A version of a time dependent decision problem arises in printing technology. Color printers render a continuous range of colors using a few discrete ones. The printer must “decide” which of these few colors to print at a given pixel. Error diffusion is a greedy algorithm used to make the decision. In general terms, a polytope in $n$-space is given and a sequence of demands, $\gamma_k$, of points in the polytope is prescribed. The problem is to prescribe a sequence of vertices $v_k$ of the polytope such that the average of the $v_k$ converge to the average of the $\gamma_k$. At time $k$, error diffusion chooses the vertex which minimizes the accumulated error. We give a proof of the convergence of the algorithm using some delicate geometry. This is joint work with quite a few of my colleagues at IBM, Roy Adler, Bruce Kitchens, Marco Martens, Charles Tresser, Chai Wah Wu and with Charles Pugh who was visiting IBM.