developing logic architectures for Arrays that would best serve the electronic systems market, and assisting customers designing with Micromatrix and Micromosaic. A Computer Aided Design effort was already underway at R&D under Dr. Hugh Mays, ably assisted by Dr. Jim Koford, and Dr. Ed Jones among others.

Test Engineering developed the first LSI device tester -- the 8000A at R&D. It was designed to handle devices with large numbers of pins, and custom complex internal logic functions. Test patterns would be applied to inputs and output patterns observed to determine compliance with logic simulations performed by CAD during the custom product design. As the first tester started to come to fruition, Vitale had to interface with Fairchild Instrumentation who would build it. There was the usual interdivisional politics and in-fighting with Instrumentation, which had the charter to design & build testers, but CMA wanted to control the functionality of the LSI testers, a field in which Instrumentation had no experience. When Instrumentation failed to produce a viable 8000B product, Vitale and his entire group of test engineers transferred to Instrumentation to assure the continuity of the R&D design, and to transition LSI testers into production. The 8000B morphed into the Sentry, the first computer controlled high speed LSI tester.

When the CMA product lines and the support activities including Testing, CAD, & Systems were deemed mature, Schreiner's CMA department moved to Mt View (Bldg 20) under John Sentous to begin production of the first Micromatrix and Micromosaic arrays. Systems Engineering matured in the form of the "mighty MOS machine", a Computer Aided Design system running on an IBM 360 system, which automated logic simulation, test generation, test verification, cell placement & wire routing, and rubylith artwork generation. Leo Craft, Ralph Bestock and others joined CMA from Dr. Mays CAD group for the transition of the CAD system & software to production. As I recall, Hugh Mays retained the key CAD guys, Koford & Jones, but they spent a huge amount of time in Mt. View getting the computers and software running. During the early days in Bldg 20 we were still cutting rubylith artwork on IBM plotters. Maurice O'Shea's reticule generator system, produced by Perkin-Elmer, ultimately eliminated the rubylith process. Almost every customer in the industry passed through a "CAD tour" to show off Fairchild's fledgling LSI capability. Production of the first Micromatrix and Micromosaic products began.

In 1968, Bob Noyce and Gordon Moore departed Fairchild to start Intel. Hogan's heroes arrived as the new top management, and group directors were created over the former product line directors. Soon thereafter, the powers that be offered Schreiner the top job at Instrumentation, which he re-named Fairchild Systems Technology. Ultimately the Sentry Testers became a very successful business for Fairchild.

When Schreiner left CMA, I took over the CMA department for a brief period, and promoted Rob Walker to manage the Systems & CAD group. Gene Blanchette, who had become the group executive over the MOS LSI organization, wanted to bring in a seasoned production manager, Jack Gates, to run MOS Arrays. Blanchette and Schreiner conned me into taking over Central Applications, which probably saved my career. I lost track of the mighty MOS machine for a year or so while re-organizing Central Applications.

About a year later Nichols returned to Applications in Peter Alfke's Digital group. He headed a team that included Mogens Ravn, John Springer, and Rich Whicker. They began development of an MOS chip set dubbed Large Scale Standards (LSS). This effort was partially funded by the MOS division through a budget arrangement I made with Blanchette. It was intended to be a new programmable MOS standard product offering, to supplement the custom Array products. MOS was also involved in development of the PPS-25 calculator chips which had no relationship with the Large Scale Standards architecture. Nichols never favored the custom circuits inherent in Fairchild's LSI philosophy ("Which was: Build whatever the customer wants."). Instead, Nichols emphasized that the semiconductor industry thrives on high volume standard products to achieve both low cost and ever increasing functionality in accordance with Moore's law. Because packaging became an increasing cost burden on large multi-pin packages, Nichols sought ways to maximize gate to pin ratio in complex standard logic functions. Looking to the computer