Singapore and the science of cities

How does one design a sustainable city fit for the future and its many challenges? Here we glimpse into the emerging science of cities, its tools and how Singapore is applying it in urban planning.

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In his influential book, "The Death and Life of Great American Cities," the late urban planner Jane Jacobs decried the "plague of urbanism," where people were trapped in a system that was too complex to understand. What she observed was that urban design must be simplified yet holistic, involving every agent - from government down to residents - so that they interact with their environment and the environment interacts with them. But this interaction is not only between people and their urban settings, but also between cities and their environment. The way cities interact with their environment can only be understood through the multidisciplinary approach to the challenges it poses. This approach involves the integration of environmental and social sciences, technological and engineering disciplines, and the use of data analytics and artificial intelligence. The multidisciplinary approach is a tool for understanding and managing complex urban systems.

THE MODE A SCIENCE OF CITIES

Professor Geoffrey West, a former president of the Santa Fe Institute, who is the current director of the World Cities Laboratory at New York University and Shanghai Jiao Tong University, explains this model in his book, "The Scale of Cities." He defines cities as a creature of the complexity of the interactions that take place within them. Cities are emergent systems where the behavior of each agent affects the behavior of others. This complexity is not just about the physical structure of cities but also about the social and economic interactions that take place within them. Cities are complex systems, and the interactions between their components are not independent but interdependent. This is why they are designed, and this understanding of their interdependence is crucial for designing sustainable cities.

THE LIMITS OF UNDERTHROUGH CONSIDERATION

A result of emergent, complex systems are many of today's behavior, emergence, emergence, and behavior is emergent. An emergent system can emerge unanticipated - and often undesirable - consequences. For example, in urban systems, "traffic jams are unforeseen," a situation where the interaction of all components leads to a new outcome that is not anticipated.

Traffic jams are the result of the unexpected consequences of the interactions of all components of the system. For example, in a city, the interactions of all the components lead to traffic jams, which is not anticipated. Similarly, in the case of climate change, the interactions of all components lead to its results, which are not anticipated.

INTERDISCIPLINARY APPROACH

It is important to look at complex systems not just in their component parts, but also together as a whole. In Singapore, the government has adopted a multidisciplinary approach to planning that involves the collaboration of different agencies. This approach has been successful in creating a vision for the city's future that is not only sustainable but also inclusive and equitable.

THE OUTLOOK FOR THE SCIENCE OF CITIES

The challenge of designing and planning sustainable cities is immense. The tools and techniques used in the science of cities are still evolving. Singapore is one of the few cities that have adopted a multidisciplinary approach to urban planning. The city's emphasis on innovation and data analytics is a testament to its commitment to sustainable development.

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