

Worldbuilding – Rollicking Rules of Ecosystems

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1. Life feeds on waste.

You breathe the waste product of plant photosynthesis—trees suck in the trash you exhale as part of cellular respiration. You eat plant life and, in a natural system, your excretia becomes the mulch that feeds the plants you eat. Trash is a product Life knows how to use.

2. Life grabs opportunities.

Excess trash of any kind will make an opening for any new form of life that can figure out how to use it. Expect, within the next few thousand years or so, the arrival of the Huggies Monster and the Tire Mound Scavenger.

3. Life likes volatiles.

Stable elements like nitrogen are never going to be the basis of a life form. Think of them as bran—they go in and they come out unchanged. You need unstable stuff, that Life can mix and match like tinkertoys. Any nice moderately unstable stuff will do, however.

4. Redundancy matters.

The smaller and weaker and tastier you are, the more kids you must have all at once to guarantee survival of the species. If you are a member of a species that gives birth to snacks at the point where they are most likely to be devoured, you'll have millions of children at a time. Witness a mayfly hatch if you doubt this.

5. There are at least five ways of doing anything and Life will try them all.

Take traveling as an example. Fly, swim, hop, run, bounce, slither, burrow, tumble, float on a breeze, or roller-skate. Or travel as a parasite in someone else's belly. You'll still get from point A to point B.

6. Microclimates demand microecologies.

Every desert, island, jungle, mountain, desert, valley, and ice field gives you the opportunity to invent neat new life forms adapted to their environment. Furthermore, each of these specialized terrains **demand**s that you take it into account when designing life forms. A desert rabbit, a jungle rabbit, a tundra rabbit, and a plains rabbit will all have very different characteristics, and will not be able to inhabit each other's ecological niches.

7. Big predators eat a LOT.

If you have a wide variety of big predators, the number of little buggers you will need to support them is mind-boggling. Don't forget to design a wide and weird variety of little guys, too. And don't forget to mention them, show them, and have them play some part in your story. The absence of small, non-predatory life forms on planets that support a wide variety of huge, hungry monsters demonstrates sloppy writing and that the writer has no concept of how a planet and its lifeforms work.

8. Life's Big Three: Eat, Excrete, Reproduce.

If you can design your beasties with these three factors in mind, all art, psychology, warfare, science, and religion will follow. Try it, using only one of the big three. Create a sapient creature. Figure out what it eats, and how it must go about gathering or acquiring its food. Because it is sapient, tool development for food acquisition will ensue, as it

figures out more efficient ways to gather its current food.

It will, furthermore, teach its offspring to use tools, and its offspring will have improved survival rates compared to others in its species – a successful foray into reproductive improvement. More complex tools will follow as your sapient becomes more efficient. And this efficiency will have a price on your creature's environment (the extinction of over-hunted herds or the destruction of top-soil in over-planted or over-grazed fields, for example) that will necessitate further tool development, and changes in social structure. Cities or wars may ensue.

9. Life is weapons escalation.

New weapons (tools for guaranteeing the safety of the breeding population) breed new defenses, which make new weapons necessary, which—aw, hell, just ask the Pentagon. This holds as true for a plant's excreted toxic resins or a deer's better antler design or a skunk's more noxious skunk gland spray as it does for a human's Star Destroyer or Colt Peacemaker. Something, somewhere, will develop a way of getting around the defense to get at what it wants.

(And part B of this rule – Unlike the Pentagon, Life balances the budget.)

Any species that expends its energy in weapons development while shortchanging eating, excreting, and reproducing is going to become extinct. Any weapon system that makes too big a drain on the creature's resources will cause its eventual extinction. (Pity this rule doesn't work in the strange microecology of Congress.) (Or does it?)

10. Specialists are more efficient.

Specialists meet the Big Three by doing a certain thing a certain way—by only sipping nectar from the flowers of the rare thurka tree, for example. Specialists let the thurka tree

provide for all their needs, and thus conserve the energy trial and error require.

11. Generalists live longer.

Generalists have to work harder. They are rarely as good as the specialists at any one thing, but they are not too bad at meeting the Big Three. However, Generalists are not shit-out-of-luck if some virus kills off all the thurka trees. Inefficiency can save your life – something people frequently fail to consider. And only Generalists go into space.

If you caught the worldbuilding bug, and need to know how to do it professionally without OVERdoing it, take a look at my Create a World Clinic – which includes worksheets, video demos, a class forum, and more.

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