1046-01-1126   **Daniel S. Alexander*** (`daniel.alexander@drake.edu`), Department of Mathematics & Computer Sciences, Drake University, 2507 University Avenue, Des Moines, IA 50311. *The Center Problem in Complex Dynamics, 1913-1942.* Preliminary report.

The problem of determining the behavior iterates of a complex rational function f near an irrationally indifferent fixed point λ was one of the more intractable problems in complex dynamics during the first half of the 20th Century.

If iteration could be linearized, that is, if a convergent solution B to the Schróder functional equation $B \circ f = f'(\lambda)B$ existed, then a center was said to exist, and iteration near the fixed point would be conformally equivalent to an irrational rotation of a disc.

Determining whether or not a solution existed if f was of degree two or greater proved quite difficult, however, and the problem resisted the best attempts of several mathematicians. Indeed, in 1919 Gaston Julia claimed to have proved that aside from the linear case centers did not exist, a claim he later withdrew.

Until Carl Ludwig Siegel demonstrated the existence of centers in 1942 progress was either in the negative—determining conditions under which the centers did not exist—or the conditional: Assume a center exists and explore the consequences. This presentation will survey the efforts of several mathematicians to confront this problem, among them, Siegel, Julia, Pierre Fatou, George Pfeiffer and Hubert Cremer. (Received September 14, 2008)