



Nest architecture, communication networks, and the organization of work in ant colonies

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Social insect nests serve two overarching purposes: shelter and a space where individuals interact. Research thus far has primarily focused on describing nest structures, investigating the rules that shape nests, and the nest's function as shelter. Only recently research has begun to address the effects of nest architecture on the collective behavior of its inhabitants. Collective behavior emerges from interactions, that by definition are impacted by spatial constraints because spatial proximity is necessary for an interaction to occur. I will highlight some of empirical and theoretical research on the effects of architecture on collective behavior and outline new directions and frameworks for elucidating the effects of nest architecture on collective behavior and colony organization. Specifically, I will discuss the adoption of quantification methods from architects of human buildings and the use of multilayer networks to integrate space and social interactions in a single framework. By taking an interdisciplinary approach and exchanging ideas with social scientists, architects, and mathematicians, we can begin to answer new questions about the impact of nest architecture on the collective behavior of social insect colonies.