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JOHN SIMMONS ANTROBUS

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John Antrobus founded the CUNY Experimental Cognition Program at City College in 1969 and developed it into the CUNY Cognitive Neuroscience Ph.D. Program in 2005. Although most of his career has been devoted to off-line cognitive processses, especially mindwandering and dreaming sleep, his primary interest in the past 10 years is in how utility (accurate recognition benefit minus cost) controls perception. He currently studies neural computation attractor utility models that represent how neuro-cognitive processes in one brain region bias those of other regions to maximize utility - and free up brain resources for off-line thought and imagery.

Personal Data

Born August 7, 1932, Peace River, Alberta, Canada
Naturalized U.S. Citizen, Dec. 21, 1962 #8524070,
Social Security No. 083-32-8363

Education

B.A. University of British Columbia, 1954
Ph. D. Columbia University, 1963

Recent Honors

Significant Early Contributor, Sleep Research Society Jubilee Award for founding and sustaining active scientists

Teaching

Emeritus Head Ph.D. Program in Cognitive Neuroscience	2005-
Professor of Psychology, The City College of New York	1970-2005
Head, Ph. D. Pgm. in Cognitive Neuroscience, Psychology, CUNY	2005
Head, Ph. D. Pgm. in Experimental Cognition, Psychology, CUNY	1969-74, 90-92, 95-05
Associate Professor of Psychology, The City College	1967-70

Research and Professional Vita

Membership in Professional Organizations

Director, Center for Research in Cognition and Affect, CUNY	1972
Fellow, New York Academy of Science	1970
Society for Psychophysiological Research	1967
American Association for the Advancement of Science	1963
Association for the Study of Sleep (formerly, APSS)	1963
Eastern Psychological Association	1962
American Psychological Association	1962
International Neural Network Society	1986
American Psychological Society	1989
American Acoustical Association (Associate)	1995
Cognitive Neuroscience Society	2003

Editorial Boards

Imagination, Cognition and Personality	1981
International Review of Mental Imagery	1981
Journal of Mind and Behavior	1979
Journal of Mental Imagery	1977
Journal of Sleep Reviews	1972
New Sciences of Dreaming - book	2005

Referee for

American Psychologist, Australian Research Grants Scheme, Behavioral and Brain Sciences, Cognitive Therapy and Research, International Journal of Psychophysiology, International Journal of Clinical and Experimental Hypnosis, International Journal of Cognitive Psychology, J. of Abnormal Psychology, Journal of Experimental Psychology, Journal of Personality and Social Psychology, Gerontology, Physiology and Behavior, Psychology and Aging, Psychological Review, Psychophysiology, Science, Sleep, Memory and Cognition, National Institute of Mental Health, National Science Foundation.

Certified Psychologist, New York State	1964-2006

Grants

PI, The Effect of Blood Alcohol Concentration On The Ability of Young Male Adults To Optimize Recognition By Using Contextual Cues Common To Current and Recent Targets, Neurobehavioral Research, Inc. Honolulu, HI	2009-
PI, CUNY, FRAP "Acoustic-phonetic speaker-specific categories"	1998-99
PI, CUNY, FRAP "Semantic Satiation"as a pre-semantic phenomenon	1995-96
PI, CUNY, FRAP, Dreaming and cognitive activation: REM/NREM and diurnal rhythms	1990-92
PI, CUNY, FRAP, EEG and sensory-motor performance in sleep	1987-88
PI, CUNY FRAP, The stream of thought	

and ambient auditory stimulation 1984-86

PI, CCNY, Thought & imagery: effect of cortical activation 1984-85

Co-PI with H. Ehrlichman. NIMH, Sleep mentation and hemispheric asymmetry 1974-77

Co-PI with A.M. Arkin and S. Ellman, NIMH, NREM mentation affected by REM deprivation. II 1971-74

Co-PI with A.M. Arkin, NIMH, NREM mentation affected by REM deprivation. I 1968-70

Co-PI with J.L. Singer, NIMH, Production and suppression of thought and imagery 1965-71

Co-PI with J.L. Singer, NIMH Dimensions of fantasy and imagination 1963-69

Publications

Books:

Antrobus, J. and Bertini, M. (Eds.).(1992). *The neuropsychology of sleep and dreaming sleep*. Hillsdale, N.J.:Erlbaum Associates.

Ellman, S., and Antrobus, J.S. (Eds.). (1991). *The mind in sleep.* (2nd edition). N. Y.: Wiley Interscience.

Salzinger, S., Antrobus, J., and Hammer, M., (Eds.). (1988) *Social connections from crib to college: Studies of the social networks of children, adolescents and college students.* Hillsdale, N.J.: Erlbaum Associates.

Salzinger, S., Antrobus, J. S., and Glick, J. (Eds.) (1980). *The ecosystem of the "sick" child*. N.Y.: Academic Press.

Arkin, A., Antrobus, J.S., and Ellman, S. (Eds.) (1978). *The mind in sleep.* Hillsdale, NJ: Erlbaum Associates.

Associates.

Recent Presentations:

Antrobus, J., Sundaram, B., Shono, Y., Duff, M., Farahani, R., Tarshish, C. (2011). A Connectionist Word Recognition Model of Implicit Priming of the Target and Foils. *36th Annual Interdisciplinary Conference*, Jackson Hole, WY, Jan 23-28.

Antrobus, J. & Monk, Meredith (2011) . Onstage conversation about how her brin produces her dreams and their significance to her life. *Brainwave. Rubin Museum*, Feb. 11.

Papers

Wamsley, E., Antrobus, J.A., Tucker, M.A., Hirota,Y., Ross, L., Doan, T., & Chaldadar, A. (2009). Differential cognitive, cognitive and affective characteristics of diurnal and REM-NREM brain activation rhythms. *Neurobiology of Learning and Memory.*

Betancourt, O. & Antrobus, J. (In preparation). Vowel Identification From Harmonic Contours of Vowel Centers Using an Automatic Algorithm That Eliminates Windowing Error.

Wamsley, E.J. & Antrobus, J.A. (2009). Sleep mentation in REM and NREM: A neurocognitive perspective. In: Squire, L.R. (Ed.). *Encyclopedia of Neuroscience, 8,* 1031-1036. Oxford Univ. Press.

Wamsley, E.J. & Antrobus, J.A. (2008). Homeostatis and circadian influences in dreaming. *International Journal of Dream Research, 1* (2), 7-12.

Wamsley, E.J. & Antrobus, J.A. (In press) How does the brain dream?: A dual rhythm neural network attractor model. In D Barrett & P. McNamara (Eds.) *The New Science of Dreaming*.

Wamsley, E.J., Hirota,Y., Tucker, M.A.,Smith, M.R., Doan, T., & Antrobus, J.S. (In press). Circadian and Ultradian Influences on Dreaming: A Dual Rhythm Model. *Brain Research Bulletin.*

Antrobus, J., Duff, M., Shono, Y., Sundaram, B., Farahani, R., & Numanbayraktaroglu, S. (2005). Rapid Accurate Recognition in Context: Repetition Priming with Visual Words Submitted for publication.

Wamsley, E., Antrobus, J.A. (In press). Book review of William Domhoff's "The Scientific Study of Dreams. *American Journal of Psychology,*

Smith, M., Antrobus, J.A., Gordon, E., Tucker, M.A., Hirota,Y., Wamsley, E., Ross, L., Doan, T., Chaldadar, & Emery, R. A.(2004). Motivation and Affect in REM Sleep and the Mentation Reporting Process Do active limbic structures in REM sleep create motivational relationships in dream characters? *Cognition and Consciousness*, *13*, 501-511.

Antrobus, J. (2001). Rethinking the fundamental processes of dream and sleep mentation production: Defining new questions, that avoid the distraction of REM versus NREM comparisons. *Sleep and Hypnosis, 3*, 1-3.

Antrobus, J. (2000). How does the dreaming brain explain the dreaming mind? *Behavior and Brain Sciences, 23,* 904-907.

Antrobus, J. (2000). *Theories of dreaming*. In M. H. Kryger, T. Roth & W. C. Dement , (Eds.). Principles and practice of sleep medicine, 3rd ed. Orlando, FL. W. B. Saunders

Antrobus, J. (2000). Theories of dreaming. In A. H. Forman (Ed.) *Encyclopedia of Psychology*, APA and Oxford Univ. Press.

Antrobus, J. & Conroy, D. (1999). Dissociated Neurocognitive Processes in Dreaming Sleep. *Sleep and Hypnosis*, 2, 105-111.

Antrobus, J. (1999). Toward a Neurocognitive Processing Model of Imaginal Thought. In, P. Salovey & Jefferson Singer, (Eds.). *At play in the fields of consciousness: Essay in honor of Jerome L. Singer*. (Pp. 1-28) Hillsdale, N. J.: Erlbaum.

Hong, C. C-H., Potkin, S. G., Antrobus, J. S., Dow, B. W., Callagan, G. M., & Gillin, J. C. (1997). REM sleep eye movement counts correlate with visual imagery in dreaming: A pilot study. *Psychophysiology, 34*, 371-381.

Pilotti, M., Antrobus, J. & Duff, M. (1997). The effect of presemantic acoustic adaptation on semantic satiation. *Memory and Cognition*, *25*, 305-312.

Betancourt, O. & Antrobus, J. (1996a). Vowel Identification From Harmonic Contours: Higher than Human Accuracy From Vowel Centers. *Proceedings of the International Neural Networks Society*.

Betancourt, O. & Antrobus, J. (1996b). Using natural harmonic as acoustic features in speech recognition: A vowel classification example. *Journal of the Acoustical Society of America, 99*, 2497.

Gertner, I. C., Lucci, S., & Antrobus, J. (1996). Acoustic signal analysis using Gabor-type windows. *Journal of the Acoustical Society of America, 99*, 2496.

Antrobus, J. (1995). The status of dream theory, 1995: A personal view. (1995). *Impuls: Tidsskrift for psykologi* [Norwegian Journal of Psychology], *3*, 56 - 61.

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perception. (Vol. 4, pp. 607-612). Proceedings of the World Congress on Neural Networks, San Diego, CA., June 7-11.

Antrobus, J., Kondo, T., Reinsel, R., & Fein, G. (1995). Summation of REM and Diurnal Cortical Activation. *Consciousness and Cognition*, *4*, 275-299.

Antrobus (1995).Thinking Away and Ahead. In H. Morowitz & J. L. Singer (Eds.) *The mind, the brain and complex adaptive systems*. Santa Fe: Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Volume *XXII*, 155-174.

Antrobus, J. (1994). Dreaming. *Encyclopedia of human behavior.* 2, 165-175. N. Y.: Academic Press.

Antrobus, J. (1994). Review of Freud's, *The Interpretation of Dreams. Dreaming, 4*, 58-60.

Antrobus, J. (1993). The dreaming mind/brain: Understanding its processes with connectionist models. In C. Cavallero, & D. Foulkes (Eds.) *Dreaming as cognition* (pp. 77 - 92). Hempstead, England: Simon & Schuster.

Antrobus, J. (1993). Dreaming: Could we do without it? In A. Moffitt, M. Kramer, & R. Hoffman, *The functions of dreaming* (pp 549-558). Albany, N. Y.: SUNY University Press.

Antrobus, J. (1993). Review of [C. Cavallero, P. Cicogna, V. Natale, M. Occonero, A. Zito, Slow wave sleep dreaming] *Sleep, 15*, 562-566; and in *World Federation of Sleep Research Society Newsletter, 2*, 38.

Antrobus, J. (1993). Characteristics of Dreams (Pp. 98-101). In, M. A. Carskadon (Ed.), *Encyclopedia of sleep and dreaming.* N.Y.: MacMillan.

Antrobus, J. (1993). Recall of Dreams. (Pp. 491-493). In, M. A. Carskadon (Ed.), *Encyclopedia of sleep and dreaming.* N.Y.: MacMillan.

Antrobus, J. (1993). Commentary on Horne [P. V. Horne. The nature of imagery] *Consciousness and Cognition, 2*, 58-82], 83-85.

Antrobus, J., Alankar, S., Deacon, D., & Ritter, W. (1992). Auditory Orienting: Automatic Detection of Auditory Change Over Brief Intervals of Time: A Neural Net Model of Evoked Brain Potentials, *3*, 775-779, *Proceedings of the International Joint Conference on Neural Networks,* Baltimore, Maryland, June, 7 - 11.

Fookson, J., and Antrobus, J.S. (1992). A connectionist model of bizarre thought and imagery. In, J. Antrobus, and M. Bertini, (Eds.). *The neuropsychology of dreaming sleep.* Hillsdale, N.J.:Erlbaum Associates.

Antrobus, J. (1991-92). Review of [David Koulak, To catch a dream: Explorations of dreaming, Albany, NY: State University of NY, 1990] In, *Imagination, Cognition and Personality*, *10,* 285-287.

Rosenblatt, S., Antrobus, J. and Zimler, J. P. (1992). The effect of post-awakening differences in activation on the REM/NREM report effect and on the recall of information from films. In, J. Antrobus, and M. Bertini, (Eds.). *The neuropsychology of dreaming sleep*. Hillsdale, N.J.:Erlbaum Associates.

Reinsel, R., Antrobus, J., and Wollman, M. (1992). Bizarreness in sleep and waking mentation. Antrobus, and M. Bertini, (Eds.). The neuropsychology of dreaming sleep. Hillsdale, N.J.: Erlbaum Associates.

Reinsel, R. and Antrobus, J. (1992). Performance on lateralized tasks after awakening from REM and Stage 2 sleep. In J. Antrobus, and M. Bertini, (Eds.). *The neuropsychology of dreaming sleep.*, Hillsdale, N.J.:Erlbaum Associates.

Antrobus, J. (1990-91). Review of [Erik T Mueller, Daydreaming in Humans and Machines: A Computer Model of the Stream of Thought. Norwood, N. J.: Ablex] In, *Imagination, Cognition and Personality, 10,* 285-287.

Antrobus, J. (1991). Dreaming: Cognitive processes during cortical activation and high afferent thresholds. *Psychological Review, 98,* 96-121.

Antrobus, J. (1990). The neurocognition of sleep mentation: phasic and tonic REM sleep. (pp. 1-24) In R. R. Bootzin, J. F., A. Kihlstrom, and D. L. Schacter (Eds.). *Sleep and cognition*. Washington, D.C.: American Psychological Association.

Antrobus, J., Bushell, C., Alankar, S., and Tartter, Vicky. (1990). FORMANTR1: A Neural Net detector of second formants using cochlear nucleus transformation of cochlear signals. *Proceedings of the 1990 Long Island I.E.E.E. Student Conference on Neural Networks*.

Antrobus. J. (1990). Review of The dreaming brain. *American Scientist*.

Rosa, D., Antrobus, J. and Reinsel, R. (1989). Investigating the left hemisphere and right hemisphere EEG differences in sleep. *Sleep Research, 18,* 22.

Kondo, T., Fein, G., and Antrobus, J. (1989). Late REM activation and sleep mentation. *Sleep Research, 18*, 147.

Reinsel, R., Antrobus, J. and Fein, G. Hemisphere differences and sums in sleep and waking: effects of state of consciousness, time of night, and electrode placement. *Sleep Research, 18*, 21.

Reinsel, R., Antrobus, J. and Fein, G. Lack of correlation between pre-awakening EEG and post-awakening task performance. *Sleep Research, 18,* 125.

Fookson, J. E., and Antrobus, J. A. (1988). Executive control in a PDP sytem: Automatization of task performance and mindwandering. *Neural Networks, 1*, Supplement 1, 174.

Antrobus, J. (1987-88). Review of, Dream life, wake life: The human condition through dreams. *Imagination, cognition and personality, 7*, 377-378.

Antrobus, J. (1987-88). Review of, The dream: 4000 years of theory and practice. *Imagination, cognition and personality, 7*, 97-98.

Antrobus, J. (1987-88). Review of, The nightmare: psychological and biological foundations. *Imagination, cognition and personality, 7*, 99-100.

Antrobus, J., Dobbelaer, R., and Salzinger, S. (1988). Social networks and college success, or, grade point average and the friendly connection. In, Salzinger, S., Antrobus, J., and Hammer, M., (Eds.). *Social connections from crib to college: Studies of the social networks of children, adolescents and college students.* Hillsdale, N.J.: Erlbaum Associates.

Wollman, M.C., and Antrobus, J.S. (1987). Cortical arousal and mentation in sleeping and waking subjects. *Brain and Cognition, 6*, 334-346.

Antrobus, J. (1987). Cortical hemisphere asymmetry and sleep mentation. *Psychological Review, 94,* 359-368.

Antrobus, J., Hartwig, P., Rosa, D., Reinsel, R., and Fein, G. (1987). Brightness and clarity of REM and NREM imagery: photo response scale. *Sleep Research, 16,* 240.

Antrobus, J., Rosa, D., Antrobus, N., and Spielman, A. (1987). Somatic stimulation and sleep: Pulsed waterbed mattress. *Sleep Research, 16,* 246.

Reinsel, R., and Antrobus, J. (1987). Performance on lateralized cognitive and psychomotor tasks after waking, REM and stage 2 sleep. *Sleep, 16*, 238.

Antrobus, J., & Reinsel, R. (1986-87). [Review of E.L. Rossi's, *Dreams and the growth of personality: Expanded awareness in psychotherapy]. Imagination, Cognition and Personality, 6,* 384-386.

Antrobus, J. (1986) Dreaming: Cortical activation and perceptual thresholds. *The Journal of Mind and Behavior, 7,* 193-212.

Reinsel, R., Wollman, M., and Antrobus, J. (1986). Effects of environmental context and cortical activation. *The Journal of Mind and Behavior, 7,* 259-276.

Wollman, M.C., and Antrobus, J.S. (1986). Sleeping and waking thought: effects of external stimulation. *Sleep, 9*, 438-448.

Antrobus, J.S. (1986). Rapid eye movements and the cerebellum. Commentary on Hobson, J.A., Lydic, R., and Bagdoyan, H.A. Evolving concepts of sleep cycle generation. *The Behavioral and Brain Sciences, 9*, 400-401.

Antrobus, J.S. (1985). [Review of Horowitz, M. Image formation and psychotherapy.] *Contemporary Psychology*,

Antrobus, J.S. (1984-85) [Review of D.J. Hufford's The terror that comes by night: an experience-centered study of supernatural assault traditions.] *Imagination, Cognition and Personality, 4*, 225-227.

Ehrlichman, H., Antrobus, J.S., and Weiner, M. (1985). EEG asymmetry and sleep mentation during REM and NREM sleep. *Brain and Cognition, 4*, 477-485.

Fein, G., Feinberg, I., Insel, T.R., Antrobus, J.S., Price, L.J., Floyd, T.C., and Nelson, M.A. (1985). Sleep mentation in the elderly. *Psychophysiology, 22*, 218-225.

Reinsel, R., Antrobus, and Wollman, M. (1985) The phasic-tonic difference and the time of night effect. *Sleep Research, 14*, 10.

Antrobus, J.S., Reinsel, R., and Wollman, M. (1984) Dreaming: Cortical activation and perceptual thresholds: more evidence. *Sleep Research, 13*, 101.

Wollman, M., and Antrobus, J.S. (1984a). The effect of external stimulation on length of thematic segments in mentation reports from sleeping and waking subjects. *Sleep Research, 13*, 107.

Wollman, M., and Antrobus, J.S. (1984b). Spectral frequency analysis of EEG data from waking and REM sleep: comparison of electrode placements, EEG bandwidths and time window. *Sleep Research, 13,* 30.

Wollman, M., and Antrobus, J.S. (1984c). Hemispheric asymmetry and measures of visual and verbal imagery in sleeping and waking subjects. *Sleep Research, 13*, 100.

Wollman, M., and Antrobus, J.S. (1984d). The relationship between cortical arousal and report length in waking and REM sleep. *Sleep Research, 13*, 106.

Stein, R., Antrobus, J.S., Lee, B., and Potash, H. (1984). The effect of somatic stimulation on sleep onset. *Sleep Research, 13*, 108. Also presented at the Berkshire Conference on Behavior Analysis and Therapy, Oct. 12, 1985.

Reinsel, R., Wollman, M., and Antrobus, J.S. (1984). Bizarreness: a function of report length in waking, REM and stage 2 reports. *Sleep Research, 13*, 105.

Antrobus, J.S. (1984). Distinguishing waking from sleeping mentation. *Association for the Study of Dreams Newsletter, 1*, 8.

Antrobus, J.S. (1983). Mental processes during sleep and waking. Sleep Research, 12, 25-27.

Antrobus, J.S. (1984) The hemisphere controversy: resolution of a paradox. In Bosinelli, M., and Cicogna, P. (Eds.). *Psychology of dreaming* (pp. 137-143). Bologna, Italy: Cooperative Libraria Universitaria Editrice Bologna.

Antrobus, J.S. (1983). REM and NREM sleep reports: comparison of word frequencies by cognitive classes. *Psychophysiology, 20*, 562-568.

Antrobus, J.S., Ehrlichman, H., and Wollman, M. (1983) The REM report and the EEG: Cognitive processes associated with hemispheres, their ratios and sums, preawakening trends and cross night contrasts, and EEG window duration. In Koella, W.P. (Ed.) *Sleep 82*, (pp. 49-51). Basel: Karger.

Wollman, M.C., Reinsel, R., and Antrobus, J.S. (1983). Predictability of speech generated from wakefulness and after awakenings from REM and stage 2 sleep. In Koella, W.P. (Ed.), *Sleep 82*, (pp. 378-382). Basel: Karger.

Antrobus, J.S. (1983). *[Review of Foulkes, D. Childrens' dreams: Longitudinal studies]. Imagination, Cognition and Personality, 3*.

Sewitch, D.E., Pollack, C.P., Weitzman, E.D., Antrobus, J.S., and Clark, W.C. (1982). Sleep-wake perception in normal sleep. *Sleep Research, 11*, 95.

Sewitch, D.E., Pollack, C.P., Weitzman, E.D., Antrobus, J.S., and Clark, W.C. (1982). The alteration of sleep-wake perception by sleep and wake biasing suggestions and partial feedback given to normal sleepers. *Sleep Research, 11*, 96.

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Antrobus, J.S. (1981). Discussion of [Hilgard, E. Imagination in Western/American Psychology]. *Journal of Mental Imagery, 5*, 24-26.

Antrobus, J.S. (1981). Discussion of [Kosslyn, S.M. The demystification of imagery.] *The Behavioral and Brain Sciences*,

Antrobus, J.S., Ehrlichman, H., and Weiner, M. (1980). The "dream" report: attention, memory, functional hemispheric asymmetry and memory organization. In Fishbein, W. (Ed.). *Sleep, dreams and memory.* (pp. 135-146). N.Y.: Spectrum.

Antrobus, J.S., and Saul, H. (1980). Sleep onset: subjective, behavioral and electroencephaographic comparisons. *Waking and Sleeping, 4*, 259-270.

Salzinger, S., Antrobus, J.S., and Glick, J. (1980). The ecosystem of the "sick" kid. In, Salzinger, S., Antrobus, J.S., and Glick, J. (Eds.) (1980). *The ecosystem of the "sick" child*. (pp. 1-16). N.Y.: Academic Press.

Salzinger, S., Antrobus, J.S., and Glick, J. (1980). Epilogue In, Salzinger, S., Antrobus, J.S., and Glick, J. (Eds.) (1980). *The ecosystem of the "sick" child* (pp. 291-292). N.Y.: Academic Press.

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Antrobus, J.S., Fein, G., Jordan, L., Ellman, S.J., and Arkin, A.M. (1978). Measurement and design in research on sleep reports. In Arkin, A., Antrobus, J.S., and Ellman, S. (Eds.) *The mind in sleep.* (pp. 19-58). Hillsdale, N.J.: Erlbaum Associates.

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Antrobus, J.S. (1976). The private life of an eyeball watcher, or, where is the dream? In, M. Siegal, and P. Ziegler (Eds.), *Psychological Research: The Inside Story* (pp. 291-305). N.Y.: Harper and Row.

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