Toby and Sonja are helping out at the Grand Hotel Garni's Buffet.

**Toby:** Look at that guy—he's already gone back for a *third* plate of ribs. Respect.

**Sonja:** Rookie mistake. Meat slows you down. I'd go for high-density calories first.
Pastry aisle, straight to the cheesecake. In and out in five minutes.

**Toby:** But then you spend half your time queuing with the dessert crowd. I'd start with the unpopular stuff—bread, rice, even salad. Low competition, quick gains.

**Sonja:** So, you're Team "Fill Fast, Eat Cheap"?

**Toby:** More like "Efficient Stomach Logistics." What's your plan, Miss Sugar Rush?

**Sonja:** High-value targets only. Hit the sweet spot between rarity and access.
Cake, then shrimp, then the fancy cheese cubes.

**Toby (grinning):** Sounds good—unless *everyone* has your strategy. Then you're elbow-deep in the tiramisu trench war.

**Sonja:** Exactly. That's the point.
What if *everyone* at the buffet picked either your strategy or mine?

**Toby:** … Oho. Now we're talking buffet game theory.

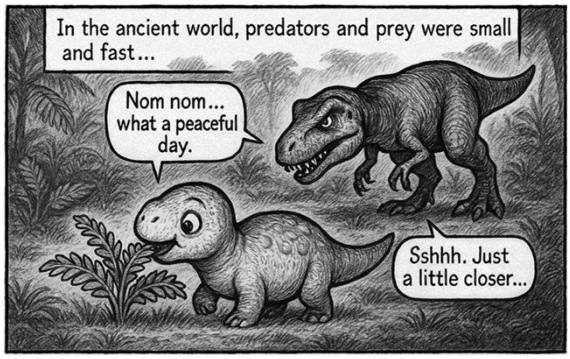
Run buffetStrategy.py and look at the visualization.

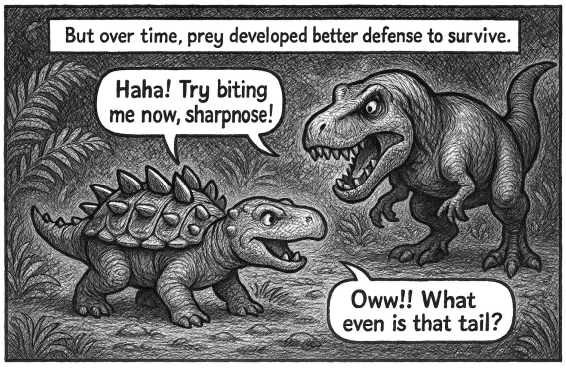
- What happens when multiple Sonja-type guests target the same high-value dishes?
- How does the presence of Toby-type guests affect the crowding at Sonja's preferred dishes?
- Why might Sonja's payoff increase when she becomes a minority in the population?
- At what point in the simulation does Sonja's performance begin to improve? Why that point?
- Can you think of other real-world examples where a strategy is only effective when it's rare?

**Niche advantage** means that a strategy or behavior works especially well when only a few individuals use it — because it avoids direct competition and exploits a "gap" or underused opportunity in the system.

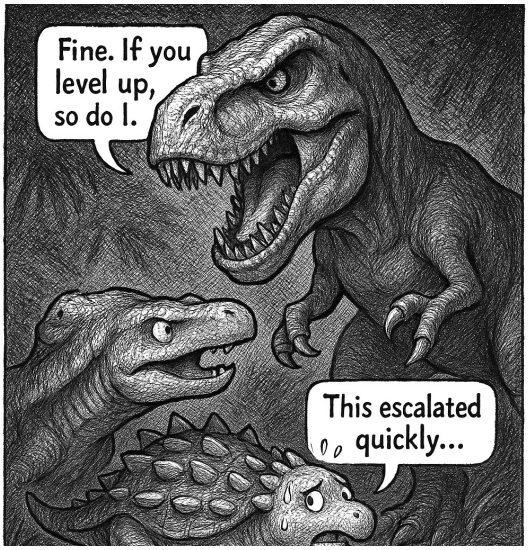
Run buffetStrategy_deap.py and look at the visualization.

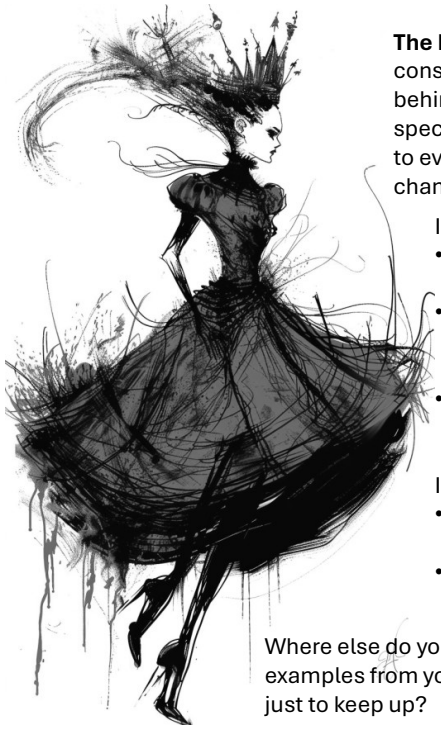
- After being invited to thirty similar parties – which strategy was adapted by most guests?
- Change parameters GENERATIONS and POP_SIZE in the head of the script. Are there any changes?
- Why are people choosing Sonja's Strategy?
- What causes certain strategies to become more common over time?
- Why might the final population not consist entirely of the "best" strategy?




- Run redQueen.py.
- Try to understand what happens.
- Parasites are trying to be more ____ to the hosts.
- Hosts try to be _____ from the parasites.
- Explain the diverging strategies over time !



**The Red Queen Race** describes a dynamic in which participants must constantly adapt, not to gain an advantage, but merely to avoid falling behind. The concept originates from evolutionary biology, where species co-evolve—predators, prey, hosts, and parasites—each forced to evolve continually just to maintain their relative position in a changing environment.

In **academic settings**, Red Queen dynamics emerge when:

- **Students use AI tools** (e.g., ChatGPT) to generate essays, while institutions respond with **increasingly sophisticated detection algorithms**.
- **Researchers exploit publication loopholes** or duplicate content, prompting journals to employ **more advanced plagiarism checkers** and **stricter peer review processes**.
- **AI tools are used in peer review**, prompting a debate about whether automated reviewing enhances or undermines scholarly rigor—creating a loop of escalation between human and machine.

In **social contexts**, such dynamics can be observed when:

- **Commoners imitate the behavior or fashion of nobility**, leading elites to **constantly invent new markers of distinction** to reassert their superiority.
- This triggers a perpetual game of imitation and distinction—a social arms race of appearances.

Where else do you see Red Queen-like races in society, technology, or culture? Are there examples from your own field or experience where innovation or adaptation seems endless—just to keep up?

*[Friday afternoon, warm and sunny. Two kindergarten teachers, Ms. Miller and Ms. Janet, are sitting on a bench in the shade, watching the children play. The ice cream freezer hums in the background.]*

**Ms. Miller:** Tell me that wasn't Leo.

**Ms. Janet:** Oh, it was. That's his *second* one today. He waited until we turned around, then swooped in like a sugar ninja.

**Ms. Miller:** Didn't he have one after nap time?

**Ms. Janet:** Yup. And yesterday. And the day before. Honestly, I think he's working on some kind of secret popsicle hoard under the sandbox.

**Ms. Miller (sighing):**Every summer it starts the same. One clever kid cracks the system—then suddenly they *all* start "just checking the freezer temperature."

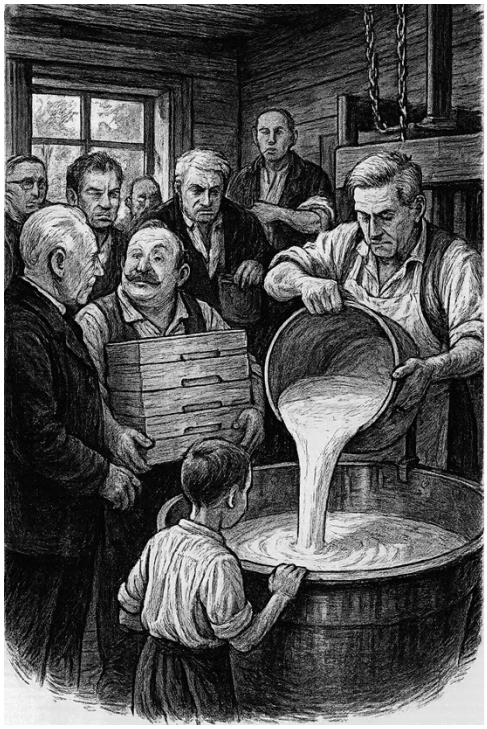
**Ms. Janet:** And by Wednesday, half the kids are crying because there's no ice cream left.

**Ms. Miller:** I mean, we *do* restock every Friday. If they'd all just wait, there's enough for everyone.

**Ms. Janet:** But nope. Short-term gain. Long-term meltdown. Literally.

**Ms. Miller:** Classic tragedy of the freezer commons.

**Ms. Janet:** We should teach game theory instead of finger painting.



- Run iceCream.py. What seems to be a better strategy? Be patient or be sneaky?
- Run iceCream_deap.py.
- Run it again.
- Do you get the same result every time?
- Why can there be different outcomes about which strategy is more successful?

Modelling conflicting strategies can be used to explain different problems.
For example:
What does it take, to become part of a Canon?

1. A short text, that can be read in class? (Not too short).
2. A novel, that looks good on a bookshelf?
3. A scandal, that resonates with future generations?
4. A plot, that works as a movie?

Find examples!

The **tragedy of the common**s is a situation where individuals, acting in their own self-interest, overuse and deplete a shared resource, even though it's in everyone's long-term interest to preserve it.