

From Rodent Utopia to Urban Hell: Experiments in Crowding Pathology

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The focus of this paper is on a series of experiments carried out by John B. Calhoun, an animal ecologist employed as a psychologist at the National Institute of Mental Health (NIMH) in Washington from 1956-1986. These were experiments on rats and mice into the pathological consequences of overcrowding. This work was very influential, the most notable of his publications being a paper entitled "Population Density and Social Pathology" in *Scientific American* in 1962, which became one of the most widely referenced papers in the history of psychology.

The aim of this paper is establish how, and how well, facts of crowding pathology, generated in the rodent laboratories of NIMH, travelled to an alternative experimental setting, the cities and institutions of environmental psychology, a field concerned explicitly with the effects of the physical environment on human behaviour. In so doing, the paper will assess the influence of experimental tools, standards and practices in determining this transfer of knowledge, and the ways in which social scientists interpreted the value of animal studies more generally.

Calhoun saw his rats and mice as models for man: social, psychological and physiological breakdown was a common response of social animals to crowded environments. Increased population density led to unwanted social contact, which, in turn, could lead to aggression, withdrawal, and sexual deviance. He responded to criticism that his rodent universes were unnatural environments, by emphasizing that this was precisely the point. Life in an unnatural urban environment of ever-increasing density could result in the complete devastation of humanity.

Calhoun's rats captured the imagination of a generation concerned with such issues as the population explosion, the quality of the environment, and the rise of urban violence. In one experimental universe, so many of humanity's social ills seemed confirmed and explained in relation to crowding. The attention here, however, is on a group of social scientists, environmental psychologists, who tried to develop the field of crowding research by identifying and replicating Calhoun's rodent pathologies among human populations.

However, in seeking to test Calhoun's findings on human beings, psychologists were faced with obvious ethical and practical restrictions. Psychologists therefore adopted a number of research strategies that they believed capable of uncovering the processes of crowding in human beings, in a way that was analogous to Calhoun's studies with rats and mice.

One strategy consisted of a series of human experiments in the laboratory directed by Jonathan Freedman, first at Stanford University in the 1960s, and then at Columbia. In these experiments, high school and university students were assigned a number of tasks. They completed these tasks in different sized rooms, ranging from large to small, the size of the group remaining constant. The experiments were designed to provide an objective measure of the degree to which density, that is, number of individuals per square unit area, determined levels of stress, discomfort, aggression, competitiveness, and

unpleasantness. However, as Freedman reported in his influential text of 1975, *Crowding and Behavior*, density had no appreciable negative effect among human beings. His work was influential, leading many to argue by the late 1970s, that while density may have been pathological among lower animals, human beings were capable of coping with crowding.

A second strategy consisted of a series of field studies carried out in the college dormitory by those such as Andrew Baum of Trinity College in Connecticut and later, the School of Medicine of the Uniformed Services University. Baum argued that Freedman's studies had failed to study conditions analogous to Calhoun's rats, in which individuals existed in crowded spaces for considerable periods of time. Turning to the college dormitory, Baum and his collaborators carried out detailed studies using a variety of tools, such as institutional records, interviews, observation, and physical examination. By comparing the results of a study of two different college dormitory designs, corridor and suite they provided evidence of both pathology and the potential for its amelioration.

Both strategies, experimental and field, were therefore determined to focus attention onto the psychology of physical space, and both sought to provide a more positive assessment of humanity's future in a crowded world. They both, however, used and adapted Calhoun's experiments in markedly different ways. Freedman defined Calhoun's experiments as studies of physical density on behavior, and in so doing, questioned the quality of Calhoun's experiments and their relevance to humanity. Baum, in contrast, recognized that Calhoun was concerned more with controlling the process of social interaction through design, allowing for the amelioration of crowding pathology. The paper will argue that these differing perspectives can be seen to stem from differing interests in the subject of crowding and different visions for the development of environmental psychology as a discipline.

For Freedman, through the carefully designed laboratory experiments of the psychologist, it was possible to gain a basic and objective understanding of crowding among human beings that could contribute to debates over population growth and urbanization, debates in which he was actively involved. Like many social scientists working in these areas, he was increasingly concerned to counter what he saw as undue pessimism of biologists. Population growth was indeed a problem, yet cities of high density could provide a solution to the ecological destruction wreaked by suburban sprawl.

Baum, in contrast, was involved directly in environmental design and public health. He was concerned to show how specific architectural interventions could reduce the stress of high-density situations. He was active in policy, his arguments applied to the design of college environments. Through focusing on social interaction as well as density, he retained a focus on crowding as a pathological response.

Finally, the paper will briefly assess the significance of both these strategies of human crowding research to the perception of Calhoun's work among the broader social science community. While many continued to see parallels between Calhoun's rats and mice and situations in which human beings existed as a caged and crowded animals, others celebrated Freedman's work for "clearing out the rats nest" from the study of the human condition in the urban environment.