***The Major Transitions in Evolution*** is a very well renowned and influential book in evolutionary theory. In brief, it says that (so far) life has gone through 8 major evolutionary transitions (which I was thinking could equate or link up somehow with your 10 rounds of evolutionary environmental events.)

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| --- | --- | --- | --- |
| They are: | | |  |
| **Transition from:** | **Transition to:** | **Notes** | **Joolie comments** |
| [Replicating molecules](https://en.wikipedia.org/wiki/Replicating_molecule) | "Populations" of [molecules](https://en.wikipedia.org/wiki/Molecule) in compartments | Can't observe | This one is the “origin of life” so to speak, but we may want to start off with life already existing. |
| Independent replicators (probably [RNA](https://en.wikipedia.org/wiki/RNA)) | [Chromosomes](https://en.wikipedia.org/wiki/Chromosomes) | [RNA world hypothesis](https://en.wikipedia.org/wiki/RNA_world_hypothesis) | This one is, basically, the differentiation between the thing that replicates and the thing that moves around in the world. You are not the same as your genes. |
| RNA as both [genes](https://en.wikipedia.org/wiki/Gene) and [enzymes](https://en.wikipedia.org/wiki/Enzyme) | [DNA](https://en.wikipedia.org/wiki/DNA) as genes; [proteins](https://en.wikipedia.org/wiki/Protein) as enzymes |  | This one is not all that different than the previous one, as far as we are concerned. It is a step up in sophistication for genes. |
| [Prokaryotes](https://en.wikipedia.org/wiki/Prokaryote) | [Eukaryotes](https://en.wikipedia.org/wiki/Eukaryote) | Can observe | This is the change from simple to complex cells. Still single cell organisms. I think this might be the first stage that we want to include in the game. |
| [Asexual](https://en.wikipedia.org/wiki/Asexuality) [clones](https://en.wikipedia.org/wiki/Cloning) | [Sexual](https://en.wikipedia.org/wiki/Sex) [populations](https://en.wikipedia.org/wiki/Population) | [Evolution of sex](https://en.wikipedia.org/wiki/Evolution_of_sex) | Ooooh. Into sex now. An important transition, but I would need some time to think about how to put it into the game. |
| [Protists](https://en.wikipedia.org/wiki/Protist) | [Multicellular organisms](https://en.wikipedia.org/wiki/Multicellular_organism) — [animals](https://en.wikipedia.org/wiki/Animal), [plants](https://en.wikipedia.org/wiki/Plant), [fungi](https://en.wikipedia.org/wiki/Fungus) | [Evolution of multicellularity](https://en.wikipedia.org/wiki/Evolution_of_multicellularity) | Now we are into multi-celled organisms! |
| Solitary individuals | [Colonies](https://en.wikipedia.org/wiki/Colony_(biology)) with non-reproductive [castes](https://en.wikipedia.org/wiki/Caste) | [Evolution of eusociality](https://en.wikipedia.org/wiki/Evolution_of_eusociality) | Now we have bees and naked mole rats and other weird ways to organise sexual reproduction. |
| [Primate](https://en.wikipedia.org/wiki/Primate) societies | [Human](https://en.wikipedia.org/wiki/Human) societies with [language](https://en.wikipedia.org/wiki/Language), enabling [memes](https://en.wikipedia.org/wiki/Meme) | [Sociocultural evolution](https://en.wikipedia.org/wiki/Sociocultural_evolution) | Now it gets really tricky cause we have language, education, manners, fashion, music, etc. that clogs things up and makes sex so much trickier. |

The original theory of these transitions says each transition has some or all of these common properties. :

1. Smaller things combine to form one, more complex big thing.
2. The small things differentiated or specialised as part of the new, bigger and more complex thingy.
3. The smaller things are no longer independent replicators (this is kind of implied in the first 2 points).
4. The smaller things can sometimes disrupt the large thing.
5. Each transition is about a new way of transmitting information.

## This info comes from [this wikipedia article](https://en.wikipedia.org/wiki/The_Major_Transitions_in_Evolution) (and one of my degrees) but [this one on the history of evolution](https://en.wikipedia.org/wiki/Evolutionary_history_of_life) may also be useful.

Basically, I like your initial outline, but have a few comments, suggestions, questions so will create a grid here to track the ideas.

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| --- | --- | --- | --- | --- |
| Original idea | JK |  |  |  |
| Each player plays as 1 organisms with the goal of the game to be most numerous at the end | Each player plays as a population, with the goal to be the most numerous at the end or as multiple populations to hedge your bets by evolving both plants and animals? A bit like monopoly properties… buy some cheap ones and some expensive ones. |  |  |  |
| Get food tokens to spend on attack, defense, reproduction, evolution | Different kinds of species might get different amounts of tokens or different types of tokens (like, plants get 20 sunlight tokens per turn but carnivores get one kill per turn. Might be easier to just say that some species need fewer tokens than others do to achieve the same action (plants definitely reproduce easier than animals). Would also mean plants are worth less at the end of the game. |  |  |  |
| Evolutionary events are about environmental conditions, ranging from minor unpleasantness to catastrophic near total destruction. This happens at end of each turn by drawing from a deck of environmental event cards. | Evolutionary events can ALSO be triggered by player actions (e.g. reach a threshold in population and choose to evolve through a transition… from 20 paramecium to 4 fungi (like the choice to start adding houses in monopoly). |  |  |  |
| Follow real world evolution to some extent, plus humor (Donald Trump as an environmental hazard, evolve a big red bum as a reproduction trait, etc.) plus fun future evolution (AI symbiosis) | This sounds ace! I would say that the future evolution can try to match the established evolutionary transitions in that people could become hive societies, telepathic, cloning technology, etc. |  |  |  |