Lanchester Squares

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1 Theory

- Lanchester (1914) developed the Squares Law of Modern Combat
- $\frac{dy}{dt} = -\beta x$, $\frac{dx}{dt} = -\alpha y$
- Problem: coefficients can't be estimated *a priori*, low res, deterministic
- Solution: Hirshleifer's (1989) formulation of the contest model
- $\frac{\alpha}{c(\alpha+\beta+\epsilon)}$, where c in this case is -100

2 Back-End

- Goal: plot slope fields for differential equations and IV problems
- Tool: `matplotlib` and its dependencies, Euler's method (show code)

3 Front-End

- Two-player game based on Square Laws and contest model
- Tkinter GUI
- easy replay
- saves plot and all "moves"

4 Demo

- Cassy vs. Matthias (show plot, csv)
- Would the make different moves now?

5 Questions?

- Do the assumptions make sense? Will it work experimentally?
- Should technology have a lesser role? one-time or multiple?
- Add Blotto component? Offense/defense?