**A new view on old problems**
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This talk is focused on the idea that a careful model choice is crucial for successful optimisation. In particular, the use of non-standard approaches can provide new insights into the properties of a problem and substantially improve the performance of the related algorithms.

This point will be illustrated on three rather unrelated problems:
- simulation of pedestrian crowd movement;
- cell formation in industrial engineering;
- arc routing.

The first part of the talk is focused on the tool for simulating pedestrian crowd movement. Such tools are needed for facilities design, emergency routes planning, etc. We present a model based on the so-called cellular automata, that is flexible enough to accommodate mental and anticipatory properties of pedestrians. Furthermore, the proposed model is efficient enough to allow simulation of hundreds of pedestrians in real time. We also show how such a model can be used to generate simple behavioural recommendations that can improve pedestrian traffic.

In the second part of the talk we consider the industrial engineering problem of cell formation. This problem, being related to layout design, aims at grouping machines (physically or logically) so as to reduce the time spent on transportation of products between machines and ease management of the manufacturing process. We show that high quality heuristic solutions can be obtained by modelling cell formation via the p-Median problem. For the latter, we propose an efficient formulation that allows solving large instances to optimality and provides interesting insights into the properties of the problem. Furthermore, we consider an exact model for cell formation and show that it is tractable in many realistic cases.

In the third part of the talk, we consider the arc routing problem that, in contrast to a more famous vehicle routing, assumes that the demand is located at arcs rather than nodes. We look into the relation between the two problems and show how to handle the arc routing problem in case of more than one objective.