Going back to the drawing board
Harnessing the potential of the design process to effectively change organizational routines

Many organizations face challenges when trying to create effective and lasting strategic change. Dr Vern Glaser, Associate Professor in the Department of Strategy, Entrepreneurship and Management at the University of Alberta, studies how organizations change their routines to accomplish strategic objectives.

In his paper “Design Performances: How Organizations Inscribe Artifacts to Change Routines”, Dr Glaser presents a case study of how a law enforcement agency designed an algorithm to optimize officers’ patrolling routines, thereby deterring criminal activity. His study reveals that the process of designing a change initiative may be seen more important than defining the right goal or selecting the right algorithm. His case study of a law enforcement agency reveals four aspects of the design process which ultimately determine the effectiveness of a strategic change initiative: identifying essential components of the existing routine; questioning underlying assumptions that shape how routines are performed; redistributing the work to optimize effectiveness; and re-thinking performance metrics. Dr Glaser’s findings have theoretical and practical implications for routine dynamics and organizational strategy.

DESIGNING AN ALGORITHM TO CHANGE ORGANIZATIONAL ROUTINES: THE CASE OF METROPOL
In his research, Dr Glaser examined how a law enforcement organization in the Western United States (i.e., Metropol, a pseudonym) designed software to change patrolling routines with the objective of deterring criminal activity—specifically, terrorism and fare evasion on public transport. Organizational actors partnered with Algo-Security, a research firm dedicated to developing real-world security solutions, to design a tool that used a game-theoretic algorithm to predict criminal activity and automatically adjust patrolling routines based on those predictions.

Metropol’s existing patrolling routines were determined by schedulers who used an Excel spreadsheet to assign officers to locations in a very complex, labour-intensive process. For example, to make it more difficult for terrorists to realise a successful attack, Metropol responded to suspicious activities by deploying available resources such as patrol units, K-9 units, and plainclothes officers to different locations. Upon their arrival, officers would observe activities, query individuals or look for suspicious materials, such as abandoned backpacks. Likewise, to deter fare evasion, Metropol periodically deployed deputy officers and security assistants to transit stations, trains, and buses to audit passengers and issue warnings to passengers without valid fare documentation.

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IDENTIFYING ESSENTIAL COMPONENTS OF THE EXISTING ROUTINE
To design a tool that used an algorithm to randomize patrolling routines, the project team had to identify all components of the existing routine (e.g., locations protected by Metropol, the types and number of available security resources, activities that those resources could perform, and the amount of time it takes to perform those activities) and translate them into knowledge that could be embedded as parameters in the algorithmic software application. For example, the algorithm needed to consider tacit knowledge, such as travel time to a patrolling destination, and the relative attractiveness of each location to criminals. Similarly, when patrolling a bus or train station, law enforcement officers could take three different actions: question individuals in the station (15 minutes), observe the station without taking any action (10 minutes), or move between different levels of a station (1 minute). It was important to comprehensively identify the core components (i.e., resources deployed, location, travel time, action time) of the routine, and translate these essential components into algorithmic parameters.

QUESTIONING UNDERLYING ASSUMPTIONS
During the design process, Metropol and Algo-Security interrogated the key assumptions built into existing routines. The game-theoretic approach to scheduling is based on a
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The algorithm’s performance. Clearly, the new algorithm provided a much easier way to randomize patrolling routines. But was it more effective than simply using Excel to randomize the patrol schedule and modifying it based on insights from patrol officers? To settle this debate, the team conducted a 21-day experiment and found that the productivity of officers who followed the schedule produced by the algorithm doubled in terms of the number of false verifications, warnings, and citations. Moreover, Metropol realized that while patrol coverage metrics are important, it is just as important to track which targets are not being covered. More generally, conversations about the philosophy underlying performance metrics helped Metropol clarify that their objective was to contain criminal activity rather than eliminate it altogether. This shift in focus made it clear that game-theoretic scheduling offers the best overall protection for society.

CONCLUSION
The Metropol case reveals the importance of the algorithm design process in facilitating organizational change. Although objectives and performance metrics helped Metropol clarify that their objective was to contain criminal activity rather than eliminate it altogether. This shift in focus made it clear that game-theoretic scheduling offers the best overall protection for society.

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