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Sommario/riassunto	The nature of distributed computation in complex systems has often been described in terms of memory, communication and processing. This thesis presents a complete information-theoretic framework to quantify these operations on information (i.e. information storage, transfer and modification), and in particular their dynamics in space and time. The framework is applied to cellular automata, and delivers important insights into the fundamental nature of distributed computation and the dynamics of complex systems (e.g. that gliders are dominant information transfer agents). Applications to several important network models, including random Boolean networks, suggest that the capability for information storage and coherent transfer are maximized near the critical regime in certain order-chaos phase transitions. Further applications to study and design information

structure in the contexts of computational neuroscience and guided self-organization underline the practical utility of the techniques presented here. .