to get designs as "short" as possible, minimizing the number of rules of the P systems.

If we consider the number of (parallel) steps as a complexity measure to compare the designs, then we conclude that the third solution is *better* than the other ones, since it needs less steps.

Another relevant computational parameter is the weight of the Sevilla Carpet, that measures the total number of rules that have been applied along the computation. If we assign a *cost* to each application of a rule, then we can say that Solution 2 is the most *expensive*, while Solution 3 is the *cheapest*.

Nonetheless, the key point of a design of a solution in Membrane Computing is the use of the massive parallelism. As pointed out in [5],

> *a bad design of a P system consists of a P system which does not exploit its parallelism, that is, working as a sequential machine: in each step only one object evolve in one membrane whereas the remaining objects do not evolve. On the other hand, a good design consists of a P system in which a huge amount of objects are evolving simultaneously in all membranes. If both P systems perform the same task, it is obvious that the second one is a better design that the first one.*

In this line, the fact that the average weight of Solution 1 is smaller than the average weights of Solutions 2 and 3 can be interpreted saying that the latter designs make a better use of the parallelism in P systems than the first one.

To sum up, according to the parameters corresponding to the computations of the three solutions running on the chosen instance, Solutions 2 and 3 are similar regarding the average weight, but the tissue-like approach is overall the best choice.

5 Conclusions and Future Work

It is important to remark that these are not asymptotical comparisons, as we focus only on the data corresponding to one instance. Indeed, due to the exponential number of membranes created during the generation stage, we believe that considering another instance with a greater size will stress the differences between the design based only on n and the other one, based on n and k. The bound on the size of the instances that can be studied is imposed by the necessity to use a P systems simulator to obtain the detailed description of the computation: number of rules, number of cellular steps, and number of times that the rules are applied in each step.

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