THE HISTORY OF PROGRAM DYNACAM

I wrote the first version of this program in 1979 when working as a Senior Engineer at Polaroid Corp. The graphics minicomputer had recently been invented, and Polaroid had purchased an early example—a Hewlett Packard. Recognizing that the company needed a better means to design cams for their production machines and wanting to learn how to program the HP, I wrote an interactive program for cam design and called it ANACAM.

This program was left behind when I went on to teach mechanical engineering at WPI in 1981. WPI had recently purchased five Apple II computers, which were among the vanguard of graphics microcomputers just becoming available at the time. These were then the only graphics-capable computers at WPI. The school had a Vax mainframe for general computation, but graphics terminals for it were still in the future. The Apples were sitting unused in a locked classroom, and I asked to use them. To learn how to program them and to create teaching tools for kinematics, I rewrote a much reduced version of ANACAM on the Apple II and renamed it DYNACAM.

The Apple II version was a fairly crude, menu driven, memory limited, and slow program, but it served the purpose as a teaching tool, along with other programs I wrote for student use such as FOURBAR, FIVEBAR, SIXBAR, SLIDER, ENGINE, and MATRIX. In 1992, limited student versions of these programs were included with my first textbook, *Design of Machinery*, now in its 4th edition and six languages These programs have been used by thousands of students around the world.

Over the next decades, computers went through huge changes. WPI followed the trends, migrating to Macintosh, DOS, and Windows in all its gestations (95, 98, 2000, XP, Vista, Win7). Each time the school switched computers and operating systems, I was forced to rewrite these programs so that my students could still use them. Languages used were Apple Basic, DOS Basic, QuickBasic, Visual Basic 4 through 6, and now Visual Studio VB.NET.

As the program was rewritten, it also grew with the addition of features and capabilities. Some of these were the result of student projects and theses done at WPI. Those students are credited in the program's splash screen. The biggest changes came about as a result of a sabbatical done at The Gillette Company in Boston in 1996, where I found a number of my former students using their student copy of DYNACAM to design cams for production machines.

At the time, DYNACAM was a very limited, menu-driven, DOS program. For example, it only handled translating followers, and most of Gillette's cams have oscillating followers. So, I began adding features while working on that sabbatical at Gillette and took great advantage of interactions with their engineers to define what they needed and wanted the program to do. They also served as my beta testers (and still do). I also rewrote the code from scratch in Visual Basic in the process. The result was what is now called the *Professional Edition* of DYNACAM. Release 9 became a mature, useful, and well-debugged program for cam design.

DYNACAM 10 is a complete rewrite of release 9, done from scratch, and is currently used by over 100 companies and universities worldwide It retains release 9's feature set but has more robust and streamlined code. The old program had "grown like Topsy" and was convoluted and a bit of a patchwork that had become difficult to maintain. Dynacam 10 has fewer screens, is simpler to use, and has much improved plotting capability. Suggestions for improvements are always welcome.

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