

History of Computer Choreography Programs

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Takeaway: what these programs are good for and what their limitations are

Before computers, what did callers do?

Paper and pencil
Checkers (teacups?)

Why?

To work out modules, sequences, singing call figures, or clever resolutions

To write or check or understand material (calls or sequences) in caller note services

To write challenge material that will be read from the mike

It depends on how you generate your choreography at your dance: sight calling, modules, memorize sequences, reading, mental image, combination of all of them

Do dancers or callers learn anything by pushing checkers through calls or sequences of calls?

Do you learn proper use of hands and body flow?

If so, then we may be losing that with computer choreography programs. More on this point later.

Let's start with the first program I am aware of — a program I wrote as part of my undergraduate thesis at MIT starting in 1975.

Since about 1970 when I was exposed to computers and got hooked on programming them, I had a history of computerizing everything — games, homework drill, social science surveys, etc.

When I was told by Mike Tersoff or John DeTreville that they had thought about computerizing square dancing and it was impossible, I wanted to prove them wrong. Why was it impossible?

Ocean waves and the hinge example.

I had relearned to dance what is now Plus in the fall of 1974 and was not a caller. My goal was to write a program that would generate smooth, flowing, resolved square dance Plus-level square dance sequences — A Computer Square Dance Caller.

Note that this is not a checker pushing program, but rather a choreography generating program.

As a budding challenge dancer, after learning Plus in the Fall 1974 John Sybalsky taught an Advanced class in Spring 1975, and we kept going up the levels, I had one other goal that was a little unusual — if it was legal to do a call from a certain position, my program should be able to do it. I was already getting into definitions and what is legal at that time.

Talk about proper use of hands.

Talk about flow.

Talk about overflow.

Talk about resolving.

Talk about problems of doing any call that is legal from anywhere.

Talk about having people dance the sequences and what happened at TriState Caller's Association.

Good at flow, hands, DBD. No animation, beats, degree of difficulty, or calling with a purpose.

Written in Algol 60 running on a PDP-11 running the Delphi operating system. As far as I know, the only program like it. Perhaps because generating random choreography is not needed by anyone.

In 1978, John Sybalsky did an MIT undergraduate thesis called A Computer Square Dancer. It was written in MDL and ran on a PDP-10 running the ITS operating system. I don't remember much about it. I believe he wanted the dancer to be really smart and know who is around them and how they can interact with each other. My thesis was kind of a parlor trick and he wanted real smarts. I don't know if he got very far — it is a hard problem.

By 1983, I was dancing and calling all levels of Challenge. This required writing substantial amounts of material and, my wife said I needed a program to help because I wouldn't have time to write with the baby that was due in January 1983! (I also had to learn to drive.)

I was working for Symbolics and we made \$120,000 single user workstations that ran the Lisp language and were used by artificial intelligence researchers to solve hard problems. I was able to borrow time on a Lisp machine and wrote a checker pushing program (unnamed).

It was somewhat brute force and was able to do concepts, fractions, phantoms, resolve, and give the user menus of what was legal from the current position.

It did not do animation (why would anyone want that?), or understand beats, flow, or proper use of hands. For the next 20 I used that program to write all my material. I believe John Sybalsky also used it.

This was the first checker pusher for challenge choreography and perhaps the first one for Mainstream and Plus, also.

Let's take a quick diversion and remind ourselves of the history of personal computers. All the computers that have been talked about so far are big, expensive, and one would not have them in their house.

The ability to manufacture a computer on a chip launched the hobby computer field in 1974. Nothing happened with square dancing and computers.

1977 Apple II \$1,298 (\$5,476 in 2019 dollars) 4K RAM, no disk, audio cassette; B&W 24 lines x 40 characters

Still nothing happened with square dancing and computers.

1981 IBM PC \$1,565 16K RAM no disk
In 1983 IBM sold more than 750,000 of these

1983 IBM PC XT (internal disk), 360 KB 5 1/4 inch floppy disk

1984 IBM PC AT faster CPU

1984 Mac 128K, \$2,495 (\$6,140 in 2019), 400 KB 3 1/2 inch floppy disk

Now we are getting somewhere.

In ~1987 Avron (Ron) Ehrlich created a choreo program (later called PILLM) and offered it for free to anyone. It ran on DOS and later Windows and did MS to A2 and later Challenge. It used abbreviations to enter call names (which can initially be off-putting) and you could teach it new calls. It also ran in an incredibly small amount of memory.

In 1988 Paul Galburt, a C4 dancer and big PC user, convinced me we could use database software, dump a pre-generated database from my Lisp program, and run the result on a PC or Mac. We called this program ChoreoCrafter and sold 3 versions. It gave you menus of what was legal from where you are, could do some concepts and fractions, but no phantoms so it was only really good to C2. While it could do Plus, it wasn't designed for that and don't know if we had many satisfied users at that level.

In ~1988 Bill Fought created Caller's Angels which ran on DOS and cost \$129 and did though Advanced. It was very popular and the first program orientated towards MS and Plus callers. I believe it had voice input and handled asymmetric choreography.

In 1989 Don Beck offered Desktop Dancer for the Mac for \$129. He developed this using HyperCard, a revolutionary new program on the Mac that allowed mere mortals to develop programs with great graphics and user interfaces. Initially it knew up through Plus.

It offered menus of what was legal from where you are, could do speech output (i.e., call but not know timing), did know the beats of each call, and could generate random sequences. It also had modes to practice mental image and sight calling.

In 1990 I worked with Dave Wilson and created AutoChecker. This consumed a different version of my Lisp machine's expanded database of before-after pictures which allowed it to do everything ChoreoCrafter did but also do phantoms, making it more suitable for C3 and C4. However, the addition of phantoms took away its ability to create menus of what was legal from where you were. We sold this for \$495 and I expect there were no more than 20 users.

To the best of my knowledge, all the programs I have mentioned so far:

- are no longer available
- are no longer under development
- are probably no longer in use

We are talking about 30 to 45 year old software.

I believe Don started on a rewrite of Desktop Dancer and he does have the ability to run that in a descendent of HyperCard. It hasn't been in active development for ?? years.

Now we come to a seminal program created by Bill Ackerman and Stephen Gildea which currently goes by the unassuming name of “sd”.

Announced in 1992 this program’s main sweet spot is to allow Challenge callers to write their choreography. Unhappy with my “expanding the database” approach, they wanted a program that was smart enough to do concepts and nested concepts and nested nested concepts from “first principles”. SD should know if calls have parts and how to roll and sweep, etc.

The code is written in C and distributed under GNU’s GPL:

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Over the years Bill has continued to add features, calls, and bug fixes. I expect more challenge sequences have been written on SD than any other program. It is of highest quality and, for better or worse, is used as an arbiter: is this legal — let’s see what SD does

In 1992 Lorenz Kuhlee (Germany) introduced WinHash which runs on Windows and was offered for \$199. It was designed for MS-A2 callers and was very popular. It was the first program to show animations of the calls and could show users what calls it could do from the current position. It did not have the ability to resolve.

By 1996 there were several more programs created that could do MS-A2 and show animations:

1. The Electronic Square by David Archer for \$0, \$65
2. The Electronic Square Dance by Al Gelman and Marty Firstenberg for \$129
3. Square Dance Action by Ralph Housman for \$99

The first two of these ran on DOS or Windows and the last one was for the Mac

These programs generally knew how many beats a call took. I don't know that any of them exist today.

By 1997 Vic Ceder, an outstanding C4 caller, offered CSDS — the Ceder Square Dance System. This did everything a C4 caller (like himself) would want

- Push checkers, resolve, save sequences
- Store music
- Play music
- Singing call lyrics

The program did not do animations or beats per call but did resolve, do concepts, fractions, know what was legal, and could be taught (correctly or incorrectly) new calls and positions.

It can offer menus of what is legal from where you are, handle asymmetric choreography, and hexagons.

It is actively maintained, runs on Windows, and costs \$200.

In 2001 Brad Christie offered Taminations which was available as a web page and showed animations and definitions of individual calls. This was a great teaching tool for dancers and callers. Also, being on the web it was always available and free.

Over the years Brad has expanded the calls it knows so it is great with MS to C1 and also does a bunch of C2 and C3.

Around 2010 Brad added a “sequencer” which allows it to do sequences of calls. It doesn't resolve and only does certain concepts, phantoms, and fractions. It can use abbreviations and you can teach it your favorite ones.

In 2004 Reinhold Roedig (from Germany, lives in USA) created Callarama. It runs on Windows and has a free version and can be fully functional for \$65.

This program does MS to A2 and shows great animations, knows the beats, and accepts voice input so you can call to it! It also has voice output so it can call to you. It knows what is legal from where you are.

It is in active development and Reinhold has a web page about it. I am interested to hear from people who have and use it.

How do you store and play your music?

- 1997 CSDS Vic Ceder
- 2008 SqView Thomas Bernhed
- 2015 SquareDesk Mike Pogue and Dan Lake

What have we learned?

Many programs, each written for a different reason and with different goals and sweet spots. As technology improved and got cheaper, more people were able to create programs.

Four main ones today:

- sd
- CSDS
- Taminations
- Callarama

The idea of a computer program to create choreography never took off, but I have an idea :-). Attributes (features) a program may have:

1. Runs on Windows, Mac, Web, mobile device
2. Cost
3. Levels it is best at
4. Levels it can do
5. Animations
6. Beats
7. Voice input
8. Voice output
9. Generate sequences
10. Knows flow, proper use of hands
11. Resolves
12. Concepts
13. Fractions / Parts
14. Menus of what it can do from here
15. Phantoms
16. Accurate
17. Hexagon
18. Asymmetric
19. Must use abbreviations
20. Can teach abbreviations
21. Teach new calls
22. Sight calling or mental image training
23. Writing singing calls

Thanks to Rob French for making available reviews of many programs he did in the 1990's and posted on dosado.com. Also this comment:

The use of computers to move checkers is a highly divisive topic that is too complicated to treat here. Suffice it to say that checkers, either physical or on the computer, are a tool, and can be used well or abused. It is always the responsibility of the caller to check for unusual usages, flow, etc. Computer checker movers are perhaps more prone to abuse because it's easy to just enter calls without paying attention to danceability.

Note: Bill Ackerman coined the term Clueless clicking.

I hope you now know more about the available choreography programs, what they are good for and their limitations.

Discussion points:

What programs have you used?

What do you use them for?

How have they helped you as a dancer, newer caller?

Contra dancing -- what would it take to write a checker pusher for contra dancing?