



November 15, 2004

DEPARTMENT OF
PSYCHOLOGY

Biocomplexity Faculty Search Committee
c/o Prof. Rob de Ruyter van Steveninck
Department of Physics
Indiana University
Swain Hall West 117
Bloomington, IN 47405-7105

Re: V. Anne Smith

Dear Colleagues:

Victoria Anne Smith has asked that I write a letter of recommendation in application for the position in your department. I was her doctoral advisor from 1995-2001. Her thesis combined several different approaches to the study of social behavior ranging from controlled laboratory designs to semi naturalistic field conditions to the virtual environment of computer modeling. This synthesis reflected her strong interests in behavior and mathematical modeling. When she entered graduate school, the letters of recommendation from her math professors were almost more glowing than those of her behavior professors: they hated to lose a potentially brilliant (their words, not mine, but I do not disagree) mathematician. As it turns out, she is not lost to that field as her work now lies at the interface of behavior and computational modeling. Please contact Dr. Jeffrey Schank (jcschank@ucdavis.edu) for a more expert assessment of her modeling potential.

Anne is an outstanding student who has demonstrated the ability to achieve excellence in her work. In every project with which she has been involved, she has made original contributions that reveal a depth of thought and research skill that is outstanding. As a sign of that excellence, Anne won three fellowships in her first year, an NSF graduate fellowship, Dept. of Defense fellowship, and a Howard Hughes Predoctoral Fellowship.

Anne's dissertation project was ambitious but so is Anne. Her proposal capitalized effectively on both the faculty and unique physical resources available at Indiana. She used diverse techniques to approach the problem of social development. Perhaps the most ambitious project involved breaking from the tradition of studying songbirds in small groups or alone when attempting to understand how song is learned. Clearly birds do not learn song under such impoverished social circumstances in nature. But how can we measure more complex environments? Anne set up a "colony" of 75 cowbirds in an aviary the length of a football field, divided into five sections with shelters, trees, shrubs, grass, etc. She then set about learning to measure and analyze social assortment, e.g., how to characterize the social patterns that developed. The project was technically and conceptually challenging. The first installment of the work is now

published in *Animal Behaviour*. Once she measured assortment, she related it to functional measures of song development and courtship. She also obtained blood from all the birds and spent two winters at the Smithsonian working with Rob Fleischer to determine genetic relatedness in cowbirds.

While this project was going on, Anne became interested in genetic algorithms and agent-based modeling. She saw it as a way to enhance the behavioral work by looking at how social patterns change according to certain parameters in a model and then to set up real world tests of the model's solutions. I have found the modeling fascinating as a way to articulate hypotheses and rules to guide the lab's empirical work. Without Anne, we could not have taken this new and important step. She is now collaborating with a post doc in the lab teaching him what she knows and modeling how much data are needed to test various hypotheses about social effects. Anne is now studying and publishing on modeling in a more formal setting (translation: where there are people who know more than she does!). She has been attending various meetings and conferences on informatics and evolutionary modeling and has a good understanding of the diversity of approaches to be learned. She is extremely excited about this next step. She has been in a wonderful position in Jarvis's lab as she can combine many of her strengths, as can be seen from the publications with Jarvis.

I believe Anne has a potentially very important role to play in understanding complex systems, whether behaviorally based or otherwise. She is a very impressive individual with many talents. As one of the first generation of informaticians, she has had to create her own agenda for learning rapidly developing new techniques and answering new kinds of questions about complex systems. She was in our lab at a time of great transition in terms of the kinds of methods and measures and contexts we had chosen to use to study/model the process of cultural transmission and she has played a key role during this time period. I recommend her to you with great enthusiasm.

Sincerely,

A handwritten signature in cursive script that reads "Meredith West". The signature is written in black ink and is positioned above the printed name.

Meredith West

MJW/ds