Julia Bendul studies innovative production and logistics networks.

NEW ROLES

A SCIENTIST WHO CREATES NEW COMBINATIONS

How do innovations arise? Obviously not all of them are inventions out of the blue. They also result from putting existing items to new purposes. Instead of reinventing the wheel, you can recombine it—with a suitcase, for example. That's what led to the rolling case. A successful innovation, which thirty years later is still an absolutely essential part of everyday travel.

MAREN EITEL MARCEL TARANTINO

Julia Bendul puts the principle of recombination to good use. A former management consultant who is now a professor of network optimization at Jacobs University in Bremen, Dr. Bendul works with an interdisciplinary team of economists, engineers, data analysts, and logisticians on innovative ideas for production and logistics networks. "I'm always astonished at how a team of such diverse individuals keeps finding new approaches. Everyone contributes the strengths from their own backgrounds, and the combinations generate some very unusual solutions."

Bendul, who herself has a background in industrial engineering, is especially interested in production planning and control. Based on studies at train stations, which show that synchronized departure and arrival times have a negative effect on punctuality, she found that the same is true for processes at factories. She is working with mathematicians and physicists to find a solution to this situation. The aim of the project is to design a factory layout with the right proportion of synchronous processes. Ideally the individual objects should also be self-controlling. Models for this can be found in the animal world, such as in ant colonies.

The natural sciences in general offer a wealth of ideas that Bendul is quick to make use of. "Biologists have long been studying metabolic networks in the human body. They're further along in this field than logisticians and production experts." Their results can benefit work on production networks. The results of insect studies, for example on how bees communicate smoothly with one another, can be transferred to factories—this was the topic of Bendul's thesis.

She is currently testing how insights from psychology can be applied to production. "Through our experiments, we are learning how human perception and individual personality can distort objective decision-making." It is becoming apparent that many people distrust digitization and automated decisions. For instance, when deciding on minimum inventory levels, planners will often change the optimized result as determined by computer analysis. They let their gut feeling play a role. "That's a completely new starting point in designing digitized production." ←