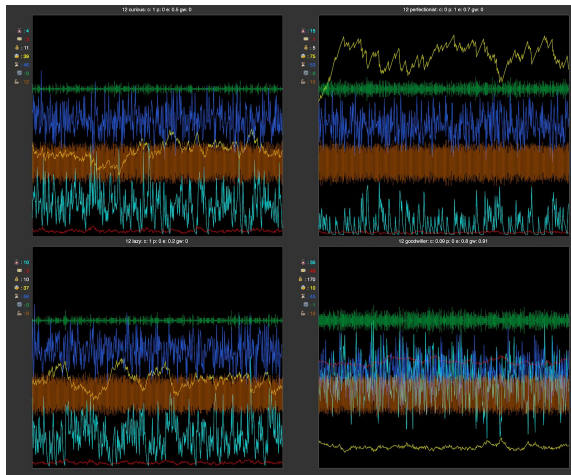# Ämtli manager report

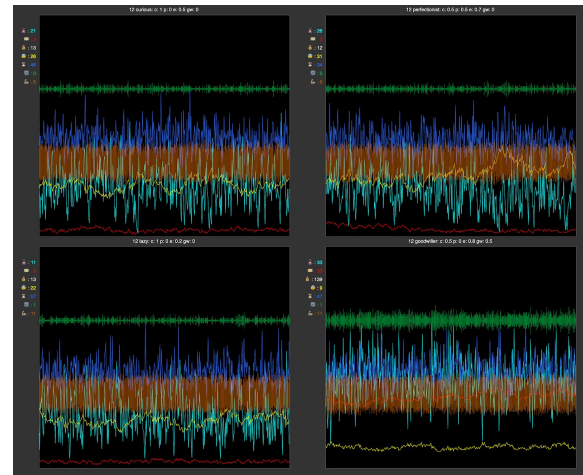**FOCUS: Observing the point where stress and time_coin curves invert**

Questions

1. It appears that brute-forcing and swapping occur at a similar frequency. How can we reduce the amount of swapping and brute forcing?
   a. Can increasing curiosity reduce the frequency and amount of swapping?
   b. What will reduce the frequency and amount of swapping/brute forcing?
   c. Does the frequency and amount of swapping/brute forcing ever change significantly (does it depend on commoner's traits)? Is there a setup based on commoners' traits where the community works most harmoniously (less stress, equal amounts of time_coin)
2. There is a difference in the community dynamics depending on the ratio of tasks : commoners. However, does this simply slow downs the events or is there a more qualitative change? For example, does the graph of activities look the same if 40 agents are doing 10 task sets over 12 months and if 40 agents are doing 5 tasks sets over 24 months?

1a. Can increasing curiosity/endurance reduce the frequency and amount of swapping?

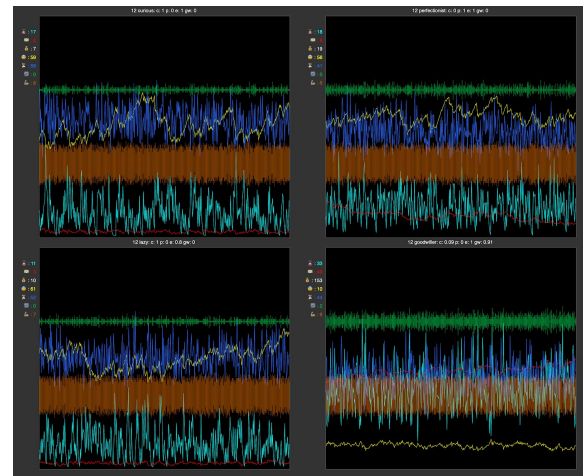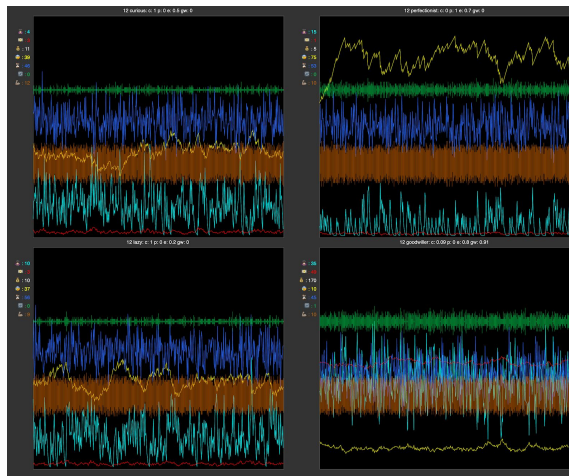| *Curious perfectionists, curious coin-conscious commoners*	
Settings: 48 commoners with default traits, 12 task-sets over 1 year	Settings: 48 commoners with max. curiosity, 12 task-sets over 1 year

Observations. Some of the swapping and brute forcing is due to the disinterest of commoners in taking up the task that has become urgent. This observation tries to address that through curiosity. Will increasing curiosity lead to less brute-forcing and swapping - less frequent and/or involving less agents? The two images show the same running time of the model, 12 months, with a group of 48 agents doing 12 task sets. On the left, we have default-trait agents (see captions above each. On the right, we have the same number of agents and task sets, but all agent types have maximum "curiosity" (the value is set to 1). All agents are less stressed, the difference is the strongest with perfectionists (why?) and the least visible with coin-conscious commoners. In the first - default case, everyone else's amount of time coin stays near the bottom. In the maximised curiosity case, coin-conscious commoners have less

time coin, but the rest are not doing better than before, on average. The amount of swapping and brute forcing has not decreased importantly. Perfectionists do have less swapping agents, lazy agents swap less frequently, and there is a small decrease with coin-conscious too.

Curious commoners are more stressed than rich, and a bit more likely to take up tasks that they are asked to do (than the less curious, default commoners). Curiosity reduced the amount of swapping by a little bit.

Endurant perfectionists, endurant coin-conscious commoners

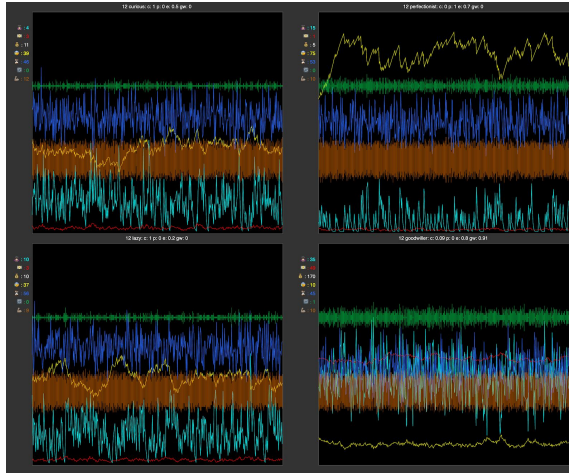| Settings: 48 commoners with default traits, 12 task-sets over 1 year	Settings: 48 commoners with max. endurance, 12 task-sets over 1 year

Observations. The other trait involved in the swapping decision (which ultimately leads to brute forcing, once too many agents decide to swap) is endurance - the less endurance a commoner has, the more likely they will be to rest instead of working. Therefore, increasing endurance should reduce the need to swap and brute force agents. On the left, we have default-trait agents (see captions above each. On the right, we have the same number of agents and task sets, but all agent types have maximum "endurance" (the value is set to 1 - except for the lazy who have 0.8). Curious and lazy are more stressed, perfectionists less than before - the three groups have on average a similar amount of stress. Coin-conscious agents are almost the same, although their endurance has been increased by 0.2. There is not significant difference between the amount and frequency of swapping and brute forcing, with perhaps a small decrease in frequency and amount of swapping in coin-conscious and perfectionist commoners. Hard working commoners are significantly more stressed than rich, with the exception of those who are more coin-conscious. Endurance reduces stress but has very little effect on the amount of swapping.
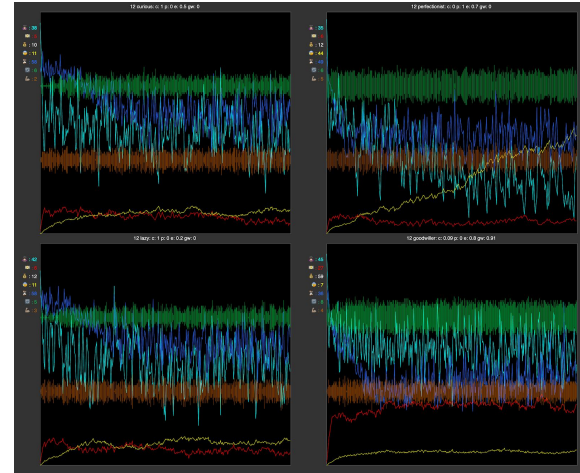
1b. What will reduce the frequency and amount of swapping and/or brute forcing?

Less work (changing task:commoner ratio)

| Settings: 48 commoners with default traits, 12 task-sets over 1 year	Settings: 48 commoners with default traits, 6 task-sets over 1 year

Observations. This observation looks into the potential changes in the group dynamic when the number of task sets is reduced, but for a longer period of time. While it is clear that simply reducing the amount of tasks will result in less brute forcing and swapping, due to simply less frequent opportunities to be involved in these, the question here is whether or not there is an observable difference in the way community develops over 1) 12 months, working on 12 task sets and 2) 12 months, working on 6 task sets. The duration is the same and the number of task sets is halved. There seems to be quite some qualitative change. The amount of swapping is higher (taller green lines); it is hard to tell whether the frequency decreases or stays the same, but it does not appear to increase. Brute forcing, however is reduced in all groups of agents. Stress in all groups of agents is lower, it appears to be reduced by an equal amount in curious and lazy commoners groups, while in the perfectionist group it grows significantly slower. Curious and lazy have a rather similar life, while coin-conscious and perfectionists get brute forced and swap in similar quantities. Stress, however shows that coin-conscious commoners are still the only ones who are able to work less than the amount of time that gets them stressed. They have more time coin than all other agents and are less stressed.

1c. Does the frequency and amount of swapping/brute forcing ever change significantly based on commoner's traits?

The good life - the coin-conscious life
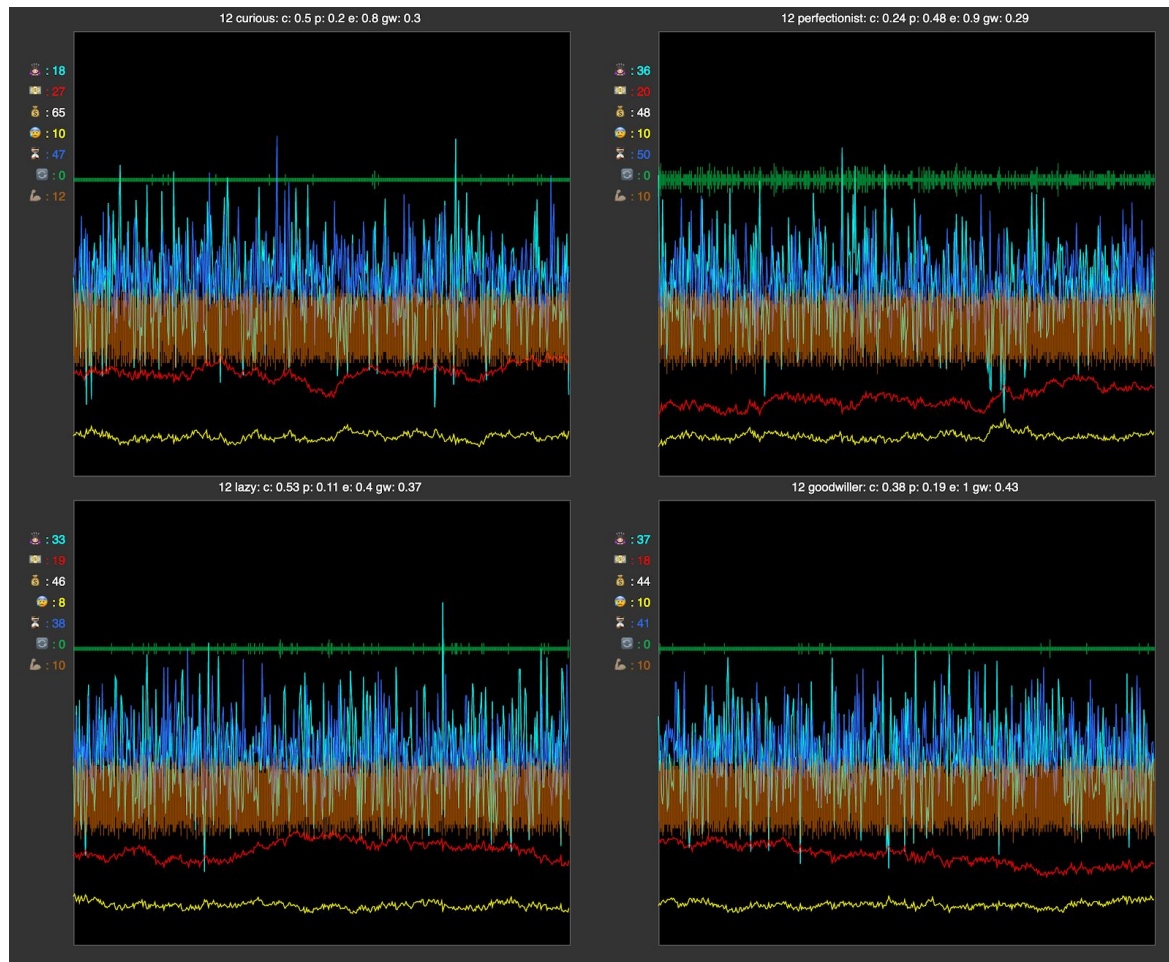
Settings: 48 agents, 12 task sets.
++ curiosity (curios and lazy = 1; perfectionists = 0.5; coin-conscious = 0.8)
++ endurance (curious = 0.7; perfectionist = 0.8; lazy = 0.2; coin-conscious = 1)
+- coin-consciousness (curious and perfectionist = 0.5; lazy = 0.6; coin-c = 0.8)
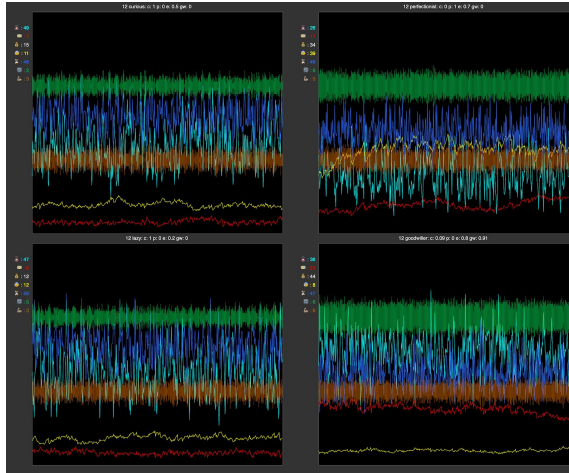
Observations.
By modifying behaviours to an extreme, increasing coin-consciousness in particular, as well as curiosity and endurance, the model runs in a very stable fashion. Harmonious community where everyone has a similar amount of time_coins, and similarly low level of stress. Stress is oscillating slightly more in the lives of curious and perfectionist commoners. Perfectionists are doing significantly more swapping than the rest of the community. Still, the amount of swapping is much lower than when the model runs with default parameters. Brute forcing happens and it appears not to be affected by the modifications of the parameters to any significant extent.
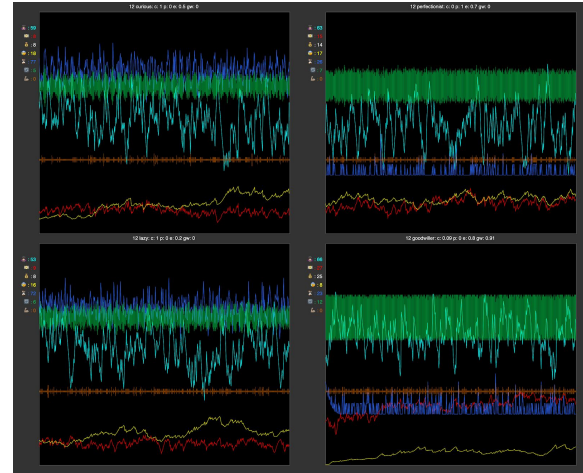
2. Does changing the ratio of tasks:commoners simply slow down (or speed up) the events or is there a more qualitative change?

Less work, more time: more swapping less brute forcing

| Settings: 48 commoners with default traits, 6 task-sets over 2 years | Settings: 48 commoners with default traits, 3 task-sets over 4 years |

Observations. As we have already seen in 1b, where commoners worked on 2 times less tasks, and get much less stressed, they swap more nad get brute forced less. The observation time is always set to last longer - so that the amount of the tasks done would be the same, and in that respect we can look at the amount and frequency of brute forcing. For example, if a commoner would get 1 task a day, and work for 30 days, they would have 30 opportunities to swap; if we reduce the number of tasks to 1 every two days, then we have to look at the 60 days, during which the agent will have again 30 opportunities to swap/get brute forced. Here we try to reduce the number of tasks to minimum, and see if there is a sort of 'backlash' in terms of laziness - too few tasks being worked on would reduce the opportunity to get time_coins, which would reduce the opportunity to rest, etc.

Looking at swapping and brute forcing alone, we can observe how their number steadily increases (in case of swapping) or decreases (in case of brute forcing) with the reduction of the amount of tasks per person in the community. In this way, already in the observation of the 1 year, and 6 task sets (instead of 12), we see rising numbers of swapping while the tendencies for swapping are consistent with the commoners type: coin-conscious swap more, curious swap less. Brute forcing decreases significantly with reduction of tasks per commoner, falling to almost zero in the scenario where they do only 3 task sets.

Stress and the distance between the stress and time_coin curves are smaller when there are less tasks commoners are working on too.

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