze Valokennolaitteet" n:o S 5-82!

Valokennolaitteet

SKS SUOMALAINEN KONE OSAKEYHTIÖ

Lisätietoja Prosessorin palvelukortilla. Rengasta numero 30.

90

PROGRAM NAME: casino PAGE 1

PROGRAM NAME: casino PAGE 2

Figure 1. Jan-Erik Nyström's Casino Adventure was one of the earliest Finnish adventure game listings. Alongside the listing, the magazine also introduced text adventure games more generally (Prosessori 11/1982, mikroprosessori special supplement).

Program listings were written in the BASIC language[1] or another programming language, such as assembler, and printed on the pages of magazines or books. With the listing, users could copy the program character by character and line by line onto their own computer. Afterward, the program could be saved to contemporary storage media such as floppy disks or cassette tapes. Manual copying was slow and prone to errors. These listings included games and various entertainment programs, utilities related to game development and other programming, extensions for the built-in BASIC interpreters of the machines, tools for handling storage media, graphic and music editors as well as and utilities suitable for tasks such as filing, statistical computation and word processing.

The publication of listings in Finland was based on international models such as the *CLOAD* and *Computer & Video Games* (CVG) magazines, though there were differences therein. In Finland, magazines did not often publish ready-made cassette or disk supplements but focused on printed programme listings. This decision was driven by cost factors. Due to the small size of the Finnish market, magazines did not focus on a single machine but instead sought to serve users of various brands and models.[2] Most often, the program listings came from the readers of the magazines, and the editorial team tested the programs for functionality, selected the best ones for publication, prepared the necessary accompanying texts and, in many cases, paid a small fee to the authors of the published programs.[3]

Alongside the program listings, magazines usually published a brief introduction explaining the content and purpose of any mentioned program. In some cases, magazines also provided a more detailed explanation that went through the program code in more depth, the purpose of which was to make it easier for users to modify the code for their own needs (see also Haddon 1988, 223). The authors of the program listings were not usually discussed in detail, with only their names being mentioned. As the programs became more complex, new machines entered the market and as commercial offerings increased, the need for entire program listings decreased. By the late 1980s, such listings were rarely published, as magazines began to deliver programs to readers in electronic form. Programs spread through diskettes, CD-ROMs, electronic services and later, the internet.

In this article, we examine program listings published in Finnish magazines, focusing particularly on game listings and other entertainment programs[4] such as utilities related to betting. We have searched for listings in all Finnish general interest, club and computer magazines available to us through university legal deposit libraries or as digitised versions. The material includes 1,290 program listings published in 11 computer magazines between 1978 and 1990. Of these, 454 are games or game-like entertainment programs. Additionally, there are listings that directly support game development, such as for implementing graphics, movable game characters and sound effects.

Our research questions are as follows:

1. What factors influenced the publication of program listings, the beginning of the publishing activity and its eventual cessation?
2. What were the focuses and characteristics of these publications?
3. Who were the creators of the listings and what united or distinguished them?

After the introduction, the article is divided into sections where we first present previous research, especially in the areas of cultural software studies and the history of computer hobbies. We then offer a review of our material and research methods, introducing the magazines and their differences. Next, we examine game listings and divide the studied period into three different phases based on the publishing channels and the popularity of game listings. Before our conclusion, we also analyse the creators of game programs and categorise them into groups.

Previous Research

In the 21st century, there has been an increase in humanities and social sciences research related to computer programs. Within the so-called field of *software studies*, various interactional relationships between software and their users have been identified (see e.g., Fuller 2008; Manovich 2013). Similarly, for example, in the history of information technology, more attention has been paid to questions related to software in addition to hardware. This research has covered topics such as the software industry, the development of individual programs and user cultures (see e.g., Campbell-Kelly 2004; 2007). The demoscene[5] and other coding-related subcultures have also been studied (see especially Reunanen 2017). Game studies in a sense, form their own field within broader software studies, despite game studies not typically being contextualised as part of software studies.

In her dissertation in media studies, Minna Saariketo (2020) describes the *landscape of code*. Using this term, Saariketo refers to how programmed environments are present in people's everyday lives in various ways. These landscapes of code both limit and guide people's conditions for action, but users can also actively influence the landscapes around them. Pekka Mertala and his colleagues (2020) have discussed code as a form of socio-material text. According to them, coding should be examined broadly within a societal context, with a willingness to address the ideological and economic ties that sometimes underpin coding presented in a neutral manner. Although

researchers have identified landscapes of code and coding cultures as 21st century phenomena, the terminology of contemporary cultural research can partially be applied to earlier periods.

There is also previous research on program listings themselves. For example, in his dissertation *Koneen lumo*, Petri Saarikoski referred to program listings as part of the development of Finnish computer hobbyism, highlighting the role of listings, especially in the early stages of computer hobbyism in the late 1970s and early 1980s (Saarikoski 2004, e.g., 67). Likewise, several international studies have also highlighted the cultural significance of program listings—or, more broadly, programs written by hobbyists—especially in the early 1980s (Haddon 1988; Swalwell 2008; Kirkpatrick 2017; Halvorson 2020). Internationally, entire works have been devoted to short individual programs (Montfort et al. 2013). Research on individual program listings has also begun in Finland in recent years. This research has involved analysing the program code itself, contextualising the listings in relation to the computing practices of their time and examining individual programs as part of the cultural heritage of computer hobbyism (Saarikoski et al. 2017; 2019).

Jaroslav Švelch (2018), in his work on early home computer and gaming hobbyism in Czechoslovakia, has written about listings and other programs published or distributed as *coding acts*.[6] By the term *coding act*, Švelch refers to the ways in which programming computer games influenced hobbyists' self-expression. Švelch sees coding acts as part of a meritocratic system inherent in computer hobbyism, whereby users achieved recognition from their peers based on the skillfulness of the programs they created (see also Reunanen 2017). Coding acts included not only the actual programming but also the publishing and distribution of these programs.

This research differs from previous work in that we have systematically reviewed the program listings published in computer magazines in one country to create a preliminary picture of general phenomena. Unlike many other studies, we focus specifically on game listings. Similar large-scale research has not been conducted in other countries, so in this article, we are unable to compare the situation in Finland to international developments. For example, we are unable to assess whether the same types of listings were published in Finland as elsewhere or whether the creators of the listings were similar to those in other countries. However, it can nonetheless be assumed that Finland's situation did not significantly differ from other similarly sized Western countries; however, at the same time, Finland's press scene was unique in many ways: some magazines in Finland enjoyed an exceptionally large circulation and their revenue was largely based on annual

subscriptions, not single-issue sales. Additionally, the popularity of different machines varied somewhat from country to country, depending on the investments made by various national importers and retailers.

Publication Forums and Research Methodology

Our research material consists of 1,290 program listings published in 11 computer magazines.[7] We have classified 454 of these as games or game-like entertainment programs, although sometimes the boundary between a game and another type of entertainment program is blurred. Our material includes the majority of all program listings published in Finnish magazines. Finding every program listing ever published in the country is a near impossible task, as individual listings were also published in the 1980s in magazines that otherwise did not deal with computing or gaming. Additionally, we excluded from our material short subprograms of just a few lines and corrections of previous publications; we focused instead on complete programs, utilities and more extensive program routines.[8] We collected the material from the listing supplements of magazines, columns on programming, article series and listings published in club sections. For this reason, we did not include, for example, *Mikro*, which began in 1983 as Finland's first microcomputer magazine (later *MikroPC*) and published only a few individual program listings or parts of them in its early years in programming articles. One of these, published as part of a larger section on games, described how to program a space shooter game (*Mikro* 1/1984, 55-56: Anders Råberg: 'Create Your Own Space Game').

Our material also does not include listings published in smaller local club magazines, as these are rarely found in university library collections or digitised online. Exceptions include the *Vikki* magazine of the VIC club in the Helsinki area and *Tieturi* from the 1800 Users' Club of Telmac users, as well as the association and hobbyist publication *Micropost*, which were available. In addition to magazines, program listings were published in books but these are not however included in our material.

We have reviewed all issues of the examined magazines either using their digitised versions or by browsing printed copies. We have tabulated the program listings and recorded the following details: the publication channel and date, the name of the program creator as well as the name and type of the program (game, entertainment, graphics, music, utility). We also wrote a short description of the content, selected quotes from the program presentations and noted specific

research-related observations. After basic tabulation, we calculated the relative proportions of different program types and computer brands and identified individuals who published programs in different magazines.

Our investigation is founded on basic research in game and media history, where the key focus is on compiling and thoroughly reviewing a large empirical dataset. Reviewing the material means reading, organising and comparing different units of the data. There is no specific methodological name for this approach, though it can well be referred to as historical-qualitative research. However, compared to many other historical studies, the source material in this case forms a relatively cohesive whole, even though it comes from a diversity of magazines.[9]

Our approach is evident in the fact that we intentionally list a large number of games and their creators in the article. The reason for this is that among the creators of the game listings are individuals who are known from other areas of Finnish game or computing history and further, many significant authors of the listings have not been previously acknowledged in research or popular works on game history, even though they deserve recognition. Similarly, compared to commercial game publications, hobbyist publications and game listings have received scant attention in research and there is little previous background knowledge of the types of games published as listings and how they were named.

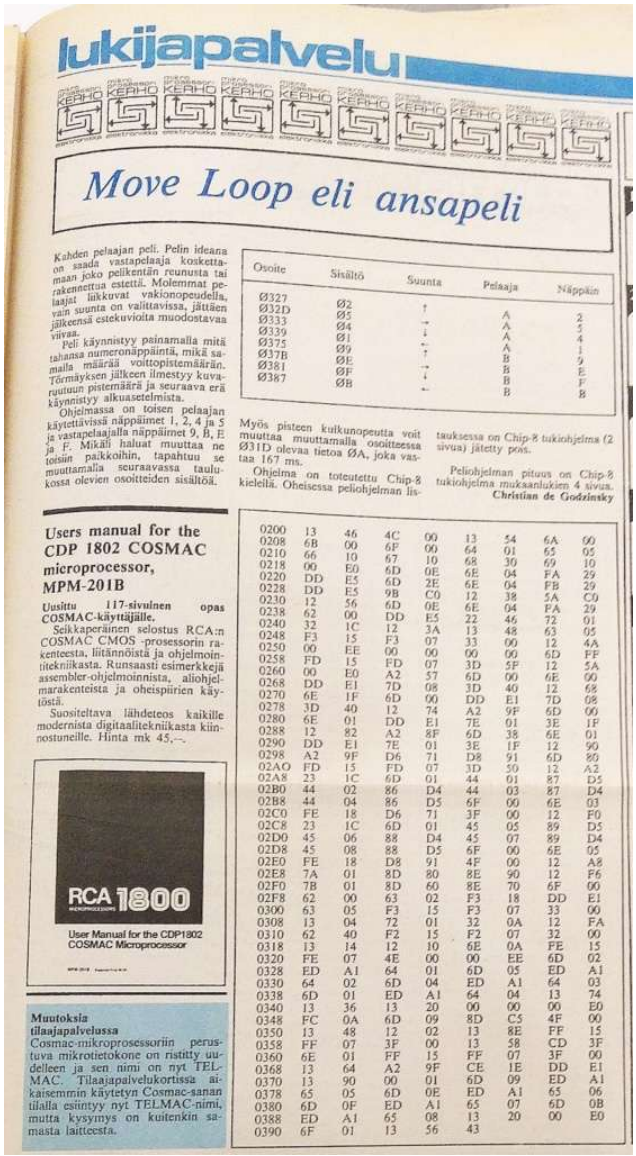
Content Changes in Game Listings

Game content can be reviewed magazine by magazine, comparing their different emphases. Another possible approach is to examine the content chronologically on a general level. We use both methods but emphasise the latter. This approach makes it easier to observe changes in computer hobbies and gaming cultures from the late 1970s to the early 1990s. When reviewing all game listings chronologically, the period under investigation can be divided into three parts: 1) the early years of publishing from 1978 to 1983; 2) a shift in the popularity of magazine from 1984 to 1985; and 3) the decline in game listings from 1986 to 1989. Next, we will examine these periods.

The Early Phase of Game Listings

The first game listing found in our material was published in *Elektroniikka* (*Electronics*) magazine in early 1978. *Elektroniikka's* listings included digital versions of classic or relatively new board and card games, such as *Mastermind*[10], *Ventti* (*Vingt-et-un*) and *Jätkänshakki* (*Tic-tac-toe*), as well as

listings clearly inspired by video games such as Christian de Gozinsky's *Move Loop* or Ansapeli (Trap Game) (*Elektroniikka* 4/1978) and Jan-Erik Nyström's *Miinakenttä* (Minefield) (*Elektroniikka* 7/1978). In some cases, we were unable to determine the original inspiration for the listings. The final game listings published in *Elektroniikka*, Seppo Kamppikoski's *Jätkänshakki* and Richard Eller's *Mastermind*, appeared at the end of 1980 and the beginning of 1981 (*Elektroniikka* 22/1980; 5/1981).



lukijapalvelu

Move Loop eli ansapeli

Kahden pelaajan peli. Pelin ideana on saada vastapelaaja koskettamaan joko pelikentän reunusta tai rakennettua estettä. Molemmat pelaajat liikkuvat vakionopeudella, vain suunta on valittavissa, jättäen jälkeensä estekuvioita muodostavaa viivaa.

Peli käynnistyy painamalla mitä tahansa numeronäppäintä, mikä samalla määrää voittopistemäärän. Törmäyksen jälkeen ilmestyy kuvaruutuun pisteemäärä ja seuraava erä käynnistyy alkuasetelmista.

Ohjelmassa on toisen pelaajan käytettävissä näppäimet 1, 2, 4 ja 5 ja vastapelaajalla näppäimet 9, B, E ja F. Mikäli haluat muuttaa ne toisiin paikkoihin, tapahtuu se muuttamalla seuraavassa taulukossa olevien osoitteiden sisältöä.

Osoite	Sisältö	Suunta	Pelaaja	Näppäin
Ø327	Ø2	↑	A	2
Ø32D	Ø5	→	A	5
Ø333	Ø4	↓	A	4
Ø339	Ø1	←	A	1
Ø375	Ø9	↑	B	9
Ø37B	ØE	→	B	E
Ø381	ØF	↓	B	F
Ø387	Ø8	←	B	8

Myös pisteen kulkunopeutta voit muuttaa muuttamalla osoitteessa Ø31D olevaa tietoa ØA, joka vastaa 167 ms.

Ohjelma on toteutettu Chip-8 kielellä. Oheisessa peliohjelman listauksessa on Chip-8 tukiohjelma (2 sivua) jätetty pois.

Peliohjelman pituus on Chip-8 tukiohjelma mukaanlukien 4 sivua.

Christian de Godzinsky

Users manual for the CDP 1802 COSMAC microprocessor, MPM-201B

Uusittu 117-sivulinen opas COSMAC-käyttäjälle.

Seikkaperäinen selostus RCA:n COSMAC CMOS -prosessorin rakenteesta, liitännöistä ja ohjelmointitekniikasta. Runsaasti esimerkkejä assembler-ohjelmoinnista, aliohjelmarakenteista ja oheispiirien käytöstä.

Suositeltava lähdeteos kaikille modernista digitaalitekniikasta kiinnostuneille. Hinta mk 45,–.

Muutoksia tilaajapalvelussa

Cosmac-mikroprosessoriin perustuva mikrotietokone on ristitty uudelleen ja sen nimi on nyt TELMAC. Tilaajapalvelukortissa aikaisemmin käytetyn Cosmac-sanan tilalla esiintyy nyt TELMAC-nimi, mutta kysymys on kuitenkin samasta laitteesta.

0200	13	46	4C	00	13	54	6A	00	
0208	6B	00	6F	00	64	01	65	05	
0210	66	10	67	10	68	30	69	10	
0218	00	E0	6D	0E	6E	04	FA	29	
0220	DD	E5	6D	2E	6E	04	FB	29	
0228	DD	E5	9B	C0	12	38	5A	C0	
0230	12	56	6D	0E	6E	04	FA	29	
0238	62	00	DD	E5	22	46	72	01	
0240	32	1C	12	3A	13	48	63	05	
0248	F3	15	F3	07	33	00	12	4A	
0250	00	EE	00	00	00	00	6D	FF	
0258	FD	15	FD	07	3D	5F	12	5A	
0260	00	E0	A2	57	6D	00	6E	00	
0268	DD	E1	7D	08	3D	40	12	68	
0270	6E	1F	6D	00	DD	E1	7D	08	
0278	3D	40	12	74	A2	9F	6D	00	
0280	6E	01	DD	E1	7E	01	3E	1F	
0288	12	82	A2	8F	6D	38	6E	01	
0290	DD	E1	7E	01	3E	1F	12	90	
0298	A2	9F	D6	71	D8	91	6D	89	
02A0	FD	15	FD	07	3D	50	12	A2	
02A8	23	1C	6D	01	44	01	87	D5	
02B0	44	02	86	D4	44	03	87	D4	
02B8	44	04	86	D5	6F	00	6E	03	
02C0	FE	18	D6	71	3F	00	12	F0	
02C8	23	1C	6D	01	45	05	89	D5	
02D0	45	06	88	D4	45	07	89	D4	
02D8	45	08	88	D5	6F	00	6E	05	
02E0	FE	18	D8	91	4F	00	12	A8	
02E8	7A	01	8D	80	8E	90	12	F6	
02F0	7B	01	8D	60	8E	70	6F	00	
02F8	62	00	63	02	F3	18	DD	E1	
0300	63	05	F3	15	F3	07	33	00	
0308	13	04	72	01	32	0A	12	FA	
0310	62	40	F2	15	F2	07	32	00	
0318	13	14	12	10	6E	0A	FE	15	
0320	FE	07	4E	00	00	EE	6D	02	
0328	ED	A1	64	01	6D	05	ED	A1	
0330	64	02	6D	04	ED	A1	64	03	
0338	6D	01	ED	A1	64	04	13	74	
0340	13	36	13	20	00	00	00	E0	
0348	FC	0A	6D	09	8D	C5	4F	00	
0350	13	48	12	02	13	8E	FF	15	
0358	FF	07	3F	00	13	58	CD	3F	
0360	6E	01	FF	15	FF	07	3F	00	
0368	13	64	A2	9F	CE	1E	DD	E1	
0370	13	90	00	01	6D	09	ED	A1	
0378	65	05	6D	0E	ED	A1	65	06	
0380	6D	0F	ED	A1	65	07	6D	0B	
0388	ED	A1	65	08	13	20	00	E0	
0390	6F	01	13	56	43				

Figure 2. *Many of the program listings published in Elektroniikka were written in the CHIP-8 programming language, such as Christian de Gozinsky's Move Loop game (Elektroniikka 4/1978).*

Another early publisher was *Prosessori*. Most of its early game listings were computer versions of *Hangman* or various board and card games, such as *Othello*, *Mastermind* and *Ventti* (*Vingt-et-un*),

with occasional outer space, sports or shooting games. The number of game listings in *Prosessori* began to increase at the end of 1982 and, by 1983, over half of the listings published in the magazine were games. By that time, the game listings in *Elektroniikka* had practically ceased. *Elektroniikka's* hobby club column focused almost entirely on Telmac and related machines, with listings for Telmac computers continuing in *Tieturi* club magazine between 1982 and 1984. *Prosessori*, on the other hand, published program listings for a variety of computer types and brands, including the Commodore PET and VIC-20, Apple II, TRS-80 and Sinclair ZX-81. Some of these computers were more expensive (PET, Apple II), while others were cheaper home microcomputers (ZX-81, VIC-20). From the end of 1982 onward, the range of game themes in *Prosessori* broadened. In addition to traditional board and card games, more complex games were published, such as Ismo J. Reitmaa's *Rata-ajo* (*Track Race*) for the VIC-20 and Jan-Erik Nyström's *Casino Adventure* for the TRS-80 (*Prosessori* 11/1982, see Figure 1).

Game listings were also published in *Tietokone* (*Computer*) magazine, *Poke & Peek!* and *Micropost* starting in 1983. That year, eight out of the 13 program listings in *Tietokone* were games. Similarly, 16 out of 18 listings in *Micropost* were also games. Many of the game listings in *Micropost* were created by a few recurring contributors and the magazine's editors.[11] The games in *Micropost* in 1983 were mostly clone versions[12] of commercial video games, often space games or popular titles of the time, such as *Breakout*, *Pong* or *Pac-Man,* which made for the Commodore VIC-20 and Sinclair ZX-81.

The Commodore distributor PCI-Data's *Poke & Peek!* focused almost exclusively on utility programs. Only one of the four program listings in 1983 was a game, the *Air Defence* game previously published in the U.S. magazine *Compute!*, which *Poke & Peek!* (2/1983, 5) advertised with the phrase, 'The VIC air defence game offers a new perspective on national defence'.[13]

The early game listings often took inspiration not only from board and card games but also from arcade games. Many 'space games' had commercial or thematic inspirations, such as *Lunar Lander* (1979), *Asteroids* (1979), *Space Invaders* (1978) and *Defender* (1981). The 'maze game', 'labyrinth game', or 'guzzle game', which began to appear between 1983 and 1984, typically referred to *Pac-Man*. These early game listings were often named after their gameplay mechanics or themes. *Pac-Man* was released as an arcade game in the spring of 1980 and over the next few years, it spread worldwide. In 1982, Atari released *Pac-Man* for its 2600 home video game console and *Pac-Man* became one of the most recognisable symbols of video game culture, inspiring enthusiasts to

create their own versions (Saarikoski et al., 2017). These hobbyists would often name their versions after their inspirations, either by directly referencing the original game names or by creating wordplays, such as Antti Hakkarainen's *Zac-Man* for the VIC (*Tietokone* 1/1984), Ari Kilpeläinen's *ZX-Man*, and Reima Mäkinen's *Pac-Nam* (*Micropost* 3/1983).

Figure 3. *The fanzine-like photocopy style of Micropost can be seen in the Pac-Man article and the ZX-Man game listing (Micropost 3/1983, magazine collection scanned by Niila T. Rautanen, https://web.archive.org/web/20191202200141/https://tietokone.ntrautanen.fi/other/micropost.htm)*

In outer space games, there were space stations, space guns, meteor defence, warfare as well as alien and UFO attacks: themes familiar not only from commercial video games but also from movies, TV shows and science fiction literature.

The game *Snake* was also frequently cloned. The earliest domestic versions we have found were published in 1984, although the history of this game type extends back to the late 1970s.[14] The *Snake* game became famous in the late 1990s on Nokia mobile phones, but the *Snakes*, *Worms* and other similar games of the early 1980s were based on the *Blockade* arcade video game released by

Gremlin in 1976 and the *Worm* games were published on the *CLOAD* magazine's accompanying cassette in 1979, originally programmed for the TRS-80 (see *MikroBitti* 2/1987). Soon after, versions of the game were quickly made for other platforms, too.

A somewhat different game from the early years was Ari Kilpeläinen's *Shot-down* revolver duel, published in *Micropost* 1/1983. However, this too was based on the well-known duel game genre, which had its roots not only in real-life duels but also in the electromechanical devices found in amusement parks and the descendants of *Gun Fight*, an arcade video game introduced by Japan's Taito in 1975. These types of western-themed games were later published for home computers in the early 1980s.

In addition to games, the most common leisure and entertainment programs were biorhythm applications, which were part of wider an international trend.[15] The pseudoscientific idea of biorhythms based on a person's birthdate was invented in the early 20th century and popularised in the 1970s when biorhythm charts were created for calculators, mainframe computers and coin-operated machines in public places. Programming a biorhythm application for home computers was relatively easy and were published as listings for many home computers in Finland, first for Telmac, Sinclair Spectrum and the rarer Sirius 1, but surprisingly only from late 1983 onward. Alongside biorhythm applications, users also created single listings for things such as palm reading and, only somewhat later, reaction testers became typical entertainment programs.

Another popular type of entertainment program involved coding tools designed for gambling, betting and sports enthusiasts. These listings were not games but rather had game-like elements or were used to optimise gaming experiences. Such programs were published for various platforms, from the popular C64 to the rarer Memotech. The majority of betting-related listings were for the Finnish national betting company Veikkaus's games. These included a statistics program for analysing football teams' performance, a system program for *Vakioveikkaus* (sports pool betting) and a system check program for rake betting systems (*Prosessori* 12/1983; *Printti* 20/1985; 18/1987). Numerous programs were also developed for horse racing (*MikroBitti* 1/1985; 9/1989). However, the most popular programs, according to quantity at least, were various lottery number generators, which first appeared in the early 1980s (*Prosessori* 2/1982; *Tieturi* 5/82; *MikroBitti* 1/1984; *Tietokone* 4/1984; *Printti* 20/1985).[16]

From Breakthrough to Decline

The launch of *MikroBitti* in April 1984 marked a turning point for game listings. Over the next two years, the number of such publications peaked. During this time, there was a clear demand for listings and *MikroBitti* served as a unifying medium with wide circulation, attracting game listers. Starting from issue 3/1985, *MikroBitti* began awarding the best listings with a supplementary 500-Finnish mark reward, which was later increased to 1,000 and later 1,500 marks.[17] On the other hand, *MikroBitti's* entry into the magazine market led other publications to reduce or cease the publishing of game listings, leading them to focus instead on utility programs. For instance, in 1984, *Tietokone* published a large number of game and entertainment program listings (40 games and 27 utilities), but in the following years, the magazine only published utility programs making only a few exceptions for PC-compatible computers. Already in the summer of 1984, Jyrki J.J. Kasvi's mathematical program for calculating derivatives and integrals was advertised with the headline: 'Forget games, try math on the Vic' (*Tietokone* 6-7/1984).

In 1984, *Tietokone*'s game and entertainment program listings were made for various computer types such as the Sinclair ZX-81 and Spectrum, VIC-20, C64, TRS-80, Apple II, Oric-1 as well as the Swedish Luxor ABC-80 and its ABC-800 version. Along with games, *Tietokone* also published biorhythm programs such as Jari Latvanen's version for the rare Victor 9000/Sirius 1 (*Tietokone* 8/1984).[18]

Tietokone's game listings included several *Pac-Man*-inspired maze games, as well as space-themed games. Other notable listings included Heikki Kyllönen's snake game *Luikero* (*Tietokone* 2/1984, for the Spectrum), Jan-Erik Nyström's *Space Adventure* for the TRS-80 Model I (*Tietokone* 4/1984), which was based on Penguin Software's *The Quest* (1983) and Tuomas Lepola's VIC-20 game *Muurarin vatsahaava* (*The Mason's Ulcer*) in which a mason builds a brick wall but cannonballs destroy it (*Tietokone* 9/1984). In addition, *Tietokone* published Arto Kytöhonka's *Mielenylennysohjelma* (*Mind-Uplifting Program*), a BASIC-language program that allowed users to create their own therapy programs (*Tietokone* 9/1984).

MikroBitti also published game and program listings for a wide variety of home computers and occasionally organised game programming competitions, publishing the results as listings. During this period, the market saw an explosion of different home computers. In addition to previously

mentioned models, *MikroBitti* featured listings for Salora Fellow and Manager, Oric-1 and its successor Atmos, Atari XL, Dragon, Sega and Sharp models. Mattel's Aquarius I and II home computers each had one published listing.

During *MikroBitti's* first two years, game listings were dominated by outer space games involving landings on celestial bodies or defending bases against attackers. Another popular theme surrounded the computer versions of board and card games as well as mechanical games, with non-digital game adaptations widely published in other magazines, too. Notable examples include listings for the *One-Armed Bandit* (fruit machine) (*MikroBitti* 1/1986; 9/1986), *Blackjack* (*MikroBitti* 5/1985; 6-7/1986), *Othello* (*MikroBitti* 9/1985; 11/1986), *Towers of Hanoi* (*MikroBitti* 3/1983; 9/1988), *Nine Men's Morris* (*MikroBitti* 9/1985; 9/1987, and *Mastermind* (*MikroBitti* 9/1986; 3/1987). Surprisingly, no listings for chess were ever published, likely because the game's complexity would have made the listing too lengthy. Sports games were also common, though more simplistic compared to commercial versions, focusing on individual sports like slalom skiing, ski jumping, javelin throwing and shot put (*MikroBitti* 1/1984; 1/1985; 8/1985; 1/1987).

Mopoilua Vicillä

HENRIK PALMEN

Silverstone-pelin ideana on ohjata radalla kulkevaa mopoa ja väistellä vastaantulevia autoja. Hyvän tuloksen rajana voidaan pitää noin 6—7 kilometriä.

Vicin basic on joskus toivottoman hidas peliohjelmointiin. Silverstoneessa on ohjesivun kehystäminen, mopedin ohjaus ja kahdeksan merkin levyisen kuvaruudun skrollaus toteutettu konekielellä.

Data-lauseiden kirjoittamisessa kannattaa olla tarkkana, sillä yksikin väärä data riittää ohjelman sekoittamiseen. Siis tallenna ennen kuin kokeilet.

Ohjelman osat ovat pääpiirteittäin:

Rivi	Toiminta
10	Varaa tilan omille merkeille
20— 30	Lataa konekielirutiinit ja kopioi merkkigeneraattorin rammiin
40	Muuttaa kuvaruudun kokoa
50	Lataa käyttäjän määrittelemät merkit
70— 90	Lähtösignaali
110—150	Pääruutiini
160—230	Törmäys vastaantulevilin autoihin
240—330	Ohjesivu
340—370	Merkki- ja konekielidatat □

Vic

```
1 REM ***************
2 REM **SILVERSTONE**
3 REM ****(C)1984****
4 REM *HENRIK PALMEN*
5 REM ***************
6 REM
10 PRINT"[CLR]LADATA ..."!X=25600:POKE52,28
:POKE56,28
20 FORI=850TO970:READA:POKEI,A:NEXT:FOR
I=7168TO7679:POKEI,PEEK(I+X):NEXT
30 FORI=288TO338:READA:POKEI,A:NEXT:GOS
UB240
40 POKE36867,72:POKE36881,13:POKE36866,
136:POKE36880,25:POKE36879,10
50 PRINT"[CLR]":FORI=7168TO7679:POKEI,PEEK(
I+X):NEXT:FORI=7448TO7510:READA:POKEI,A:
NEXT
60 S4=36874:S8=36878:POKES8,4:POKES8+7
,255:L=0:POKE288,32:POKE289,32:POKES8+1,
10
70 POKE7944,41:POKE7952,42:POKE30560,1:
POKE30564,1
80 FORT=1TO3:POKES8,15:POKES4+2,170:FOR
I=1TO400:NEXT:POKES4+2,0:FORI=1TO400:NEX
T
90 NEXT:POKES4+2,240:FORT=1TO800:NEXT:P
OKES4+2,0
```

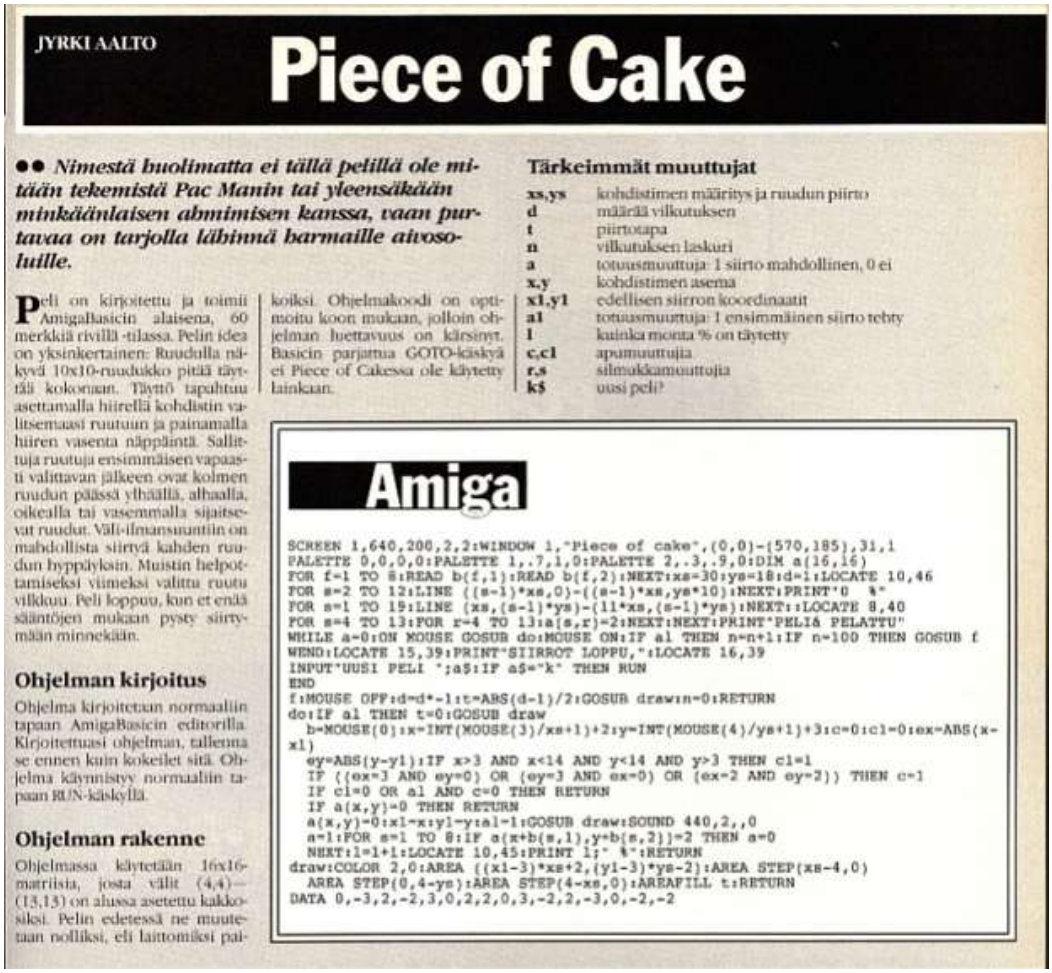
```
100 A$="[REVERSE]▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒[OFF]":POK
ES4,190:POKES8,15:L=0:YK=7680
110 L=L+1:IFINT(RND(1)*1000)+L>1010THEN
J=1:A=INT(RND(1)*7)
120 IFPEEK(YK+A+32)<>32ORPEEK(YK+A+33)<
>32THENJ=0
130 IFJ=1THENPOKE646,INT(RND(1)*7)+1:PR
INT"[HOME]";TAB(A)A$:J=0
140 IFPEEK(260)<>32ORPEEK(261)<>32GOTO1
60
150 SYS850:GOTO110

160 POKES4,0:POKES8-1,230:FORT=1TO300:N
EXT:POKES8-1,240
170 FORT=15TO0STEP-.1:POKES8,T:NEXT:POK
ES8-1,0
180 A$="[REVERSE]▒▒▒▒▒▒▒▒":PRINT"[HOME]";:FORT=1TO10:
PRINTA$;:NEXT:PRINT"[3 DOWN] AJOIT: ";
190 M=INT(INT(L/10))/10
200 PRINT" ------ ";M"KM"
210 PRINT"[HOME]";:FORT=1TO15:PRINTA$;:NEXT:
PRINT"-PAINA---SHIFT--"
220 IFPEEK(653)<>1THENPOKE36879,INT(RND
(1)*7)+8:GOTO220
230 PRINT"[HOME]":GOTO60
240 PRINT"[CLR][3 DOWN]      SILVERSTONE[3 DOWN]
     ▒▒▒▒▒▒▒▒▒▒":SYS260
250 PRINT"[REVERSE]▒▒▒▒▒▒▒▒▒▒ - [REVERSE]▒VASEMMALLE":PRIN
T"[REVERSE]▒▒▒▒▒▒▒▒ - [REVERSE]▒OIKEALLE"
260 PRINT"[REVERSE]▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒(C) HENRIK PALMEN"
:PRINT"[REVERSE]▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒1984"
270 A$="[REVERSE]▒[OFF]******** OLET JOUTUNUT MOPEDI
LLASI KESKELLE SILVERSTONEN FORMULA I KI
LPAILUA."
```

Sivulle 48

Figure 4. *Driving game listings were also published in magazines. Henrik Palmén's Mopoilua Vicillä (Moped Riding with Vic) is illustrated with a rare photograph of the actual game (MikroBitti 3/1984).*

Even *Printti* magazine published a few sports game listings early on, mainly for Spectravideo models. One notable release was Aki Rimpiläinen's unnamed game that humorously depicted the failure of a Finnish athlete at the 1984 Los Angeles Olympics (*Printti* 1/1985).[19] Rimpiläinen also created a two-part athletics game, *Athletics*, which was ported to MSX (*Printti* 19/1985; 20/1985). Overall, games made up only a small portion of *Printti's* listings, with only 10 out of its 68 listings in 1985 being games.

By the mid-1980s, listings in *MikroBitti* began to decline, with most games being developed for popular 8-bit home computers such as the C64[20], Sinclair Spectrum, Spectravideo/MSX and Amstrad CPC. By 1987, the final VIC-20 games were published. Listings for Commodore's newer models like the C16 and C128 began to appear, though these were commercially less successful. Meanwhile, the 16-bit Amiga and Atari ST platforms began to gain traction and the final listings for Amiga were published in 1989. The rise of 16-bit computers could be seen in the few program listings made for the Atari ST and IBM-compatible PCs. It doesn't really look like publishing game and software listings was meant to support the use of rarer machines. Instead, moderately popular computers—especially the Amstrad and Spectravideo/MSX—were overrepresented in game listings compared to the market leader, the C64, during the late 1980s. These machines had active user communities, but far fewer commercial games or pirated versions were available for them compared to Commodore 64, "the computer of the republic."[21]



JYRKI AALTO

Piece of Cake

●● *Nimestä huolimatta ei tällä pelillä ole mitään tekemistä Pac Manin tai yleensäkään minkäänlaisen ahmimisen kanssa, vaan purtavaa on tarjolla läbinnä harmaille aivosoluille.*

Peli on kirjoitettu ja toimii AmigaBasicin alaisena, 60 merkkiä rivillä -tilassa. Pelin idea on yksinkertainen: Ruudulla näkyvä 10x10-ruudukko pitää täyttää kokonaan. Täyttö tapahtuu asettamalla hiirellä kohdistin valitsemaasi ruutuun ja painamalla hiiren vasenta näppäintä. Sallittuja ruutuja ensimmäisen vapaasti valittavan jälkeen ovat kolmen ruudun päässä ylhäällä, alhaalla, oikealla tai vasemmalla sijaitsevat ruudut. Väli-ilmansuuntiin on mahdollista siirtyä kahden ruudun hyppäyksin. Muistin helpottamiseksi viimeksi valittu ruutu vilkkuu. Peli loppuu, kun et enää sääntöjen mukaan pysty siirtymään minnekään.

Ohjelman kirjoitus

Ohjelma kirjoitetaan normaaliin tapaan AmigaBasicin editorilla. Kirjoittettuasi ohjelman, tallenna se ennen kuin kokeilet sitä. Ohjelma käynnistyy normaaliin tapaan RUN-käskyllä.

Ohjelman rakenne

Ohjelmassa käytetään 16x16-matriisia, josta välit (4,4)—(13,13) on alussa asetettu kaikkosiksi. Pelin edetessä ne muutetaan nolliksi, eli laittomiksi paikoiksi. Ohjelmakoodi on optimoitu koon mukaan, jolloin ohjelman luettavuus on kärsinyt. Basicin parjattua GOTO-käskyä ei Piece of Cakessa ole käytetty lainkaan.

Tärkeimmät muuttujat

xs,ys	kohdistimen määritys ja ruudun piirto
d	määrää vilkutuksen
t	piirtotapa
n	vilkutuksen laskuri
a	totuusmuuttuja: 1 siirto mahdollinen, 0 ei
x,y	kohdistimen asema
x1,y1	edellisen siirron koordinaatit
a1	totuusmuuttuja: 1 ensimmäinen siirto tehty
l	kuinka monta % on täytetty
c,c1	apumuuttujia
r,s	silmukkamuuttujia
k$	uusi peli?

Amiga

```
SCREEN 1,640,200,2,2:WINDOW 1,"Piece of cake",(0,0)-(570,185),31,1
PALETTE 0,0,0,0:PALETTE 1,.7,1,0:PALETTE 2,.3,.9,0:DIM a(16,16)
FOR f=1 TO 8:READ b(f,1):READ b(f,2):NEXT:xs=30:ys=18:d=1:LOCATE 10,46
FOR s=2 TO 12:LINE ((s-1)*xs,0)-((s-1)*xs,ys*10):NEXT:PRINT"0  %"
FOR s=1 TO 19:LINE (xs,(s-1)*ys)-(11*xs,(s-1)*ys):NEXT::LOCATE 8,40
FOR s=4 TO 13:FOR r=4 TO 13:a(s,r)=2:NEXT:NEXT:PRINT"PELIÄ PELATTU"
WHILE a=0:ON MOUSE GOSUB do:MOUSE ON:IF a1 THEN n=n+1:IF n=100 THEN GOSUB f
WEND:LOCATE 15,39:PRINT"SIIRROT LOPPU,":LOCATE 16,39
INPUT"UUSI PELI ";a$:IF a$="k" THEN RUN
END
f:MOUSE OFF:d=d*-1:t=ABS(d-1)/2:GOSUB draw:n=0:RETURN
do:IF a1 THEN t=0:GOSUB draw
  b=MOUSE(0):x=INT(MOUSE(3)/xs+1)+2:y=INT(MOUSE(4)/ys+1)+3:c=0:c1=0:ex=ABS(x-
x1)
  ey=ABS(y-y1):IF x>3 AND x<14 AND y<14 AND y>3 THEN c1=1
  IF ((ex=3 AND ey=0) OR (ey=3 AND ex=0) OR (ex=2 AND ey=2)) THEN c=1
  IF c1=0 OR a1 AND c=0 THEN RETURN
  IF a(x,y)=0 THEN RETURN
  a(x,y)=0:x1=x:y1=y:a1=1:GOSUB draw:SOUND 440,2,,0
  s=1:FOR s=1 TO 8:IF a(x+b(s,1),y+b(s,2))=2 THEN s=0
  NEXT:l=l+1:LOCATE 10,45:PRINT l;" %":RETURN
draw:COLOR 2,0:AREA ((x1-3)*xs+2,(y1-3)*ys-2):AREA STEP(xs-4,0)
  AREA STEP(0,4-ys):AREA STEP(4-xs,0):AREAFILL t:RETURN
DATA 0,-3,2,-2,3,0,2,2,0,3,-2,2,-3,0,-2,-2
```

Figure 5. *By the late 1980s, MikroBitti was no longer putting as much effort into the look or illustrations of its listing publications, as shown by Jyrki Aalto's Piece of Cake for the Amiga (MikroBitti 10/1989).*

In 1987, Sanoma's subsidiary Tecnopress Oy launched *C-lehti*, a companion magazine to *MikroBitti* that focused exclusively on Commodore machines. The magazine didn't have a separate program listing section, but it did feature several columns and series about programming and computer building/modding.[22] Its focus was more on practical software. Between 1987 and 1990, the magazine only published three game listings: Jukka Tapanimäki's *Uridium* clone *Minidium* (1/1987), the editorial team's simple time-killer *Reaction Test* (3/1988), and Risto Paasivirta's *Breakout* clone *PingPong* (2/1989). The magazine also published a utility program related to gaming: *Inhoword*, which listed every word understood by the text parsers in American studio Infocom's adventure games (5/1988).[23] On the other hand, *C-lehti* ran a lot of listings for the C64, aimed at beginner game developers. These focused heavily on different graphical effects. Whereas *MikroBitti* only ever published a handful of Amiga listings, *C-lehti* ran several dozen. The number of Amiga listings grew as the C64 became technically outdated. The last program listings for the C64 appeared in 1991, less than a year before *C-lehti* shut down.[24]

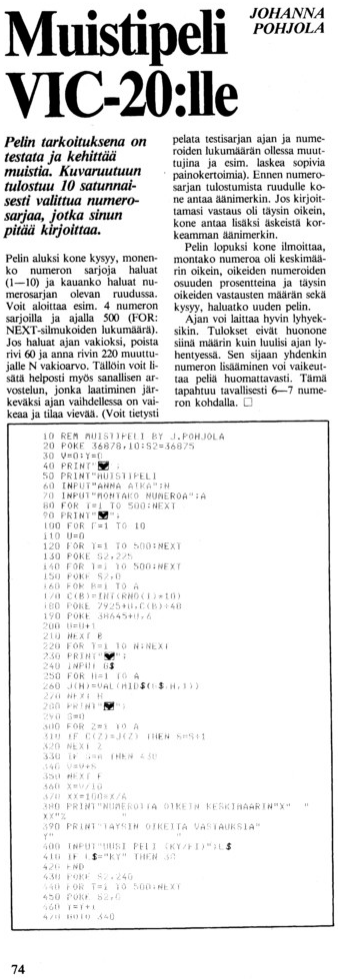
The themes of the game publications stayed much the same in the final years of the listings. They still included home-made versions of commercial games, as well as computer versions of board, card, and other traditional games. In addition to the ones already mentioned, *MikroBitti* published computer versions of *Poker*, *Solitaire*, *Roulette*, and even *Bolero* (*MikroBitti* 12/1987; 12/1988; 9/1988; 2/1989). When *MikroBitti* introduced its first listings for the Atari ST in 1988–1989, they included a space shooter, a biorhythm program, and a digital spin on the global puzzle craze of the 1980s, the Rubik's Cube (*MikroBitti* 4/1988; 2/1989; 6/1989). There were also a few more unusual themes. For example, in the summer issue of 1986, *MikroBitti* ran *Yoga* for the Memotech, programmed by Esko Pentikäinen. It turned out to be the only game ever published for that machine in the magazine. Judging by its description, though, the game had nothing to do with actual yoga—it was more like a version of the board game Go (*MikroBitti* 6–7/1986). *MikroBitti*'s listing publications came to an end in the reform made at the turn of 1989–1990, when the magazine shifted toward a more entertainment-focused content strategy (Saarikoski et al. 2019, 21).

Game Listing Creators

In the following will look at the creators of game listings. The group of individuals responsible for these listings was quite large. In *MikroBitti* alone, game listings created by over 260 different

people were published. In total, our research material included 392 game listing creators. We cannot draw conclusions about the creators' socioeconomic backgrounds or how the listings were distributed across the country. However, based on factors such as the locations of computer clubs, magazine circulation and comparisons to international research (e.g., Švelch 2018; Halvorson 2020), we can assume that game listing creators were present throughout Finland, though likely more prevalent in larger population centres than in smaller towns.

Based on the names, all game listing creators were male, with one exception.[25] In May 1984, *Tietokone* magazine published a listing for the *Memory Game* for the VIC-20, created by Johanna Pohjola. The game displayed random sequences of numbers that the player had to memorise and then input. The player could define the length of the number sequences. It is also possible that some female programmers may have used male pseudonyms.



Muistipeli VIC-20:lle

JOHANNA POHJOLA

Pelin tarkoituksena on testata ja kehittää muistia. Kuvaruutuun tulostuu 10 satunnaisesti valittua numerosarjaa, jotka sinun pitää kirjoittaa.

Pelin aluksi kone kysyy, monenko numeron sarjoja haluat (1—10) ja kuinka haluat numerosarjan olevan ruudussa. Voit aloittaa esim. 4 numeron sarjoilla ja ajalla 500 (FOR: NEXT-silmukoiden lukumäärä). Jos haluat ajan vakioksi, poista rivi 60 ja anna rivin 220 muuttujalle N vakioarvo. Tällöin voit lisätä helposti myös sanallisen arvostelun, jonka laatiminen järkeväksi ajan vaihdellessa on vaikeaa ja tilaa vievää. (Voit tietysti pelata testisarjan ajan ja numeroiden lukumäärän ollessa muuttujina ja esim. laskea sopivia painokertoimia). Ennen numerosarjan tulostumista ruudulle kone antaa äänimerkin. Jos kirjoittamasi vastaus oli täysin oikein, kone antaa lisäksi äskeistä korkeamman äänimerkin.

Pelin lopuksi kone ilmoittaa, montako numeroa oli keskimäärin oikein, oikeiden numeroiden osuuden prosentteina ja täysin oikeiden vastausten määrän sekä kysyy, haluatko uuden pelin.

Ajan voi laittaa hyvin lyhyeksikin. Tulokset eivät huonone siinä määrin kuin luulisi ajan lyhentyessä. Sen sijaan yhdenkin numeron lisääminen voi vaikeuttaa peliä huomattavasti. Tämä tapahtuu tavallisesti 6—7 numeron kohdalla. □

```
10 REM MUISTIPELI BY J.POHJOLA
20 POKE 36878,10:S2=36875
30 V=0:Y=0
40 PRINT"■"
50 PRINT"MUISTIPELI
60 INPUT"ANNA AIKA";N
70 INPUT"MONTAKO NUMEROA";A
80 FOR I=1 TO 500:NEXT
90 PRINT"■";
100 FOR I=1 TO 10
110 D=0
120 FOR I=1 TO 500:NEXT
130 POKE S2,225
140 FOR I=1 TO 500:NEXT
150 POKE S2,0
160 FOR R=1 TO A
170 C(R)=INT(RND(1)*10)
180 POKE 7925+R,C(R)+48
190 POKE 38645+R,6
200 D=D+1
210 NEXT R
220 FOR I=1 TO N:NEXT
230 PRINT"■";
240 INPUT B$
250 FOR R=1 TO A
260 J(R)=VAL(MID$(B$,R,1))
270 NEXT R
280 PRINT"■"
290 S=0
300 FOR Z=1 TO A
310 IF C(Z)=J(Z) THEN S=S+1
320 NEXT Z
330 IF S=A THEN 430
340 V=V+S
350 NEXT F
360 X=V/10
370 XX=100*X/A
380 PRINT"NUMEROITA OIKEIN KESKIMÄÄRIN";X;" "
XX"%"
390 PRINT"TÄYSIN OIKEITA VASTAUKSIA"
Y"
400 INPUT"UUSI PELI (KY/EI)";U$
410 IF U$="KY" THEN 30
420 END
430 POKE S2,240
440 FOR I=1 TO 500:NEXT
450 POKE S2,0
460 I=I+1
470 GOTO 440
```

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Figure 6 *shows that in the listing for Johanna Pohjola's Memory Game, her name was shortened to 'J. Pohjola', possibly deliberately concealing the creator's gender (Tietokone 5/1984).*

It's not entirely clear why the gender distribution among programming hobbyists—at least those who published listings—was so male-dominated, especially considering that there were many female programmers in the Finnish computer industry during the 1970s and early 1980s. However, men still dominated in leadership roles and most public appearances related to the computer industry (Vehviläinen 1996; Suominen 2003, 127–158; Švelch 2018, 78).

It seems that the gender divide in computer hobbyism more closely followed the traditions of technical tinkering rather than professional computing, which were also highly gendered. Technical tinkering, along with the creation of new inventions, was viewed as boys' and men's hobby, often associated with a fascination for technology, concepts of masculinity, male camaraderie and forms of gaining recognition (Männistö-Funk 2016, 34–35; for microcomputer hobby contexts and gender, see e.g., Saarikoski 2004, 169–179; Švelch 2018, 77–81). The gender divide was also evident in the readership: 98% of *MikroBitti* subscribers were male, and in the UK, over 90% of computer hobbyist magazine readers were men (Saarikoski 2004, 178–179).

Individual game listing creators typically did not publish multiple games. In *MikroBitti*, for example, the vast majority only published a single game. This was also true for many other magazines, with the exception of smaller publications such as *Micropost*, where a few key editors and contributors were responsible for the games. Only a few creators managed to publish more than two game listings in *MikroBitti*.[26] This usually happened when a person made programs for a rarer computer, though a few Commodore programmers also managed to publish multiple games. Jorma Jaakkola had four game listings in *MikroBitti*: a computer version of the Finnish card game *Maija* (*Black Mary*) (*MikroBitti* 9/1985), the space game *Super Space* (*MikroBitti* 6–7/1986), the snake game *Luikero* (*MikroBitti* 6–7/1987) and the adventure game *Adrian* (*MikroBitti* 10/1985), which was awarded Game of the Month.

Pasi Kettunen had six games published in *MikroBitti*: five for the Sinclair Spectrum and one for the MSX (*MikroBitti* 6-7/1985; 2/1986; 5/1986; 6-7/1987; 3/1987). His outer space game *Starex* for the Spectrum received a bonus prize for being Game of the Month (see Figure 9), as did his *Skyfox* game for the MSX. Kettunen also published a graphics-related utility (*MikroBitti* 9/1987) and placed high in *Tekniikan Maailma*'s programming competition in 1984 with his program *Marsu* (*Guinea Pig*), although no listings of his were published in the magazine (*TM* 12/1984, 103). Heikki Mäenpää created four PC games during the 'late era' of *MikroBitti* game listings between 1987 and 1989. Among them were the *PC-Flight* flight simulator (*MikroBitti* 9/1987), the car game *Keke*,

named after Finnish Formula one driver Keijo “Keke” Rosberg (*MikroBitti* 10/1987) as well as *Lantinheitto* (*Toss-up*) (*MikroBitti* 1/1988). Mäenpää’s *PC Billiards* was awarded Game of the Month (*MikroBitti* 6-7/1989).

Towards the final years during which game listings were published, Timo Poikela created three MSX games. One of them was *Zig Zag Joe*, described as a ‘relaxing Pac-Man-type game that works both hemispheres of the brain, without forgetting your eyes’. (*MikroBitti* 11/1989). Mika Silvola programmed a computer version of the *Towers of Hanoi* for the Spectrum (*MikroBitti* 9/1988), the space game *Hyperion* (*MikroBitti* 1/1986) and a game called *Reaktori* in which the player defends a nuclear reactor from missile attacks (*MikroBitti* 10/1987). Games such as *Reaktori*, drawing on Cold War themes, were relatively rarely published.

One of Jouni Suutarinen’s three games for the Sharp MZ series, *Hyppivä Jubert* (*MikroBitti* 4/1984), based on its name, seems to be a version of the arcade game *Qbert**, released in 1982. In addition, Suutarinen published *Temple*, with an Indiana Jones theme and the fighting game *Ninjamestarit* (*Ninja Masters*) (*MikroBitti* 3/1985; 4/1988). Eero Taipale coded two versions of the card game *Ventti* (*Vingt-et-un*) for the Amstrad (*MikroBitti* 5/1985; 6-7/1986), one of which won the Amstrad category in *MikroBitti*’s *Ventti* programming competition. He also developed a computer version of *Othello* (*MikroBitti* 11/1988).

JOUNI SUUTARINEN

Ninjamestarit

Jos olet kaverisi kanssa eri mieltä siitä, kumpi on parempi taistelija, niin ota joystick käteesi ja haasta kaverisi aitoon ninjataisteluun. Näin säästyt ikävältä ruhjeilta, joita oikeassa tappelussa voisit saada.

Peliohjeet

Musta ninja:

Joy(1) vas	Ninja liikkuu vasemmalle
Joy(1) oik	Ninja liikkuu oikealle
Joy(1) oik + Fi	Lyönti
Joy(1) alas + Fi	Potku

Valkea ninja:

Joy(0) vas	Ninja liikkuu vasemmalle
Joy(0) oik	Ninja liikkuu oikealle
Joy(0) vas + SP	Lyönti
Joy(0) alas + SP	Potku

●● Mustiin vartalonmyötäisiin pukuihin ja huppuihin pukeutuneet miehet liikkuvat varjosta varjoon. Ruohonkorsikaan ei värähdä, kun he katanoidensa kahvaa puristaen ja shurikenia pidellen lähestyvät uhriaan, joka ei tunnu aavistavan mitään. Ninjojen räjähtäessä toimintaan ei uhrilla ole montaakaan sekuntia elinaikaa, ellei hänkin satu olemaan ninjamestari.

Pistelasku

Lyöntiosumasta saa yhden pisteen ja potkusta kaksi. Vastustajan saa kanveesiin vain silloin, kun onnistuu lyömään neljä osumaa saamatta itse yhtään. Potkuja puolestaan tarvitaan kolme. Peli voi päättyä joko tyrmäys- tai pistevoittoon. Tyrmäysvoiton saa lyötyään vastustajan neljästi kanveesiin. Peliaika on kaksi minuuttia. □

Sharp

Figure 7. *MikroBitti's illustrator Wallu (Harri Vaalio) sometimes also illustrated program listings, such as for Jouni Suutarinen's Ninjamestarit (Ninja Masters) game (MikroBitti 4/1988).*

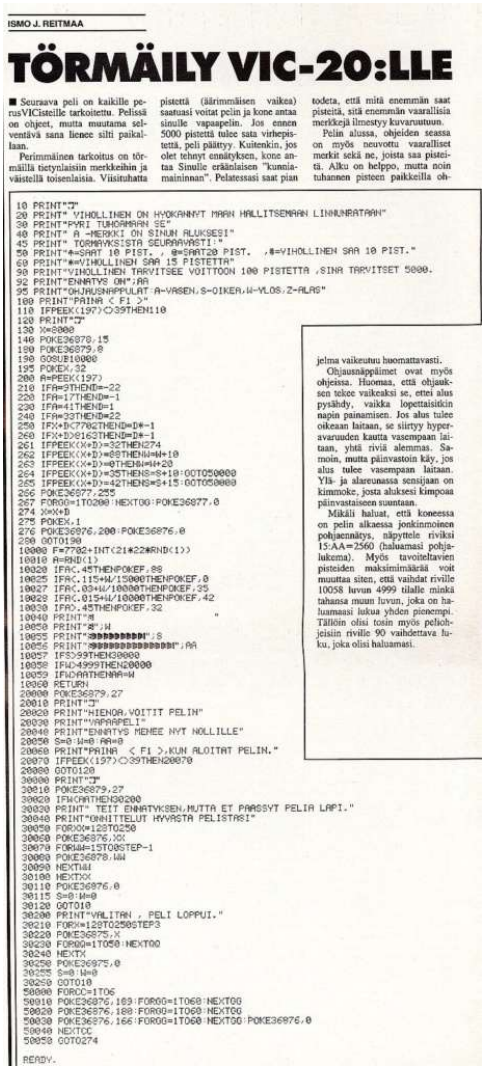
Jouko Tammela's four C64 game publications appeared in *MikroBitti*'s early years. This number is significant, as the C64, Finland's most popular home computer, likely had such a large number of listings from various developers that getting one's own game published was more challenging than for programs designed for other computers. Among Tammela's games were the air shooting game *Kone* (*Plane*) and the two-player game *Muurinrakennuspeli* (*Building a Wall*) (*MikroBitti* 4/1984; 2/1985). Petri Tynkkynen's three VIC-20 games also reflected the popular themes of their time. Tynkkynen made the ski jumping game *Scivic-jump*, the shooting game *Alien Rush* and the *Knight Rider* game based on the TV series (*MikroBitti* 11/1985; 12/1985; 2/1986). The popular TV series *Knight Rider* also inspired amateur programmers, despite the fact that there already was a

commercial game based on the show. One such game was Janne Uurinmäki's *KITT* (*MikroBitti* 8/1985) where the player jumps a car over various obstacles.

Some game developers imitated commercial game productions and attributed their games to fictional or unregistered software companies (see also Švelch 2018). These unique game studio names were often modifications of the developers' own names, references to computer culture, or inside jokes. Developers for *MikroBitti* included Sikala Software (Piggery Software), Silly Silicon Software, Jarisoft and Jansoft (from the first names Jari and Jan) (*MikroBitti* 5/1985; 2/1986; 3/1986; 5/1987).

Apart from *MikroBitti*, multiple developers also published in other magazines. Jan-Erik Nyström, for instance, frequently wrote games for the rare TSR-80 computer. His first was *Tähtien sota* (*Star Wars*), published in *Prosessori* in May 1981, followed by *Mottipeli* (*Pocket or Siege game*)in August of the same year, and the 'adventure game' *Casino Adventure* in November 1982, which was described as transporting the player to a 'typical "American world"' (see Figure 1). Nyström also published the adventure game *Space Adventure*, *Labyrintti* (*Labyrinth*) and a computer version of the dice game *Yatzy* in *Tietokone* (4/1984; 9/1984; 12/1984). In *MikroBitti* (3/1984), Nyström also released *Taikurin linna* (*Wizard's Castle*) at the end of 1984, with instructions on how to adapt the game for other machines. Nyström seemed to specialise in adventure games, which set him apart from other early Finnish amateur game programmers. We cannot be completely sure if it was the same person, but Jan-Erik Nyström had already published listings for Telmac machines and similar systems in 1978 in *Elektroniikka* magazine (see Figure 2).

Ismo Rakkolainen[27], for his part, created programs for the Sinclair ZX-81. In *Prosessori* (9/1983; 12/1983), he published *Tukikohta* (the *Base*), a *Lunar Lander*-type game, *Reaktiotesteri* (*Reaction Tester*) and a slalom game for the ZX-81in *Tietokone* (9/1983). Ismo J. Reitmaa was a rare game listing publisher, creating entertainment and game listings for different publishers' magazines. His first game, *Rata-ajo* (*Track Racing*) for the VIC-20, appeared in *Prosessori* (11/1982) published by Tecnopress, followed by *Avaruustykki* (*Space Cannon*) in *Tietokone* (9/1983) from the same publisher. Reitmaa then transitioned to *Printti* mgazine, published by A-lehdet, where he released two VIC-20 games: the space combat game *Törmäily* (*Collision*) and a computer version of *Yksikätinen rosvo* (*One-Armed Bandit*), (Printti 20/1985). Reitmaa also published *Linnanmuurilla* (*Castle Wall*) for the Commodore 16 in *MikroBitti* (6–7/1986).



ISMO J. REITMAA

TÖRMÄILY VIC-20:LLE

■ Seuraava peli on kaikille perusVICiseille tarkoitettu. Pelissä on ohjeet, mutta muutama selventävä sana lienee silti paikallaan.

Perimmäinen tarkoitus on törmäillä tietynlaisiin merkkeihin ja väistellä toisenlaisia. Viisituhatta pistettä (äärimmäisen vaikea) saatuasi voitat pelin ja kone antaa sinulle vapaapelin. Jos ennen 5000 pistettä tulee sata virhepistettä, peli päättyy. Kuitenkin, jos olet tehnyt ennätyksen, kone antaa Sinulle erälnlaisen "kunniamaininnan". Pelatessasi saat pian todeta, että mitä enemmän saat pisteitä, sitä enemmän vaarallisia merkkejä ilmestyy kuvaruutuun.

Pelin alussa, ohjeiden jeissa on myös neuvottu vaaralliset merkit sekä ne, joista saa pisteitä. Alku on helppo, mutta noin tuhannen pisteen paikkeilla ohjelma vaikeutuu huomattavasti.

Ohjausnäppäimet ovat myös ohjeissa. Huomaa, että ohjauksen tekee vaikeaksi se, ettei alus pysähdy, vaikka lopettaisitkin napin painamisen. Jos alus tulee oikeaan laitaan, se siirtyy hyperavaruuden kautta vasempaan laitaan, yhtä riviä alemmas. Samoin, mutta päinvastoin käy, jos alus tulee vasempaan laitaan. Ylä- ja alareunassa sensijaan on kimmoke, josta aluksesi kimpoaa päinvastaiseen suuntaan.

Mikäli haluat, että koneessa on pelin alkaessa jostkinmoinen pohjaennätys, näpyttele riviksi 15:AA=2560 (haluamasi pohjalukema). Myös tavoiteltavien pisteiden maksimimäärää voit muuttaa siten, että vaihdat riville 10058 luvun 4999 tilalle minkä tahansa muun luvun, joka on haluamaasi lukua yhden pienempi. Tällöin olisi tosin myös pelkoheisiin riville 90 vaihdettava luku, joka olisi haluamasi.

```
10 PRINT"□"
20 PRINT" VIHOLLINEN ON HYÖKÄNNYT MAAN HALLITSEMAAN LINNUNRATAAN"
30 PRINT"PYRI TUHOAMAAN SE"
40 PRINT" A -MERKKI ON SINUN ALUKSESI"
45 PRINT" TORMAYKSISTA SEURAAVASTI:"
50 PRINT"*=SAAT 10 PIST. , @=SAAT20 PIST.  ,#=VIHOLLINEN SAA 10 PIST."
60 PRINT"#=VIHOLLINEN SAA 15 PISTETTA"
90 PRINT"VIHOLLINEN TARVITSEE VOITTOON 100 PISTETTÄ ,SINÄ TARVITSET 5000.
92 PRINT"ENNÄTYS ON";AA
95 PRINT"OHJAUSNÄPPÄIMET:A-VASEN,S-OIKEA,W-YLÖS,Z-ALAS"
100 PRINT"PAINA < F1 >"
110 IFPEEK(197)<>39THEN110
120 PRINT"□"
130 X=8000
140 POKE36878,15
150 POKE36879,8
190 GOSUB10000
195 POKEX,32
200 A=PEEK(197)
210 IFA=9THENX=X-22
220 IFA=17THENX=X-1
230 IFA=41THENX=X+1
240 IFA=33THENX=X+22
250 IFX<8176ORX>8279THENX=X-1
260 IFX>8163THENX=X+1
261 IFPEEK(X+1)=32THEN274
262 IFPEEK(X+1)=81THENW=W+10
263 IFPEEK(X+1)=87THENW=W+20
264 IFPEEK(X+1)=35THENS=S+10:GOTO50000
265 IFPEEK(X+1)=42THENS=S+15:GOTO50000
266 POKE36877,255
267 FORG=1TO200:NEXTGG:POKE36877,0
274 XX=X+8
275 POKEX,1
276 POKE36876,200:POKE36876,0
290 GOTO190
10000 F=7702+INT(21*22*RND(1))
10010 A=RND(1)
10020 IFAC.45THENPOKEF,88
10025 IFAC.115+W/15000THENPOKEF,0
10027 IFAC.03+W/10000THENPOKEF,35
10029 IFAC.015+W/10000THENPOKEF,42
10030 IFAO.45THENPOKEF,32          "
10040 PRINT"■
10050 PRINT"■";W
10055 PRINT"■■■■■■■■■";S
10056 PRINT"■■■■■■■■■■■■■■■";AA
10057 IFS>99THEN30000
10058 IFW>4999THEN20000
10059 IFW>AATHENAA=W
10060 RETURN
20000 POKE36879,27
20010 PRINT"□"
20020 PRINT"HIENOA,VOITIT PELIN"
20030 PRINT"YAPAAPELI"
20040 PRINT"ENNÄTYS MEHEE NYT NOLLILLE"
20050 S=0:W=0:AA=0
20060 PRINT"PAINA  < F1 >,KUN ALOITAT PELIN."
20070 IFPEEK(197)<>39THEN20070
20080 GOTO120
30000 PRINT"□"
30010 POKE36879,27
30020 IFW>AATHEN30200
30030 PRINT" TEIT ENNÄTYKSEN,MUTTA ET PÄÄSSYT PELIA LÄPI."
30040 PRINT"ONNITTELUT HYVÄSTÄ PELISTÄSI"
30050 FORXX=128TO250
30060 POKE36876,XX
30070 FORWW=15TO8STEP-1
30080 POKE36878,WW
30090 NEXTWW
30100 NEXTXX
30110 POKE36876,0
30115 S=0:W=0
30120 GOTO10
30200 PRINT"VALITAN , PELI LOPPUI."
30210 FORX=128TO250STEP3
30220 POKE36875,X
30230 FORGG=1TO50:NEXTGG
30240 NEXTX
30250 POKE36875,0
30255 S=0:W=0
30260 GOTO10
50000 FORCC=1TO6
50010 POKE36876,169:FORGG=1TO60:NEXTGG
50020 POKE36876,180:FORGG=1TO60:NEXTGG
50030 POKE36876,166:FORGG=1TO60:NEXTGG:POKE36876,0
50040 NEXTCC
50050 GOTO274

READY.
```

Figure 8. *Ismo J. Reitmaa's Törmäily game listing includes instructions on how to modify the listing, and the description suggests it was influenced by arcade games: the player who wins the game gets a new 'free gam' from the computer. (Printti 20/1985).*

Unknown or known authors?

A significant portion of the contributors to game listings were ordinary game and computer enthusiasts. Among them, a few standout individuals were active in specific computer brands or programmers who became known later for their commercial game releases. For example, Raimo Suonio, who is credited with creating Finland's first commercial game, the chess game *Chesmac* in 1979, published an add-on for the game in *Elektroniikka* magazine (1/1980), which introduced a feature for changing the difficulty level mid-game and added a save option.[28] Sampo Suvisaari, who released three *Bomulus* games through the commercial publisher Teknopiste, also frequently published his program listings in *Printti* magazine.[29] His listings first appeared in the MSX-club

column, after which he began contributing a series of extensive articles on machine language graphics. Suvisaari's listings, typical of *Printti*, were utility programs rather than games but many were nonetheless related to game development, such as implementing moving graphic elements or sprites. Stavros Fasoulas, nicknamed the 'Paavo Nurmi of computer games',[30] published his first game, a *Pac-Man* clone, in the first issue of *MikroBitti* (1/1984) (see more in Saarikoski et al., 2017). Fasoulas's *Sanxion* (1986) was the first game by a Finnish designer to achieve international distribution.

Galactic Guard for the Oric-1 and *NumberBumber* for the C-64, both created by Pasi Hytönen, were published in *MikroBitti* (3/1984; 9/1986), the latter described as a version of an earlier puzzle game made for Spectravideo. Hytönen also won a programming competition organised by *Tekniikan Maailma* (14/1984, 32–34) with his game *Arttu* (*Arthur*) for the Oric-1, which was described as 'a great mix of strategy, maze, and destruction game'.[31] Hytönen later became famous for the game *Uuno Turhapuro muuttaa maalle* (1986), based on a film of the same name, which became the last and most commercially successful game release from the Finnish game and software publisher Amersoft (Kuorikoski 2014, 15–16; Pasanen & Suominen 2018). Hytönen also wrote a column called *Pelinikkarin Päiväkirja* (*The Game Hacker's Diary*) for *C-lehti* (1987–1989), which offered graphical effects programs and routines for novice game developers, using the C64 as the platform. Short demos were also available for these programs.

ORIC-1, 48 kt
Ohjelmointikilpailun voittaja:

Pikkuritari ARTTU

aika:

TULOS
700

Ohjelmointikilpailun tulokset julkaistiin TM:n numerossa 12/84. Tässä kilpailun voittanut ohjelma nyt on kokonaisuudessaan valmiina naputeltavaksi koneeseen. Muut kuin Oricin omistajat joutuvat tekemään ohjelmaan runsaasti muutoksia, ennen kuin ohjelma lähtee pyörimään muilla koneilla, mutta kokeilkaa – se kannattaa! Ohjelma on tehty kokonaan ansiokkaasti BASICilla. Erilaisia hyviksi havaittuja sääntöjä noudattaen se on saatu nopeaksi ja äänen ja kuvan yhteistoiminta on saumatonta.

PASI HYTÖNEN, ohjelma
PASI HYTÖNEN ja ESKOENSIO PIPATTI, teksti
ILARI JÄRVINEN, kuvat

Ohjelmointikilpailuun osallistuneiden ohjelmien taso oli kauttaaltaan korkea. 81 ohjelman joukossa oli hyviä kuvaruutupelejä, kodin hyötyohjelmia sekä matemaattisia lehtäviä suorittavia ohjelmia. Syy hyvään tasoon voisi löytyä siitä, että TM:n kilpailu oli lajissaan ensimmäisiä asian harrastajien piirissä pidettyjä. Vuosien aikana kerääntyneet hyvät ohjelmat ja ohjelmaideat löysivät tarkoituksensa kilpailussa.

Parhaimpaan saavutukseen ylsi 16-vuotias koululainen Pasi Hytönen Konnevedeltä. Pasi on harrastanut kotitietokoneita ja ohjelmointia oman Oric-1:nsä kanssa hieman yli vuoden. Hankalimmaksi ominaisuudeksi Pasi, kuten myös monet muut Oricin omistajat, kokee kuvaruutukäsittelyn, joka Oricissa on varsin omaperäinen. Oricissa ei ole erillistä värimuistia lainkaan, vaan käytettyjen värien koodit on sijoiteltava tulostettavien merkkien sekaan kuvaruutumuistiin. Ne syövät aina merkkipaikkoja, joten esimerkiksi kahta eriväristä merkkiä ei voi sijoittaa vierekkäin.

Näistä vaikeuksista huolimatta Pasi onnistui varsin mainiosti ARTTU-pelinsä grafiikassa. Ohjelman tekemiseen häneltä kului aikaa noin 2,5 kukauden ilat ja viikonloput. Peli on hieno sekoitus taktiikkaa, sokkelopeliä ja tuhoamispeliä. Erityisen ansiokasta pelissä on ääni- ja melodiaeleklit, joihin Oricin äänigeneraattorit antavat hyvät mahdollisuudet. Peli on juuri sopivan vaikea, että aloittelijakin pääsee siihen kohtuullisella harjoittelulla "kiinni". Peli vaikeutuu pisteiden karttuessa, mutteI

32 □ TM-mikro 14/1984

Figure 9. *Programming contest winner Pasi Hytönen and his game Arttu were featured in a Tekniikan Maailma article, which included both the program listing and a screenshot of the game (TM 14/1984, only part of the article shown here).*

In addition to Fasoulas, Jukka Tapanimäki also released his games through an international publisher. Tapanimäki contributed to *MikroBitti* and *C-lehti*. His first game, the 3D shooting game *Monolith*, was published in *MikroBitti* (6–7/1986) and awarded Program of the Month. As previously mentioned, *Minidium*, inspired by the international hit game *Uridium*, appeared in *C-lehti* (1/1987). Tapanimäki also shared game development tips in articles he penned for *C-lehti*. He later took over Hytönen's column from issue 5/1989 onwards.

Mikko Helevä, whose *Golfmaster* game was published by the British company Hewson in 1987, had his space game *Space Master* featured in *MikroBitti* (2/1987). *Space Master* was awarded Program of the Month, and Helevä placed second in *MikroBitti's* programming competition, behind

Tapanimäki (Kuorikoski 2014, 29). There are other pioneers of Finnish commercial game releases whose works can be found among the program listings in computer magazines of the era. For example, Finnish company Triosoft released Olli Kainulainen's *Talvisota* (*Winter War*) for the MSX in 1987. A few years earlier, Kainulainen had developed *Sheriffi: Revolverisankari Lännestä* (*Sheriff: A Revolver Hero from the West*), a duelling game in collaboration with Heikki Lappalainen, reflecting his interest in historically-themed games (*MikroBitti* 10/1985). Finnish game music pioneer Jori Olkkonen (now Petrik Salovaara) published several utility programs in *C-lehti*, themost notable being *MegaSound*, which he used to create music for commercial games (C-lehti 5/1988).

Juha Ojaniemi, brother of Simo Ojaniemi, the creator of Amersoft's first game releases *Mehulinja* (*Juice Line*) and *Raharuhtinas* (*Money Prince*), was involved in programming *Raharuhtinas*, as he recounted in 2019. In addition to a program listing, Juha Ojaniemi wrote articles for *Poke & Peek!* magazine and published his listings in the *Vikki* magazine for VIC-20 users. These included his *Ristinolla* (*Tic-tac-toe*) version, games such *Virgo*, *FASP* and *Hit and Run*, as well as an unnamed joystick-controlled game, and some drawing and graphics programs (see e.g., *Vikki* 1/1983; 4/1983; 5/1983; 7/1983).

Other contributors to program listings were individuals known for their achievements in other fields. Pekka Tolonen, who created the therapy conversation simulator *Kalle Kotipsykiatri*, also became known as a pioneer in electronic music (Saarikoski et al., 2019). For his part, poet and nonfiction author Arto Kytöhonka published two program listings (*Tietokone* 9/1984; 11/1984) and was an active computer enthusiast, writing about hacking as a passionate hobby. Screenwriter and CEO of Helsinki-filmi, Aleksi Bardy, published *Igor*, a program for learning Cyrillic alphabets and a BASIC extension for Spectravideo in *Printti* (6/1987; 12/1987). Jyrki J. J. Kasvi, later known for his work in promoting the information society and as a Member of Finnish Parliament, published games and utility programs in *Prosessori* and *Tietokone* magazines. He also contributed to *MikroBitti* and *Pelit* magazines. Kasvi's only publication in *Prosessori* magazine (12/1982) was *Katko* or *Viimeinen Tikki* (*Last Trick*), a computer version of a card game for the VIC-20. In *Tietokone* magazine (11/1983), Kasvi's game *Romuralli* (*Demolition Derby*) was published for the VIC. Petteri Järvinen, a well-known IT author, also contributed listings, though most were utility programs, with the exception of *Hirsipuu*, a computer version of *Hangman* for the Apple II, published in *Prosessori* in November 1982 and *Laiskan miehen lotto* (*Lazy Man's Lotto*), a lotto number generator for PC-compatible machines, published in *Tietokone* in summer 1985.

Harri Oinas-Kukkonen, now a professor of computer science at the University of Oulu, developed two games for the Sharp MZ-700, *Nopeustesteri* (*Reaction Tester*) and *Pujottelu* (*Slalom*), published in *MikroBitti* (6-7/1985; 10/1985). Petri Lankoski, now a game researcher and professor in Sweden, had his game *Ansapolku* (*Trap Path*) for the Spectrum published in *Tietokone* in April 1984. The game involved navigating from the left to the right side of the screen while avoiding obstacles.

Thus, not many enthusiasts published programs across multiple magazines or with different publishers. Some movement occurred from *Prosessori* and *Tietokone* to *MikroBitti*, and as club columns moved from one magazine to another, their regular contributors followed. However, there was little crossover between different publishers, such as *MikroBitti* and *Printti*, though, in addition to the aforementioned Ismo J. Reitmaa, Heinrich Pesch also published in both magazines. In *MikroBitti*, Pesch's programs were C64 utilities and versions of the *Game of Life* simulation (see e.g., *MikroBitti* 4/1986). In *Printti*, he published example programs for the LOGO programming language, often in collaboration with Susanna Pesch.

Conclusion

The reasons behind a magazine's motivations to publish game and other software listings were manifold. As noted in previous research, the listings provided cheap content for the publications, serving the needs of their readership, especially during the nascent stages of home computer proliferation when commercial software was not yet widely available for all computer models. Another key reason for publishing these listings was the creation and maintenance of a hobbyist community. This sentiment was particularly evident in club magazines and columns but also in commercial publications. While club magazines and columns typically focused on a single computer brand or model, computer magazines aimed to foster a broader hobbyist community and establish a dialogue between the editorial staff and their readers. However, it is essential to ask what kinds of communities were being built through these software listings. With the exception of Johanna Pohjola, it appears that all the creators of the published game listings were male, and even among the authors of utility software listings, there were very few women. In this respect, the computer hobbyism of the time was highly gendered.

Programming skills were a hallmark of hobbyists in the mid-1980s. There was an implicit expectation—both communally and even socially—that computer hobbyists possessed some programming skills or at least aspired to acquire them. Game-listing publications served as tools

for practicing programming. Program examples and their documentation were often created with the expectation that the reader would modify the program themselves, thereby gaining insights into how it worked. However, it is difficult to say how often this actually occurred. In this case, we also need to ask what type of programming was being practiced—and for what purpose.

In the case of games, practicing programming involved understanding the logic of how programs operated. Many of the published game listings were more or less direct clones of popular games. Cloning—imitating and replicating earlier games—tied game listings to the broader cultural context of digital gaming. This was a widespread practice in the 1980s, particularly with early-generation consoles and arcade games. Both commercial entities and computer hobbyists engaged in the practice. Clones helped games spread across different platforms (see, for example, Swalwell 2009). Many of the clone game listings in the data were based on popular arcade games whose mechanics had already proven to be effective. This allowed the authors of the listings to focus on writing code rather than refining gameplay. The familiarity of the original game also aided the clone, as players immediately knew what kind of game it was.

Computer versions of board games, card games and games like roulette and slot machines were also common. By creating these, hobbyists sought to understand game mechanics and their operations in various forms. This can be seen as analogous to practicing visual art techniques by copying masterpieces. It can also be interpreted as an attempt at reverse engineering, where one reconstructs an existing end-product using their own resources, without knowing the original 'formula' or composition.

Following Švelch (2018), it can also be noted that game listing publications were 'coding acts' motivated by a desire for recognition or status. This ties into the concept of subcultural capital—culturally bound knowledge that brings respect and status within a particular subculture (see Thornton 1995). Programming hobbyists gained attention within their communities through their listings, which could even serve as stepping stones to a career in the game or software industry. Listings also contributed to the authors' credibility as IT professionals, for instance as writers of technical literature, editors or contributors to computer magazines. In some cases, individuals involved in commercial game production or editorial teams may have highlighted their subcultural capital and status by publishing program listings. For most hobbyists, however, it was likely just a small reward and the satisfaction of seeing their work in print. From the editorial perspective, the motive was to serve the readership by sharing knowledge and tips about programming.

Figure 10. *Pasi Kettunen's space game Starex, which won the 500 Finnish mark prize for 'Program of the Month', was entirely composed in machine language, making it more difficult to understand than typical programs written in Basic. Machine language code was more compact, and the program ran faster (MikroBitti 5/1986).*

The motivations for creating and publishing software listings shifted over the course of the 1980s. By the end of the decade, the previously mentioned motivations gradually waned. Gaming had established itself as the primary use of popular 8-bit home computers. There were numerous pirate versions of games available, while the quality and playability of game listings never truly competed with commercial games. This undoubtedly affected their popularity outside of programming hobbyist circles. Moreover, by the late 1980s, the most popular computer models had become technically outdated. Programming hobbyists transitioned to newer 16-bit computers, around which communities such as the Finnish demoscene emerged in the 1990s (see Reunanen 2017, 67–71).[32] Publishing program listings was no longer the most practical way to share code. Listings faded from computer magazines, but self-made non-commercial software continued to circulate through other channels, increasingly digitally via computer networks and later the internet.

In this article, we have examined program listings published in Finland through comprehensive research material. Our article highlights how many early Finnish commercial game developers had backgrounds in publishing game listings. Some other notable individuals from the IT or media sectors also published such listings. We have also introduced several individuals who published game listings whose names have not previously come up in discussions of the early stages of Finnish computer game history.

However, we have not analysed the program codes themselves or played the published games. These perspectives could nonetheless be explored in future research. In follow-up studies, more attention should also be given to certain game versions, the development of specific game types or hobbyist interpretations. Additionally, publications that deviated from the mainstream deserve more thorough examination. Furthermore, Finnish hobbyist programming and publishing cultures should be compared to those in other countries.

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Notes

[1] BASIC or Beginner's All-purpose Symbolic Instruction Code (Kemeny & Kurtz, 1964. See also Montfort et al., 2013, 157–194).

[2] However, in Finnish club magazines such as *Tieturi* (1983–1984), printed program listings were not often published. Instead, the magazine issues came with program cassettes compiled by club members (Saarikoski, 2005, 68).

[3] In the United States, for example, game listings had already been published in books since the early 1970s. Michael Halvorson, who studied the history of hobbyist programming in the U.S., notes that David Ahl's book *101 BASIC Computer Games* (1973), which published program listings submitted by users across the U.S. for the DEC PDP minicomputer, became extremely popular and sold tens of thousands of copies. Ahl also created sequels to the book in the late 1970s aimed at microcomputer users, further boosting the popularity of game programming. These books seem to have created a model for the publication process of listings: Ahl tested the games submitted by users, made corrections, if necessary, published the best ones and wrote a short description of each game, noting its usability and technical limitations (Halvorson, 2020, 19, 128–132). A similar editorial process was also used in many Finnish magazines that published program listings.

[4] The term pastime program or entertainment program was a contemporary concept that referred to not only games but also other entertainment programs, such as biorhythm programs, humorous artificial intelligence applications, text generators and so forth.

[5] The **demoscene** is a subculture of computer enthusiasts that has evolved since the late 1980s, focusing on creating audiovisually impressive and code-optimised program segments.

[6] The concept of coding act or coding action introduced by Švelch has been inspired by John Austin's and John Searle's speech act theories as well as game history research and other game studies that emphasise the creativity of hobbyists.

[7] The sources also include general technical magazines such as *Tekniikan Maailma*, club magazines and a magazine published by Finland's Commodore importer.

[8] As a result, cheat codes for games published on the *Peli-Guru* column of *C-lehti* were not included in the research material.

[9] For methods and materials in historical game research, see, for example, Matilainen (2017, 37). For the concept of basic research in historical studies, see Suominen (2018, 38). Our research method could perhaps also be called an application of data-driven qualitative content analysis, although we have not conducted detailed content-based categorisation or classification. Individual program listings can be thought of as observation units, and the publication data recorded in the table's columns as coding units on which the analysis is based, but in this case, the coding does not extend much into the listing contents.

[10] Mastermind is a board game developed by Israeli Mordecai Meirowitz in the early 1970s, which can also be played on paper and became popular in Finland around the late 1970s and early 1980s.

[11] *Micropost* was a fanzine-type publication created by hobbyists, edited by Petri Tuomola and Reima Mäkinen. Game history researcher Niklas Nylund (2018) described its visual style as 'punk-inspired'. Nylund's characterisation refers to other subcultural publications of the time, often duplicated using photocopiers. In a later phase, *Micropost* was published by the Mikromaakarit association. Out of the games published in the magazine, 10 were made for the Sinclair ZX81, 12 for the VIC-20, and two for the Sinclair Spectrum. The program listings in Micropost were created mainly by Sami Inkinen, Tuukka Kalliokoski, Ari Kilpeläinen, Reima Mäkinen and Petri Tuomola.

[12] In this context, the term clone refers to both the archetype of a certain game genre and games whose mechanics or content were directly copied from a previous game.

[13] Similar defence rhetoric was used in *MikroBitti* (2/1985) a couple of years later in a review of the commercial game *Raid Over Moscow*. In this review, the reviewer's innocent remark about an 'excellent defence game' sparked accusations of anti-Soviet sentiment and led to a broader game-related controversy (Pasanen, 2011). The program listing in *Poke & Peek!* did not directly reference the Soviet Union, but the listing's inspiration may have been the arcade game *Missile Command* (1980), whose versions appeared for home computers widely in the early 1980s.

[14] This refers to Heikki Kyllönen's game *Luikero*, published in *Tietokone* magazine in February 1984.

[15] Entertainment programs aimed at creating music and graphics are not included in this group of pastime programs.

[16] For the Finnish history of betting games and, for example, the role of the lottery as a popular game in Finland, see Matilainen (2018) and Ahonen (2019).

[17] 500 Finnish marks in 1984 corresponds to approximately 220 euros in current currency (2024) according to the Finnish Bank's inflation calculator. The cheapest home computers in 1984 cost just under a thousand marks without accessories, but the typical price with mass storage was at least double or triple that. Hit games usually started at a price of 100 marks, and games for PC-compatible systems, as well as for the Commodore Amiga and Atari ST, could cost up to 300 marks per game by the late 1980s.

[18] The biorhythm program created by Latvanen for Sirius was also published in *Tekniikan Maailma* 14/1984. The Victor/Sirius computer resembled the IBM PC to some extent, but it was not IBM-compatible.

[19] The initial premise of the game is humorous: The Finnish Olympic Committee refuses to cover the return trip of an athlete who failed in the competition and the athlete must run back to Finland. The athlete's return is hindered by various obstacles, which the player must avoid. The game has a total of five levels.

[20] However, C64 publications primarily focused on utility programs.

[21] Commodore's importer PCI-Data used the term 'the computer of the republic' in ads for the Commodore 64, a period when the device became the most popular home computer in Finland (for ads, see, e.g., *MikroBitti*, see also Saarikoski 2004; Kuorikoski 2017). Earlier, for example, in Germany, the VIC-20 had been sold with the slogan the 'Volks Computer', the people's computer, likely in reference to the popular slogan of Volkswagen cars.

[22] The utility program listings in the magazine were mainly handled by members of the editorial team: Jukka Marin, Tomi Marin, Pekka Pessi and Pasi Andrejeff. Pasi Hytönen was responsible for the game programming listings, although Jukka Tapanimäki also published a few listings on the subject.

[23] A text parser translates and simplifies the text commands entered by players for the game system.

[24] *C-lehti* published program listings until its final issue (1/1992), although the number of listings dropped dramatically at the beginning of 1991.

[25] Although we cannot determine the typical age of those who created the listings, based on well-known examples, it seems that the creators were usually slightly under or over 20 years old, though there were also younger and somewhat older hobbyists.

[26] We do not know the exact editorial process for the listings in *MikroBitti*, nor do we know how many listings were submitted for publication.

[27] Rakkolainen has since been employed as a researcher in human-computer interaction at Tampere University and has been involved in developing, among other things, FogScreen technology. See https://www.tuni.fi/fi/ismo-rakkolainen.

[28] For more about **Chesmac**, see Reunanen & Pärssinen (2014).

[29] *Teknopiste* released three *Bomulus* games for the Spectravideo and MSX in 1985–1986. According to game journalist and non-fiction author Juho Kuorikoski (2014, 23), the *Bomulus* games were 'the Tomb Raiders of their time, action spiced with simple problem-solving'.

[30] The title the 'Paavo Nurmi of Computer Games', referring to the early 20th century Olympic champion, was given to Fasoulas by Niko Nirvi in his review of the *Sanxion* game (*MikroBitti* 12/1986).

[31] Hytönen also developed a game entitiled *Little Knight Arthur* for the Commodore 64, but it did not find a publisher at the time and was only released a few years ago.

[32] The beginning of the demoscene can be traced back to the mid-1980s and the C64 computer. However, at that time, the demoscene had not yet become its own subculture but was strongly connected to software piracy (Reunanen 2014).