

# **HBES 2002**

The Human Behavior and Evolution Society

14th Annual Meeting

June 19 - 23, 2002

Rutgers, the State University of New Jersey

New Brunswick, New Jersey

Sponsored by the Department of Anthropology

and the Center for Human

Evolutionary Studies, Rutgers University

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## Acknowledgments

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Local Host and Program Chair: Lee Cronk

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### Program committee:

Joe Carroll  
Frank Marlowe  
Linda Mealey  
Jeffry Simpson

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### Rutgers Conference Services:

Conference Coordinator: Jacqueline Erel  
Assistant Conference Coordinator: Robyn Auerbach  
College Avenue Conference Staff Supervisor: Anthony D'Agostino  
Manager: Claudia Farris

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Registration Assistants: Bria Dunham and Lauren Zizza  
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Program Assistant: Amy Jacobson  
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Session assistants: Loretta Dibble, Nicole Griffin, Gregory Lindemann,  
Alisa Matlin, Daniel McNulty, Alison Milroy, Sarah Schmidt, Kim Shah,  
Sunday Smith, Taiisa Telesford.

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The meeting organizers would like to thank the Ann and Gordon Getty Foundation, the Center for Human Evolutionary Studies, and Rutgers Department of Anthropology for their financial support and anthropology department staff members Janet Bascom, Vicki Rimes, and Linda Quaglieri for their logistical assistance.

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## QUICK TIMETABLE

## Wednesday, June 19

- Check-in and on-site registration, Brower Commons
- 7pm: Reception at the Zimmerli Art Gallery

## Thursday, June 20

- 07:00–08:30 AM Breakfast
- 08:30–08:35 AM Welcoming remarks by Lee Cronk
- 08:35–09:35 AM Morning plenary by Alice Eagly: *A Cross-Cultural Analysis of the Behavior of Women and Men: Implications for the Origins of Sex Differences*. Introduced by Anne McGuire.
- 09:35–10:00 AM Refreshments
- 10:00–12:00 PM Morning Sessions
- 12:00–01:15 PM Lunch
- 12:00–01:15 PM Publications Committee Meeting, Nova Terra
- 01:30–02:30 PM Afternoon plenary by Allan Mazur: *Biosociology of Dominance and Defense*. Introduced by Ulrich Mueller.
- 02:30–03:00 PM Refreshments
- 03:00–04:40 PM Early Afternoon Sessions
- 04:40–04:55 PM Interlude
- 04:55–06:15 PM Late Afternoon Sessions
- 06:15–07:30 PM Dinner
- 06:15–07:30 PM Executive Council Meeting, Brower Commons Room D

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- 08:30AM–01:30 PM Rotating Poster Sessions
  - 01:30PM–06:30 PM Main Lounge, Rutgers Student Center
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- 07:00PM–09:00 PM Full Poster Session
- 07:00PM–09:00 PM Atrium, Rutgers Student Center

## FRIDAY, JUNE 21

- 07:00–08:30 AM Breakfast
- 08:30–08:35 AM Announcements
- 08:35–09:35 AM Morning plenary by Tim Birkhead: *Post-copulatory Sexual Selection*. Introduced by Helen Fisher.
- 09:35–10:00 AM Refreshments
- 10:00–12:00 PM Morning Sessions
- 12:00–01:15 PM Lunch
- 12:00–01:15 PM Graduate Student Meeting, Brower Commons
- 01:30–02:30 PM Afternoon plenary by Stephen Stich and Ron Mallon: *Odd Couple: The Compatibility of Social Construction and Evolutionary Psychology*. Introduced by Robert Trivers.
- 02:30–03:00 PM Refreshments
- 03:00–04:40 PM Early Afternoon Sessions
- 04:40–04:55 PM Interlude
- 04:55–06:15 PM Late Afternoon Sessions
- 06:15–06:45 PM Pre-banquet cocktails served, Brower Commons

- **06:45-08:30 PM** Banquet food served, Brower Commons
- **08:30 PM** Keynote by Robin Fox and Lionel Tiger: *Sex, Sects, Guns, and Butter*.  
Introduced by William Irons

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- **08:30AM-01:30 PM** Rotating Poster Sessions
  - 01:30PM-06:30 PM** Main Lounge, Rutgers Student Center

### SATURDAY, JUNE 22

- **07:00-08:30 AM** Breakfast
- **08:30-08:35 AM** Announcements
- **08:35-09:35 AM** Morning plenary by Wulf Schiefenhoewel: *Human Birth: Cultural and Evolutionary Perspectives*. Introduced by Percy Rohde.
- **09:35-10:00 AM** Refreshments
- **10:00-12:00 PM** Morning Sessions
- **12:00-01:15 PM** Lunch
- **01:30-02:30 PM** Business Meeting, Brower Commons
- **01:30-02:30 PM** Afternoon plenary by Robert Hinde: *The Bases of Moral Codes*. Introduced by Linda Mealey.
- **02:30-03:00 PM** Refreshments
- **03:00-04:40 PM** Early Afternoon Sessions
- **04:40-04:55 PM** Interlude
- **04:55-06:15 PM** Late Afternoon Sessions
- **07:00 PM** Barbecue, Voorhees Mall.

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- **08:30AM-01:30PM** Rotating Poster Sessions
  - 01:30AM-06:30PM** Main Lounge, Rutgers Student Center

### SUNDAY, JUNE 23

- **07:00-08:30 AM** Breakfast
- **08:30-08:35 AM** Announcement of prize winners by Janel Tortorice
- **08:35-09:35 AM** Morning plenary by Mark G. Frank: *Not All Lies Are Created Equal: Human Lying and Lie Catching*. Introduced by Robert Kubey.
- **09:35-10:00 AM** Refreshments
- **10:00-12:00 PM** Morning Sessions
- **12:00-01:15 PM** Lunch; followed by check-out

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- **08:30AM-01:30PM** Rotating Poster Session
  - Main Lounge, Rutgers Student Center

## Detailed timetable

**NI = Paper Entered In New Investigator Competition**

**PD= Paper Entered In Post Doctoral Competition**

**All plenary lectures and the keynote lecture will be held in the Multi-Purpose Room of the Rutgers Student Center**

### Wednesday, June 19

- Check-in and on-site registration, Brower Commons
- **7pm:** Reception at the Zimmerli Art Gallery

### THURSDAY, JUNE 20

- **07:00–08:30 AM** Breakfast
- **08:30–08:35 AM** Welcoming remarks by Lee Cronk
- **08:35–09:35 AM** Morning plenary by Alice Eagly: *A Cross-Cultural Analysis of the Behavior of Women and Men: Implications for the Origins of Sex Differences*. Introduced by Anne McGuire.
- **09:35–10:00 AM** Refreshments

#### MORNING SESSIONS

- **Sex differences; Chair: Anne M. McGuire**  
Multi-Purpose Room A, Rutgers Student Center
  - **10:00 AM** McGuire *Two Million Years Of Paternal Investment: The Decline (And Rise?) Of Sex Differences In Mating Psychology*
  - **10:20 AM** Colarelli et al. *Sex Differences In Reactions To Threats To Resources, Status, And Personal Safety*
  - **10:40 AM** Choi and Silverman *Processes Underlying Sex Differences In Route-Learning Strategies In Children And Adolescents*
  - **11:00 AM** Kruger and Nesse *The Risk Of Being Male: The Sexual Mortality Ratio For Leading Causes Of Death In The United States*
  - **11:20 AM** Benenson *Similarities Between Sex Differences In Social Organization In Chimpanzees And Human Children*
  - **11:40 AM** Allen et al. *Sex Differences In Memory For Cheaters In Mating Situations*
- **Signaling; Chair: Holly Nelson**  
Multi-Purpose Room B, Rutgers Student Center
  - **10:00 AM** Price *Pro-Community Altruism And Social Status In A Shuar Village NI*
  - **10:20 AM** Plourde *Prestige Goods And The Evolution Of Sociopolitical Complexity*
  - **10:40 AM** Goldberg *Costly Signaling In The Jewish Context*
  - **11:00 AM** Sosis and Ruffle *Religious Ritual And Cooperation: Testing For A Relationship On Israeli Religious Kibbutzim*
  - **11:20 AM** Flamson *When A Monkey Falls In The Forest, Does Anyone Laugh: The Evolution Of Humor And Laughter*
  - **11:40 AM** Nelson *Symbolism And Strategy: Mutual Grooming In Courtship And Mating*
- **Kin interactions; Chair: Debra Lieberman**  
Room 411, Rutgers Student Center
  - **10:00 AM** Jones *The Generative Psychology Of Kinship: Cross-Cultural Evidence*
  - **10:20 AM** Brown *Rethinking The Social Support Hypothesis: Insights From An Evolutionary Perspective PD*

- **10:40 AM** Webster *Relatives Of Direct Lineage Are Favored In A Resource Allocation Task NI*
- **11:00 AM** Segal *Twin Film Analysis Of Cooperation And Competition*
- **11:20 AM** Lieberman *Factors Governing The Development Of Moral Sentiments Regarding Third Party Sibling Incest NI*
- **11:40 AM** Scheidel *How To Be Incestuous: Towards An Explanation Of Full Sibling Marriage In Roman Egypt*
- **Law, power, and multilevel society; Chair: Owen D. Jones**  
Brower Commons ABC
  - **10:00 AM** Rubin *Human Evolution And Political Power*
  - **10:20 AM** Dwyer and Colarelli *No-Fault Divorce Legislation And Reproductive Self-Interests Of Lawmakers*
  - **10:40 AM** Wada *Working Out On Your Fitness? Great... But How Is Our Law Doing? -- "LAW And BIOLOGY" Analysis Of Japanese Laws*
  - **11:00 AM** O’Gorman and Wilson *Policing As A Group-Adaptive Mechanism To Facilitate Social Norms: An Agent-Based Model.*
  - **11:20 AM** Kniffin and Wilson *Applications Of Multilevel Selection Theory To Human Business Organizations*
  - **11:40 AM** Jones *Prospects For A Biolegal History*

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**INTERMISSION**

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- **12:00 PM** Lunch, Brower Commons
- **1:30 PM** Publications Committee Meeting to be held at Nova Terra, 78 Albany Street, New Brunswick
- **1:30 PM** Afternoon plenary: Allan Mazur: *Biosociology of Dominance and Defense*. Introduced by Ulrich Mueller.
- **2:30 PM** Refreshments

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**EARLY AFTERNOON SESSIONS**

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- **The dark side of human mating; Organizers and Chairs: Joshua D. Duntley and David M. Buss**  
Multi-Purpose Room A, Rutgers Student Center
  - **3:00 PM** Vasquez and Figueredo *The “Dark Side” Of Assortative Mating: The “Genetic Dregs” Hypothesis*
  - **3:20 PM** Duntley and Buss *Stalking As A Strategy Of Human Mating*
  - **3:40 PM** Palmer et al. *Human Rape: Adaptation Or By-Product? Revisited*
  - **4:00 PM** Shackelford *Are Young Women The Special Targets Of Rape-Murder? PD*
  - **4:20 PM** Buss and Duntley *Mating Motives For Murder*
- **Cooperation: new theory and models; Chair: Karthik Panchanathan**  
Multi-Purpose Room B, Rutgers Student Center
  - **3:00 PM** Roberts *The Stakeholder Theory Of Altruism*
  - **3:20 PM** Panchanathan *Social Networks And The Evolution Of Indirect Reciprocity*
  - **3:40 PM** Tooby and Cosmides *The Evolution Of Collective Action: An Adaptationist Dissection*
  - **4:00 PM** Aktipis *Behavioral And Cognitive Pathways To The Evolution Of Cooperation*
  - **4:20 PM** Cory *Hamilton's Rule, Evolved Brain Structure, And The Conflict Systems Neurobehavioral (CSN) Model: Linking Evolutionary Psychology And Evolutionary Neuroscience*
- **Mothers, infants, and the origin of the family; Chair: Marilee Monnot**  
Room 411, Rutgers Student Center
  - **3:00 PM** Schlegel *The Origin Of The Human Family*



- **3:20 PM** Dissanayake *Is Early Mother-Infant Interaction A Ritualized Behavior?*
- **3:40 PM** Monnot *Affective Prosody & Infant-Directed Speech: Evidence For A New 'Basic' Emotion PD*
- **4:00 PM** Fidler *Parental Vocalizations And Perceived Maturity In Down Syndrome PD*
- **4:20 PM** Alcorta *The Primacy Of Hominid "Secondary" Altriciality NI*
- **Foraging and foragers of various kinds; Chair: Lawrence Sugiyama**  
Brower Commons ABC
  - **3:00 PM** Sandstrom *Information Foraging In Human Behavioral Ecology: Using Optimal Foraging Theory To Understand Scholars' Decision Making PD*
  - **3:20 PM** Spink and Cole *Towards An Evolutionary Understanding Of Everyday Life Information Seeking*
  - **3:40 PM** Sugiyama and Chacon *Foraging Skill Acquisition And Life History Evolution: Age Related Foraging Tradeoffs Among Shiwiar And Yora Horticulturalist-Foragers*
  - **4:00 PM** Thompson *Human Territoriality Is Like An Ogre – It Has Layers*

## INTERLUDE

## LATE AFTERNOON SESSIONS

- **Male attractiveness and female choice; Chair: John Marshall townsend**  
Multi-Purpose Room A, Rutgers Student Center
  - **4:55 PM** Townsend *Male Sexual Attractiveness: The Single Best Predictor*
  - **5:15 PM** Mueller and Mazur *Further Evidence For Male Tallness Being Sexually Selected*
  - **5:35 PM** Feinberg and Jacobson *Human Mate Choice And Female Preferences For Male Voices: Correlations With 2D:4D And Sexual Behavior*
- **Commitment; Organizers and Chairs: Randolph Nesse, Lynn O'Connor, and William Irons**  
Multi-Purpose Room B, Rutgers Student Center
  - **4:55 PM** Nesse and Kruger *Measuring Commitment: Methods, Importance And Correlates*
  - **5:15 PM** O'Connor and Berry *Interpersonal Guilt, Psychopathology And Anxious Temperament: An Evolutionary Perspective*
  - **5:35 PM** Irons and Chagnon *The Unseen Order: How Religion Works As A Hard-To-Fake Sign Of Commitment*
  - **5:55 PM** Bressler and Sosis *Cooperation And Commune Longevity: A Test Of The Costly Signaling Theory Of Religion*
- **Cognitive architecture I; Chair: Thomas E. Dickins**  
Room 411, Rutgers Student Center
  - **4:55 PM** Barrett *Enzymatic Computation: A New Model Of Cognitive Modularity*
  - **5:15 PM** Boster *Domain Specific Modules For Biological Similarity Judgment: A Case For Generality.*
  - **5:35 PM** MacDonald and Chiappe *The Evolution Of General Intelligence: The Roles Of Working Memory And Analogical Reasoning In Solving Novel Problems*
  - **5:55 PM** Dickins *What Can Evolutionary Psychology Tell Us About Cognitive Architecture? PD*
- **Psychopathology I; Chair: Charles Crawford**  
Brower Commons ABC
  - **4:55 PM** Pillman *Risk Taking, Gender And DSM-IV Personality Disorders*
  - **5:15 PM** Hagen and Barrett *Is Postpartum Depression An Adaptation? Evidence From Shuar Mothers.*

- **5:35 PM** Crawford and Salmon *The Reproductive Suppression Hypothesis And Anorexic Behavior*
- **5:55 PM** Juda *Female Dieting As A Result Of A Lack Of Social Support: An Evolutionary Approach NI*

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**Thursday Evening Activities**

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- **7:00 PM** Full Poster Session  
Atrium, Rutgers Student Center

**FRIDAY, JUNE 21**

- **8:30–08:35 AM** Announcements
- **8:35–09:35 AM** Morning plenary by Tim Birkhead: *Post-copulatory Sexual Selection*. Introduced by Helen Fisher.
- **9:35–10:00 AM** Refreshments

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**MORNING SESSIONS**

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- **New developments in biology; Chair: Robert L. Trivers**  
Multi-Purpose Room A, Rutgers Student Center
  - **10:00 AM** Trivers *What's New On B Chromosomes?*
  - **10:20 AM** Camperio, Ciani and Corna *A Family Tree Analysis Shows An Increase Of Reproductive Success In Heterosexual Carriers Of An X Chromosome Factor Partially Associated With Male Homosexuality*
  - **10:40 AM** Reese *Mutation Repair: A Proposed Mechanism That Would Enable Complex Genomes To Better Resist Mutational Entropy, And Which Suggests A Novel Function For Meiosis NI*
  - **11:00 AM** Rushton *Evolution Of Social Responsibility: A Twin Study*
  - **11:20 AM** Pound *Social And Behavioural Influences On Human Semen Parameters*
  - **11:40 AM** Steklis *Nature In Nurture: The Construction Of The Human Environment And Culture*
- **Reproductive strategies; Chair: Donna L. Leonetti**  
Multi-Purpose Room B, Rutgers Student Center
  - **10:00 AM** Garver et al. *Women's Preferences for Male Behavioral Displays Change Across the Cycle*
  - **10:20 AM** Leonetti et al. *Cooperative Breeding Effects Among The Matrilineal Khasi Of N. E. India*
  - **10:40 AM** Schmitt *Patterns Of Sociosexuality Across 52 Nations: Do Sex Ratios, Fertility Rates, Resource Levels, Pathogen Loads, And Other Environmental Stressors Adaptively Moderate Human Reproductive Strategies?*
  - **11:00 AM** Cvorovic *A Pilot Study: Sexual And Reproductive Strategies Among Serbian Gypsies*
  - **11:20 AM** Cristiani *Female Adolescents' Strategic Behavior In Romantic Relationships*
  - **11:24 AM** Waynforth and Waynforth *Minding The Baby And Demographic Transition*
- **Social perception and misperception; Organizer and Chair: Martie G. Haselton**  
Room 411, Rutgers Student Center
  - **10:00 AM** Scheyd *Estimating The Sexual Intentions Of Others: The Mediating Role Of Physical Attractiveness*
  - **10:20 AM** Smurda and Haselton *Effects Of Relationship Status And Sexual Strategy On Perceptions Of Intrasexual Rivals' Sexual Intent: Preliminary Evidence For The "Interloper Effect"*

- **10:40 AM** Andrews *Attributing Honesty To A Signal Purporting To Reveal Mental State*
- **11:00 AM** Franklin and Penton-Voak *Facial Preferences Change With Levels Of An Ovulation-Regulating Hormone, Thereby Illuminating Tradeoffs Between Symmetry And Degree Of Masculinization*
- **11:20 AM** Ketelaar *Perception Of Gains & Losses: Adaptive Designs And Bird-Brained Utility Functions*
- **11:40 AM** Kirkpatrick *Discussant*
- **Culture and other emergent phenomena; Chair: Robert Auger**  
Brower Commons ABC
  - **10:00 AM** Auger *Major Transitions In Technology*
  - **10:20 AM** Corning *Synergy Goes To War: An Evolutionary Theory Of Collective Violence*
  - **10:40 AM** Wallace and Wallace *Rubbernecking Sociobiology's Wreck: Towards A Cultural Immunology*
  - **11:00 AM** Steadman et al. *Taking The Magic Out Of Magic: A New Evolutionary Approach To Religion*
  - **11:20 AM** Kameda and Nakanhishi *Does Social/Cultural Learning Increase Human Adaptability: Roger's Question Revisited.*
  - **11:40 AM** Newson *Mothers Know Best When It Comes To Inclusive Fitness **NI***

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**INTERMISSION**

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- **12:00 PM** Lunch, Brower Commons
- **1:30 PM** Afternoon plenary by Stephen Stich and Ron Mallon: *Odd Couple: The Compatibility of Social Construction and Evolutionary Psychology.* Introduced by Robert Trivers.
- **2:30 PM** Refreshments

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**EARLY AFTERNOON SESSIONS**

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- **Intrasexual competition; Chair: Dennis McBride**  
Multi-Purpose Room A, Rutgers Student Center
  - **3:00 PM** McBride and Tennyson *Hemline Trends Explained As A Product Of Female-Female Competition*
  - **3:20 PM** Rucas et al. *Mate Competition In The Medium Of Television: An Evolutionary Analysis Of Intrasexual Competition*
  - **3:40 PM** Egan et al. *Sensational Interests As A Form Of Intrasexual Competition*
  - **4:00 PM** Salmon et al. *The Impact Of Female-Female Competition And Male Attention Stress On Measures Of Body Image And Dieting.*
  - **4:20 PM** Faer et al. *Anorexia And Bulimia Nervosa: Female Competition For Mates Or For Status?*
- **Symmetry; Chair: Steven W. Gangestad**  
Multi-Purpose Room B, Rutgers Student Center
  - **3:00 PM** Mealey et al. *Do Parents Show Favoritism For Their Symmetric Children?*
  - **3:20 PM** Jacobson and Trivers *Attractiveness And Potential As A Friend In Jamaican Children As A Function Of Bodily Symmetry Of Chooser And Chosen.*
  - **3:40 PM** Ellis *Correlations Between Symmetry And Sperm Count, Mobility, And Morphology In A Sample Of Boston Men*
  - **4:00 PM** Prokosch *Evidence For A General Fitness Factor: Psychometric Estimates Of G Predict Correlations With Body Symmetry*
  - **4:20 PM** Gangestad et al. *Preferences For The Scents With Symmetry And Features Of The Major Histocompatibility Complex (MHC): Testing Models Of Sexual Selection*

- **Philosophy of evolutionary psychology; Chair: Jeffrey A. Kurland**  
Room 411, Rutgers Student Center
  - **3:00 PM** Speelman *Evaluating Evolutionary Psychology: A Perspective From Contemporary Philosophy Of Science* **NI**
  - **3:20 PM** West *The Use Of Artificial Neural Networks To Find Human Nature* **NI**
  - **3:40 PM** Koppl *What Is Verstehen?*
  - **4:00 PM** Kaag et al. *The Evolution Of Philosophers: A Darwinian Perspective On Academics*
  - **4:20 PM** Russell *The Future Of Human Evolution*
- **Psychopathology II; Chair: Viviana A. Weekes-Shackelford**  
Brower Commons ABC
  - **3:00 PM** Keller and Nesse *Subtypes Of Low Mood Provide Evidence For Their Adaptive Significance*
  - **3:20 PM** Berry et al. *Chimpanzee Psychopathology And Subjective Well-Being*
  - **3:40 PM** Masters *Behavioral Effects Of Water Toxicity*
  - **4:00 PM** Mysterud and Polesynski *Expanding Evolutionary Psychology: Violence As A Case*
  - **4:20 PM** Weekes-Shackelford and Shackelford *Methods Of Murder By Stepmothers And Genetic Mothers*

## Interlude;

## Late afternoon sessions

- **Status and dominance; Chair: Jeffrey K. Snyder**  
Multi-Purpose Room A, Rutgers Student Center
  - **4:55 PM** Snyder and Kirkpatrick *Opposite Sex Mating Preferences: The Roles Of Dominance And Prestige*
  - **5:15 PM** Jackson *Male Physical Dominance As An Intensifier Of Mate Attractiveness*
  - **5:35 PM** Gross and Mueller *Personal Dominance As A Predictor Of Reproductive Success*
  - **5:55 PM** Butovskaya and Levashova *Walking Speed And Socioeconomic Status: Cross-Cultural Analysis*
- **Gossip, rumor, and information; Chair: Hank Davis**  
Multi-Purpose Room B, Rutgers Student Center
  - **4:55 PM** De Backer *Gossip As A Social Bonding And Control System*
  - **5:15 PM** Nakamaru and Kawata *Evolution Of Rumor And Its Role Of Discriminating Defectors.*
  - **5:35 PM** Davis and McLeod *Woman Murders Baby & Eats Family Dog: An Evolutionary Perspective On Sensational News*
- **Cognitive architecture II; Chair: Ralph Hertwig**  
Room 411, Rutgers Student Center
  - **4:55 PM** Sherman *The Lazy Gene: Filling in the Missing Theoretical Links in the Evolution of Cognitive Architecture*
  - **5:15 PM** Ainslie and Monterosso *Self As A Population Of Reward-Selected Processes: Experimental Evidence For The Emergence Of Self-Control*
  - **5:35 PM** New *An Evolved Bias In Visual Attention: The Preferential Detection And Monitoring Of Animate Objects In Complex Scenes.*
  - **5:55 PM** Hertwig *The Benefits Of Mental Bounds: Why Bigger May Not Be Better*
- **Darwinian epistemologies in literary criticism; Organizer and Chair: Lisa Zunshine**  
Brower Commons ABC
  - **4:55 PM** Boyd *Evolutionary Approaches To Literature: A Model*
  - **5:15 PM** Zunshine *"If I Knew But Who I Were . . .": A Cognitive Perspective On The Literary Motif Of The (Comically) Transferred Self-Identity*
  - **5:35 PM** Easterlin *Redefining The Environment In Literary Ecocriticism*

- 5:55 PM Jobling *Discussant*

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### Evening activities

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- Banquet in Brower Commons
- Keynote by Robin Fox and Lionel Tiger: *Sex, Sects, Guns, and Butter*. Introduced by William Irons.

## Saturday, June 22

- 7:00-8:30 AM: Breakfast
- 8:30-8:35 AM: Announcements
- 8:30-9:30 AM: Morning plenary by Wulf Schiefenhoevel: *Human Birth: Cultural and Evolutionary Perspectives*. Introduced by Percy Rohde.
- 9:30-10:00 AM: Refreshments

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### Morning sessions

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- Love, jealousy, betrayal, and rape; Chair: Helen Fisher  
Multi-Purpose Room A, Rutgers Student Center
  - 10:00 AM Fisher et al. *The Neural Mechanisms Of Mate Choice*
  - 10:20 AM Rilling *Imaging The Neural Correlates Of Mating Competition In Dominant Male Rhesus Monkeys*
  - 10:40 AM Garretson *Gender, Attachment Style And Reactions To Imagined Betrayals Of Trust In Heterosexual Relationships.*
  - 11:00 AM Forssell *Jealousy In Homosexual And Heterosexual Men And Women: Examining Evolution And Attachment NI*
  - 11:20 AM Conlan *Mate Expulsion*
  - 11:40 AM Fechenhauer *Females' Risk Attitudes And Sociosexuality Predict Their Chance Of Being Raped*
- Coalitions, cooperation, and sharing; Chair: Michael Gurven  
Multi-Purpose Room B, Rutgers Student Center
  - 10:00 AM Allen-Arave et al. *Is Food Sharing Between Close Kin Due To Kin Selection Or Reciprocal Altruism? Data Analyses Of Ache Food Transfers*
  - 10:20 AM Patton *Coalitional Support As A Motivation For Meat Transfers In Conambo*
  - 10:40 AM Gurven *Why Do Foragers Share And Sharers Forage? PD*
  - 11:00 AM Hibbing and Alford *Accepting Authoritative Decisions: Humans As Wary Cooperators*
  - 11:20 AM Navarrete et al. *Anxiety And Ethnocentrism: Coalition Psychology In Two Populations*
  - 11:40 AM Hiraishi *Can I Get My Share? Extension Of The Wason Selection Task With The Sharing-Rule.*
- Father absence and the development of reproductive strategies; Organizer and Chair: Bruce Ellis  
Room 411, Rutgers Student Center
  - 10:00 AM Ellis et al. *Does Early Father Absence Place Daughters At Special Risk For Early Sexual Activity And Teenage Pregnancy? Longitudinal Investigations In The United States And New Zealand.*
  - 10:20 AM Quinlan *The Effect Of Timing Of Father Absence On Female Reproductive Development*
  - 10:40 AM Grainger *Family Background And Female Developmental Trajectory*
  - 11:00 AM Waynforth *The Influence Of Father Absence On Reproductive Strategies:*

- Evidence From Two Traditional Societies.*
- **11:20 AM** Flinn et al. *Longitudinal Patterns Of Cortisol Reactivity, Father Absence, And Maternal Behavior In A Rural Caribbean Village*
  - **11:40 AM** Draper *Discussant*
- **Endocrinology; Chair: Peter Gray**  
Brower Commons ABC
- **10:00 AM** Gray *Marriage, Parenting And Testosterone Variation Among Kenyan Swahili Men NI*
  - **10:20 AM** Chen *Does Testosterone Affect Bony Structures In The Face? Are Women Sensitive To Testosterone Markers In The Face?*
  - **10:40 AM** Burnham and Chapman *Testosterone, Overconfidence, And Negotiating Ability.*
  - **11:00 AM** Boothroyd *The Effect Of Parenthood On Physical Aggression: Evidence From Criminal Data. NI*
  - **11:20 AM** Sergeant *The Affects Of Male Sexual Orientation On Female Perception Of Body Odour NI*
  - **11:40 AM** Miller *Sex, Sex Orientation And Occupational Choice*

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#### Intermission

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- **12:00–01:15 PM** Lunch, Brower Commons
- **01:30–02:30 PM** Afternoon plenary by Robert Hinde: *The Bases of Moral Codes.* Introduced by Linda Mealey.
- **02:30–03:00 PM** Refreshments

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#### Early afternoon sessions

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- **Morality and ethics; Chair: John Teehan**  
Multi-Purpose Room A, Rutgers Student Center
  - **3:00 PM** Curry *A Cut-Out-And-Keep Guide To The Naturalistic Fallacy*
  - **3:20 PM** Teehan and diCarlo *On The Naturalistic Fallacy : A Conceptual Basis For Evolutionary Ethics*
  - **3:40 PM** DiCarlo *Evolution, Skepticism, And Epistemic Responsibility*
  - **4:00 PM** Roes and Raymond *Belief In Moralizing Gods*
- **Personality; Chair: Maria G. Janicki**  
Multi-Purpose Room B, Rutgers Student Center
  - **3:00 PM** Cosmides et al. *Are There Cognitive Adaptations For Learning About One's Own Personality? Neuropsychological Evidence For Specialized Learning, Storage, And Retrieval Systems.*
  - **3:20 PM** Pereyra et al. *The Influence Of Assertiveness In Reasoning About Different Contents*
  - **3:40 PM** Saad et al. *Effect Of Birth-Order On Consumer Behavior*
  - **4:00 PM** Roach *Birth Order And Personality In Amazonian Ecuador*
  - **4:20 PM** Janicki and Salmon *Friend And Family Dynamics: Relationships Between Birth Order, Exchange Orientation, And Perceptions Of Exchange*
- **Evolutionary psychology is infrastructural to the social sciences; Organizer and Chair: Jerome Barkow**  
Room 411, Rutgers Student Center
  - **3:00 PM** Fessler and Navarette *Third-Party Attitudes Toward Incest: Evidence For The Westermarck Effect*
  - **3:20 PM** Brown *Cheater Detection And The Social Transmission Of Information*

- **3:40 PM** Barkow *Evolved Infrastructure Supports Sociological Processes: Some Brief Examples.*
- **4:00 PM** Clark Barrett *Discussant*
- **Adaptationist literary study; Organizer and Chair: Joseph Carroll**  
Brower Commons ABC
  - **3:00 PM** Sugiyama *Lions And Tigers And Bears: Predators As A Folklore Universal PD*
  - **3:20 PM** Gottschall *Traits Of Female Protagonists And Antagonists In World Folktales*
  - **3:40 PM** Jobling *Faultless Monsters: Positive Biases In Self-Perception And The Nineteenth Century Novel Hero*
  - **4:00 PM** Carroll *Assessing Scientific And Literary Reconstructions Of Paleolithic Life*
  - **4:20 PM** Rhoads *Feminist Literary Theory Meets The Challenge Of Evolutionary Psychology*

## Interlude;

## Late afternoon sessions

- **Sexual selection and creativity; Chair: Cathryn Coe**  
Multi-Purpose Room A, Rutgers Student Center
  - **4:55 PM** Miller and Haselton *Fertile Women Prefer Poor, Creative Men To Wealthy, Uncreative Men As Short-Term Sexual Partners: Preliminary Evidence For Ovulatory Cycle Shifts In Attraction To Artistic And Entrepreneurial Excellence*
  - **5:15 PM** Coe *What Sexual Selection Cannot Explain: Traditional Visual Art And Ancestors*
  - **5:35 PM** Aiken and Coe *Sexual Selection Does Not Account For All Art*
  - **5:55 PM** Dissanayake *Discussant*
- **Evolutionary cross-cultural psychometrics; Organizer and Chair: Aurelio Jose Figueredo**  
Multi-Purpose Room B, Rutgers Student Center
  - **4:55 PM** Figueredo et al. *Evolutionary Ethnography And Comparative Psychometrics*
  - **5:15 PM** Tal et al. *Farmers, Herders, And Fishers: The Ecology Of Revenge*
  - **5:35 PM** Dumouchel et al. *Date Rape As A Perceived Violation Of Social Exchange*
  - **5:55 PM** Kirsner et al. *Friends And Lovers: The Mate Value Inventory*
- **Mathematical reasoning; Chair: Claudia Uller**  
Room 411, Rutgers Student Center
  - **4:55 PM** Uller *Developmental And Evolutionary Origins Of Human Numerical Knowledge*
  - **5:15 PM** Freedman *Selection Pressure To Produce Proto-Mathematical Ability*
  - **5:35 PM** Leron *Application Of Evolutionary Psychology To Research In Math And Science Education*
  - **5:55 PM** Dickins *Discussant*

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Evening activity: Barbecue, Voorhees Mall.

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**Sunday, June 23**

- **07:00-08:30 AM** Breakfast
- **08:30-08:35 AM** Announcement of prize winners by Janel Tortorice
- **08:35-09:35 AM** Morning plenary by Mark G. Frank: *Not All Lies Are Created Equal: Human Lying and Lie Catching*. Introduced by Robert Kubey.
- **09:35-10:00 AM** Refreshments

## Morning sessions

- **Mate choice: New theory and data; Chair: Leif D. Nelson**  
Multi-Purpose Room A, Rutgers Student Center
  - **10:00 AM** Johnson and Tassinary *The Functional Significance Of The Human Body On Interpersonal Judgments: Converging Evidence From A Multi-Method Approach*
  - **10:20 AM** Hill and Reeve *The Evolution Of Human Mating Transactions*
  - **10:40 AM** Nelson *Mate Ideals And The Symptoms Of Resource Scarcity NI*
  - **11:00 AM** Rohde and Fetchenhauer *Riskproneness As A Mate-Choice Criterion And Predictor Of Mating Success In Men And Women*
  - **11:20 AM** Tragesser and Lippman *Gender, Sociosexual Orientation, And Reactions To Flirtatious Joking Comments*
- **Parental and grandparental behavior; Chair: Frank Marlowe**  
Multi-Purpose Room B, Rutgers Student Center
  - **10:00 AM** Marlowe *A Critical Period For Paternal Provisioning Among The Hadza*
  - **10:20 AM** Platek et al. *How Much Resemblance Is Enough To Assure Paternity?*
  - **10:40 AM** Hiraiwa-Hasegawa et al. *Biased Sex Ratios In Illegitimate Births During Pre-War Japan.*
  - **11:00 AM** Mace et al. *Sex Ratio Variation In Ethiopia*
  - **11:20 AM** Michalski *Grandparental Investment As A Function Of Relational Uncertainty And Similarity NI*
  - **11:40 AM** Sear et al. *The Effect Of Older Women On Their Daughters' Fertility Rates In The Gambia: Implications For The Evolution Of Menopause*
- **Faces and emotions; Chair: David Sloan Wilson**  
Room 411, Rutgers Student Center
  - **10:00 AM** Duchaine et al. *Normal Recognition Of Facial Expressions Of Emotion In A Developmental Prosopagnosic*
  - **10:20 AM** Wilson and O'Gorman *Emotions And Actions Associated With Norm-Breaking Events*
  - **10:40 AM** DeBruine *Facial Resemblance Enhances Trust*
  - **11:00 AM** Hammond *A New Model Of Uneven Development In Human Neurophysiology: The Enhancement Imperative And The Emergence Of Religion*

Lunch, followed by check-out

## POSTER SESSIONS

*Posters will be displayed twice, once in a full poster session Thursday evening in the Atrium of the Rutgers Student Center and again in a rotating display in the Main Lounge in the Rutgers Student Center.*

### Thursday morning, 8:30am - 1:30pm: Attractiveness

Brase and Walker	<i>Using Eye Gaze And Eye Fixations To Assess Males' Use Of Physical Attractiveness Cues</i>
Chang et al.	<i>Effects Of Motion And Expression On Facial Attractiveness</i>
De Backer	<i>Gender Differences In Partner Selection: A Content Analysis Of Personal Advertisements In A Belgian Newspaper.</i>
Demarest and Alonso	<i>At What Age Does An Attractive Young Female Become Sexually Desirable?</i>
Fisher and Voracek	<i>Bodily Curvaceousness And Androgenousness In Adult Media Actresses</i>
Hancock and Ross	<i>What's A Pretty Face Worth II: Factors Affecting Offer Levels In A Dictator Game</i>
Milroy et al.	<i>Health And Cosmetics: Can Female Signals Of Health And Beauty Be Faked By The Use Of Cosmetics?</i>
Penton-Voak et al.	<i>Measures Of Female Condition Influence Preferences For Sexual Dimorphism In Faces Of Male Homo Sapiens.</i>
Shah and Cronk	<i>Human Mate Preference And Parental Involvement In Gujarati Matrimonial</i>



*Advertisements*

- Tragesser et al. *Eye Gazes As Courtship Signals In Mixed-Sex Dyadic Interactions*  
 Voracek and Fisher *Shapely Centerfolds? Temporal Change In BMI And WHR*

**Thursday afternoon, 1:30pm - 6:30pm: Sociality**

- Blum *Tests Of A Behavioral Ecological Model Of Human Dispersal From The Natal Family*  
 Burkett and Kirkpatrick *Cheater Detection And The Fundamental Attribution Error: A Test Of Social Exchange Theory*  
 Demarest and Joworski *Altruism In An Online Fantasy Adventure Game: Gender And Alien Race As Determinants*  
 Faulkner et al. *Perceived Vulnerability To Disease Predicts Prejudice Against Culturally Unfamiliar Peoples*  
 Heath et al. *Daughters, Sisters, Wives, And The Making Of Male Alliances*  
 Hoier and Rohde *Adopted Children Are Strongly Preferred Over Stepchildren: The Neglected Role Of Sexual Conflict In Explaining Variable Levels Of Conflict In Genetic, Adoptive, And Stepfamilies*  
 Park et al. *Disease Avoidance And Prejudice Against People With Disabilities*  
 Rende Taylor *Patterns Of Child Fosterage In Rural Northern Thailand.*  
 Sell *Converging Evidence On The Function Of Revenge*  
 Shenk *Homo Hierarchicus Meets Human Behavioral Ecology: Caste And Class-Based Marriage Strategies In Urban South India*

**Friday morning, 8:30am - 1:30pm: Mating, sex differences, and sexual behavior**

- Beaulieu *Meeting The Preferences Of Our Ideal Mate: Sexual Selection And Social Comparison*  
 Cellerino *Can "Ideal" Facial Proportions Be Interpreted As A Behaviourial Reproductive Barrier?*  
 Cristiani *Information-Seeking As The Evolutionary Function Of Infatuation.*  
 Dean et al. *The Influence Of Prestige And Prosocial Orientation On Females' Ratings Of Male Desirability*  
 Nelson and Morrison *Mortality Salience And The Moderation Of Mate-Choice Copying In Humans*  
 Nesse and Kruger *Explaining Sexual Mortality Ratio Variations Across Age, Culture And Time*  
 Oda *Sex Differences In Choices Of Tradeoffs Between Success And Health*  
 Pietrzak *Do Men Have More Sex Partners Than Women?*  
 Ries and Tragesser *Females' Preferences For Males Who Differ In Physical Attractiveness And Socioeconomic Status*  
 Toolan *Viewing The Personals With An Evolutionary Eye: Preferential Mate Qualities In Same-Sex And Opposite-Sex Partners*  
 Tortorice *Strategies For Teaching 'Sexual Strategies Theory' In A Unique Environment*

**Friday afternoon, 1:30pm - 6:30pm: Jealousy and related topics**

- Burch and Gallup *Jealousy-Evoking Narratives Fail To Predict Jealous And Abusive Behavior*  
 Clark *Mating Strategy Affected By Self-Perception Of Attractiveness In Women*  
 Copeland and Brase *The Effect Of Sex Differences In Jealousy On Lay Perception Of Criminal Responsibility In Crimes Of Passion*  
 Demarest and Oliveri *Methodological Issues In Studying Sexual And Emotional Jealousy*  
 Demarest and Sedlachek *Motives For Inducing Jealousy And Avoiding Jealousy Induction*  
 Foster et al. *Mate Poaching, Narcissism, And Empathy*  
 Gallup and Burch *The Human Penis As A Semen Displacement Device: Male Sexual Behavior Varies Following Separation From Female Partner*  
 Pillsworth and Haselton *What Women Know... And Men Don't: Changes In Women's Sexual Behavior Found As A Function Of Fertility.*  
 Schützwohl *Jealousy As A Specific Innate Module: The Selective Input Hypothesis Considered*  
 Sheets et al. *Patterns Of Jealousy In Russia*

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**Saturday morning, 8:30am - 1:30pm: Evolutionary psychology I**


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Baron and Burnstein	<i>Are Humans Equipped With A Specific Cheater-Detection Module Or A More General Person-Impression Module?: Evidence From A Face Recognition Experiment</i>
Berry and O'Connor	<i>September 11th: Responses To Terrorism And Interpersonal Guilt</i>
Butner et al.	<i>Variation and Reaction Time as Measures of Judgment Stability</i>
Chiappe et al.	<i>Remembering The Faces Of Potential Cheaters And Cooperators In Social Contract Situations</i>
Cline-Brown	<i>Direct And Indirect Fitness Hindrances As A Predictor Of Depression</i>
Davis	<i>Explaining Individual Differences In Food Preference: The Role Of Social Experience</i>
Hanoch and Vitouch	<i>When Less Is Better: The Ecological Rationality Of Emotional Arousal And The Negation Of The Yerkes-Dodson Law</i>
Krupp et al.	<i>Violence And Aggression: Seasonal Effect Of Testosterone In An Australian Offender Population</i>
LeFevre et al.	<i>Anxiety As A Stimulus For Nipple Erection</i>
Michalski	<i>An Attempted Replication Of The Relationships Between Birth Order And Personality</i>

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**Saturday afternoon, 1:30pm - 6:30pm: Evolutionary psychology II**


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Aktipis	<i>Intertemporal Choice In Variable And Stable Environments</i>
Ermer	<i>Losses, Gains, And Status In Risky Decision-Making</i>
Hill et al.	<i>Delay-Discounting Of Monetary Choices: Relationship To Risk-Taking Behavior</i>
John	<i>A New Mental Disorder Diagnosed By Politicians: Evolutionary Psychological And Group Defenses As Psychopathology To Be Treated With Behavior Modification</i>
Ku et al.	<i>The Physical and Psychological Dimensions Underlying Adult Perceptions of Similarity of an Infant's Cries</i>
Lang	<i>Thinking Of Your Self: The Nature Of Human Consciousness</i>
Lee	<i>Perception Preceeds Stimulation, Information Processing In Humans</i>
Mills	<i>Adaptive Illusions: Can Evolutionary Psychology Explain the Arbitrary Content of Quilia?</i>
Pereyra et al.	<i>Extreme Sports And Precautionary Reasoning</i>
Takezawa and Keller	<i>Development Of Core Social Preferences: Experimental Studies</i>
Thompson	
Wilke and Hoffrage	<i>Emotional Adaptations For Judgement And Choice</i>

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**Sunday morning, 8:30am - 1:30pm: Theory and metatheory**


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Alkon	<i>"Hello, Psycho" -- Creating A Successful, Real-Life Meme</i>
Mealey	<i>Obituary: Stephen Jay Gould</i>
Schafer	<i>On The Possible Origins Of Human Behavior In Quantum Reality</i>

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**Organized poster session: If Darwin Had Been a Woman: Alternatives to the Received View of Human Evolution — Organizer: James Brody.**


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Brody	<i>Alternatives To The Received View Of Evolution</i>
Bloom	<i>The Xerox Effect: On The Importance Of Pre-Biotic Evolution</i>
Turner	<i>Darwinism's Difficulties: Extended Organisms, Constructed Environments And Emergent Physiology</i>

## Detailed Timetable With Abstracts

### Wednesday, June 19

- Check-in and on-site registration, Brower Commons
- **7pm:** Reception at the Zimmerli Art Gallery

### THURSDAY, JUNE 20

- **07:00–08:30 AM** Breakfast
- **08:30–08:35 AM** Welcoming remarks by Lee Cronk  
Morning plenary by Alice Eagly: *A Cross-Cultural Analysis of the Behavior of Women and Men: Implications for the Origins of Sex Differences*. Introduced by Anne McGuire.
  - Eagly, Alice (Northwestern U.)
  - Wood, Wendy (Texas A&M U.)

*A Cross-Cultural Analysis of the Behavior of Women and Men: Implications for the Origins of Sex Differences*

In this talk, which is based on collaborative work with Wendy Wood, I evaluate origin theories of sex differences in human behavior by reviewing cross-cultural distributions of sex-differentiated behavior. The behavior of women and men is considered in a wide range of nonindustrial societies, especially the activities that contribute to the sex-typed division of labor and patriarchy. To explain these cross-cultural findings, I consider the perspectives of social constructionism and evolutionary psychology, as well as an integrative biosocial theory. I conclude that sex differences arise primarily from the interaction between the physical specialization of the sexes, especially female reproductive capacity, and the economic and social structural aspects of societies. This biosocial approach treats the psychological attributes of women and men as emergent given the evolved characteristics of the sexes, their developmental experiences, and their situated activity in society.

Alice Eagly  
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- **08:35–09:35 AM**
- **09:35–10:00 AM** Refreshments

### Sex differences

### Multi-Purpose Room A, Rutgers Student Center

10:00AM

- McGuire, Anne M. (Harvard U.)

*Two Million Years Of Paternal Investment: The Decline (And Rise?) Of Sex Differences In Mating Psychology*

Evolutionary psychologists often stress sex differences in mating psychology and argue that these differences are the product of selection for the low male parental investment that is typical of males across species. However, a phylogenetic perspective suggests that low paternal investment is not typical of human ancestors over the past 1.9 million years. An alternative model proposed here postulates that changes in resource ecology during hominid evolution caused male and female parental investment strategies to converge, and that only since the advent of food production has selection for convergence weakened. This model attributes the origin of pair bonds to changes in feeding ecology, and argues that these pair bonds permitted increased male parental investment (rather than that increasing male investment selected for pair bonds). This model has extensive implications for mating psychology. A review of recent research on aspects of mating psychology (e.g. sexual vs. emotional jealousy, mate choice characteristics, preferred waist-to-hip ratio) demonstrates that sex differences and preferences are neither as pervasive nor robust as have been assumed. Currently observed sex differences, rather than being expressions of domain-specific psychological mechanisms shaped by selection for relatively low male parental investment, are here hypothesized to be vestigial remains of incomplete selection against low male parental investment. The proposed male-female convergence model accounts both for the considerable similarities in male and female mating psychology (often downplayed in evolutionary psychology) and for sex differences. By shifting our perspective on mating psychology, this research program aims to reinvestigate exploratory empirical inquiry in evolutionary psychology.

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10:20AM

- Colarelli, Stephen (Central Michigan U.)
- Jaffa, Melvyn (Central Michigan U.)
- Gager, Derek (Central Michigan U.)

*Sex Differences in Reactions to Threats to Resources, Status, and Personal Safety*

Although men typically have greater status strivings than women and women tend to be more attuned to the capacity to provide resources than men, it is unclear whether men and women react differently to threats to status and resources. Two weeks after the September 11th terrorist attacks, 182 participants completed an open-ended questionnaire that asked them to write about their thoughts and feelings since the attacks. Several weeks later, the same participants responded to scenarios that described threats to status, resources, and personal safety. Our dependent measures were feelings of anxiety, feelings of aggression, and likelihood of behaving aggressively. We also measured attachment style as a potential intervening variable. Women experienced significantly more anxiety over threats to status and threats to personal safety than men. There were no differences in feelings of aggression or likelihood to behave aggressively.

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10:40AM

- Choi, Jean (U. of Lethbridge)
- Silverman, Irwin (York U.)

*Processes Underlying Sex Differences In Route-Learning Strategies In Children And Adolescents*

Cognitive processes underlying sex differences in route-learning strategies were investigated in children and adolescents using a direction-giving paradigm based on a novel map. Sex differences in object memory and spatial perception tasks were found in children as young as 9 years of age although differences in route-learning strategies did not emerge until 12 years of age. This was followed by sex-specific patterns of cognitive processes underlying route-learning strategies in adolescents, suggesting that route-learning strategies emanate from different spatial processes. Results are consistent with the notion of specialized spatial processes in males and females, presumed to be the products of differential evolutionary pressures related to the division of labour.

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11:00AM

- Kruger, Daniel J. (U. of Michigan)
- Nesse, Randolph M. (U. of Michigan)

*The Risk Of Being Male: The Sexual Mortality Ratio For Leading Causes Of Death In The United States*

Differential parental investment creates higher levels of sexual selection pressure for human males than females. Human males have riskier behavioral strategies than females as an adaptation to the stronger selection pressure in mate competition. The male tendency for riskier behavior may account for some of the discrepancy between male and female mortality rates across age groups. Sexual selection pressure may have also selected for male reproductive success at the expense of health protecting factors and longevity. We obtained 1998 mortality data for the United States from the National Center for Health Statistics. We divided male mortality rates by female mortality rates to obtain the Sexual Mortality Ratio (SMR) across age groups for 10 of the leading mortality causes. We found that American men die at up to three times the rate of women in certain age groups. The SMR is highest in late adolescence and young adulthood. Mortality differences are especially pronounced for deaths caused by direct behavioral causes, such as accidents, homicide, and suicide. There is a second SMR peak in late middle age, predominantly for diseases that are impacted by adverse behaviors. Constitutional differences and greater incidence of adverse behaviors such as smoking and drinking excess alcohol result in disproportionate male deaths during middle age. We attribute 27% of the total number of life years lost to the difference between male and female mortality rates. Evolutionary and public health implications will be discussed.

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11:20AM

- Benenson, Joyce (McGill U.)

*Similarities Between Sex Differences In Social Organization In Chimpanzees And Human Children*

Research on chimpanzees has identified sex differences in social organization that differ from most other species that are closely related to human beings. Across study sites, young male chimpanzees begin to separate from their mothers around 5 years of age and by adolescence segregate themselves from their mothers and females in general, dominate all females, and organize themselves into interconnected groups. In contrast, female chimpanzees remain close to their mothers until adolescence. When females form relationships with unrelated others, they prefer interaction with males more than with females. When they do form relationships with unrelated females, they are more likely than males to form friendships with only one or two other females. These sex differences in social organization parallel those found in human children from diverse cultures and in adults. A genetic basis for sex differences in social organization for humans is proposed.

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11:40AM

- Allen, Joanne (U. of Exeter)
- Morse, Hayley (U. of Exeter)
- Leaver, Lisa (U. of Exeter)

*Sex Differences In Memory For Cheaters In Mating Situations*

For human couples there are sex-differential costs associated with a partner's infidelity. Paternity uncertainty means that men are at risk of incurring costs associated with investing in unrelated offspring. For women, there is the risk that a partner may divert resources away from her and her offspring, perhaps to another female and/or children sired through extra-pair copulations. Consequently, when men and women use reputational information to assess the suitability of potential partners they should be differentially sensitive to cues that predict the likelihood of future sexual infidelity vs resource diversion. In the present study, we predicted sex differences in memory for the faces of, and information about, opposite sex individuals who have engaged either in extra-pair sexual activity or resource diversion. Participants read three hypothetical stories about heterosexual couples. The first two described situations involving either sexual infidelity or resource diversion by a member of the opposite sex while the third was a control story involving neither. Each scenario was accompanied by photographs of the couple depicted in the story. Following a distraction task, subjects were tested for recognition of faces and recall of information in the stories. Females were better at the memory tasks overall and showed little difference in their ability to recall information about sexual infidelity versus resource diversion. In contrast, as predicted, men were better able to recall information related to sexual infidelity.

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**Signaling**  
**Multi-Purpose Room B, Rutgers Student Center**

10:00AM

- Price, Michael (U. of California, Santa Barbara)

*Pro-Community Altruism And Social Status In A Shuar Village NI*

Costly signaling theory (CST) and reciprocity theory both predict that contributors of collective resources will have high social status. This paper explores the ways in which status allocations among the Shuar of the Ecuadorian Amazon depend on how much individuals have contributed to the collective good. Data suggest that: (1) those who contribute more collective resources are higher status; (2) individuals are highly skilled at assessing how much others have contributed; (3) individuals who allocate status to contributors are themselves relatively high status, so status allocations may be used to solve the second-order free rider problem; and (4) the way in which individuals allocate status is in part affected by their desire to punish free riders. Results 1-4 are all direct predictions of reciprocity theory. CST predicts result 1 and could plausibly predict result 2. But because CST bypasses free rider problems, it does not predict result 3. And because CST explains the high status of altruists only in terms of their being more attractive to others, and not in terms of their being sanctioned by others, it cannot account for punishment and so does not predict result 4. To conclude, reciprocity appears to be important in explaining why contributors of collective resources are high-status among the Shuar.

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10:20AM

- Plourde, Aimee (UCLA)

*Prestige Goods And The Evolution Of Sociopolitical Complexity*

In this paper I explore a model of costly signaling and its ramifications for the evolution of hierarchical sociopolitical organization, one of the major transformations in human society since the end of the Pleistocene. A key question in studying the evolution of political hierarchy is how leaders first came to hold authority, and how power relationships became institutionalized. Different historical trajectories as shown by archaeological data suggest that a rise in long-distance trade of prestigious items often correlates with the emergence of social ranking. Costly Signaling Theory (CST) can be useful in understanding the role played by prestige goods in the evolution of political hierarchy, as a point from which to start exploring the desire for and acquisition of rare, costly items that serve no “useful” function. Recent work in evolutionary psychology has focused on the function of prestige in small scale societies, and how costly signaling of personal quality could translate into the possession of charismatic authority. The procurement of exotic items could signal personal quality in a variety of ways, including: demonstrating inter-community social contacts important for trade and alliance, the hunting or raiding skills necessary for direct acquisition of non-local materials, or a more generalized degree of wealth or personal success. In a context where social ranking is emerging due to a range of factors (for e.g. inter-group conflict and intensification of subsistence production) signals of ‘leadership’ qualities could function to shape political alliances and attract followers, thus providing a mechanism for the stabilization of hierarchical power relations.

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10:40AM

- Goldberg, Rick

*Costly Signaling in the Jewish Context*

Costly signaling theory is becoming a valuable and increasingly accepted tool for analyzing intra-group human communication. In religious behavior, costly pledges and claims exchanged repetitively can serve to strengthen the bonds between participating group members. In the Jewish context, costly signaling is prevalent both in the practice of Judaism and in more secular community efforts. The purpose of this paper is to look at the major activities in Jewish life, exploring the operation of costly signaling in ritual, law, philanthropy and political activity. Specifically examined will be the three major denominations in Judaism: Orthodox, Conservative and Reform. This paper will propose that, although each denomination develops its own theological perspective, the varying levels of observance between them can best be explained by the varying costliness of each group's signaling.

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11:00AM

- Sosis, Richard (U. of Connecticut)
- Ruffle, Bradley (Ben-Gurion U.)

*Religious Ritual and Cooperation: Testing for a Relationship on Israeli Religious Kibbutzim*

One prediction of the costly signaling theory of religion is that costly and publicly observed rituals can serve to promote intra-group solidarity and cooperation. To evaluate this prediction we conducted controlled common-pool resource experiments on Israeli religious kibbutzim. We expected male religious kibbutz members to exhibit higher levels of cooperation than females because of their obligation to participate in public rituals, such as prayer, and more frequent performance of these ritual activities. Our results indicate that 1) male religious kibbutz members exhibit greater levels of cooperation than female religious kibbutz members, 2) in contrast, male and female secular kibbutz members exhibit nearly identical levels of cooperation, and 3) synagogue attendance is a significant predictor of willingness to cooperate for male religious kibbutz members but not females. These experimental findings are further supported by data collected during post-experiment interviews, which show that for male religious kibbutz members, but not females, synagogue attendance is positively correlated with their perceptions of the level of cooperation on their kibbutz.

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11:20AM

- Flamson, Thomas (UCLA)

*When A Monkey Falls In The Forest, Does Anyone Laugh: The Evolution Of Humor And Laughter*

Attempts to formulate a comprehensive evolutionary explication of humor and laughter have largely failed. This is because previous models assumed humor to be a monolithic phenomenon. However, the broad range of forms and effects of humor cannot be explained purely as derivatives of mechanisms serving a single function. Moreover, it is important to consider possible functions of laughter prior to

the evolution of humor. I propose a theory of the evolution of laughter and humor that systematizes the diverse forms in terms of differential exaptation. Drawing on the growing consensus that laughter evolved in concert with tickling as a means of testing and signaling trust in dyadic relationships, I show how the introduction of symbolic thought and spoken language created rich conditions to expand the available means of testing dyadic bonds through the provocation of laughter beyond tickling. This in turn made possible the exaptation of humor in the domains of coalition dynamics, mate selection, and rank negotiation, as well as further elaboration of its dyadic affiliation role, leading to a category of behavior that serves markedly different functions in different contexts. I discuss the different processes involved in the elaboration of humor and the variety of functions they now serve. Results that distinguish this theory from other explanations are presented.

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11:40AM

- Nelson, Holly (U. of New Hampshire)

*Symbolism and Strategy: Mutual Grooming in Courtship and Mating*

It has been proposed that the ubiquitous mutual grooming among nonhuman primates has become repressed in humans. A scale was developed to measure the frequency and form of mutual grooming among humans. Although it does not occur at the same level of frequency among humans, mutual grooming occurred in all of the relationship types reported by participants of the study. Grooming fell into four categories: traditional (shampooing, shaving, manicures), non-traditional (removing lint, hairs, food), mimicry (stroking, massaging), and neurotic (picking at scabs, pimples). Romantically involved individuals reported the most frequent mutual grooming. The results of the study suggest there is a link between grooming, mating strategy (as measured by the Sociosexual Orientation Inventory), and attachment style. More promiscuous individuals (less restricted sociosexuality) and those with insecure attachment styles reported grooming their partner more frequently. Couples who groomed one another more frequently also reported higher levels of relationship satisfaction and more trust in their partners. Males and females tended to offer different motivations for grooming their partners. Males tended to report using it to precipitate sexual activity while females tended to report grooming in order to demonstrate a close emotional bond. It is suggested that grooming functions as an effective courtship strategy because it implies relationship commitment. Individuals who favor short-term mating strategies may benefit from using mutual grooming as a courtship display because it can precipitate sexual activity while implying a close emotional bond whether or not one is actually present or desired.

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## Kin Interactions Room 411, Rutgers Student Center

10:00AM

- Jones, Doug (U. of Utah)

*The Generative Psychology Of Kinship: Cross-Cultural Evidence*

Human kinship varies greatly across cultures, but many anthropologists have suspected that a common set of principles underlies this variation. I use Optimality Theory, a new approach to rules of language, to analyze variation and universals in human kinship. I present evidence that three universal schemas of social cognition -- genealogical distance, social rank, and group membership -- regulate kin classification, and discuss their possible evolutionary foundations.

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10:20AM

- Brown, Stephanie L. (U. of Michigan)

*Rethinking the Social Support Hypothesis: Insights from an Evolutionary Perspective* **PD**

This project challenges the assumption that receiving support is beneficial to health and well-being. Based on evolutionary theories of close relationships and altruism, the benefits of social contact were expected to be due to giving support rather than receiving it. Moreover, the health benefits of providing support were expected to be greatest for grandmothers with multiple grandchildren. Using the Changing Lives of Older Couples sample, baseline indicators of giving and receiving support were used to predict mortality status over a 5-year period. Results from logistic regression analyses indicated that individuals who reported providing instrumental support to friends, relatives, and neighbors, and individuals who reported providing emotional support to their spouse were less likely to die during the course of the study. These effects were obtained after controlling for demographic, personality, health, mental health, and marital relationship variables. Moreover, receiving emotional support had no beneficial effect on mortality once giving support was taken into consideration. A three-way interaction of giving, dependence, and number of grandchildren supported predictions and demonstrated that, for females, the benefits of giving increased with the number of grandchildren; whereas the costs of being dependent were magnified for those with relatively few

grandchildren. These results are discussed in terms of the advantages of using an evolutionary perspective to understand the link between close relationships and health.

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10:40AM

- Webster, Gregory D. (U. of Colorado at Boulder)

*Relatives of Direct Lineage are Favored in a Resource Allocation Task* NI

Archival studies of inheritance patterns have supported Hamilton's (1964) model of inclusive fitness (Judge & Hrdy, 1992; Smith, Kish, & Crawford, 1987). Beneficiaries who are more closely related to their benefactor generally receive greater amounts of inheritance. Using a survey-based simulation of these studies, two independent samples of students from different universities (Ns = 144 and 29) were asked to allocate fictional lotteries of varying dollar amounts to their blood relatives. A multilevel model was employed to simultaneously model within-family and between-participant effects. Across both studies, a strong genetic preference was observed, with participants allocating greater percentages of their lotteries to relatives of greater genetic relatedness. Participants in both studies also displayed a strong preference for unilateral relatives over collateral relatives (i.e., parents and grandparents over all other relatives). This preference for progenitors of a direct lineage remained reliable when statistically controlling for the genetic effect and differences in relatives' ages. Moreover, a reliable genetic relatedness by laterality interaction emerged, such that the genetic effect was a stronger positive predictor of percent of money allocated among unilateral relatives than collateral relatives, among whom the genetic effect was positive but less strong. This interaction persisted regardless of whether relatives' ages were held constant and was replicated across both studies. The strength of the within-family main effect of laterality also varied as a function of the between-participant interaction of sex and lottery amount in both studies. The viability of applying these models to archival inheritance data will be discussed.

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11:00AM

- Segal, Nancy (California State U., Fullerton)

*Twin Film Analysis of Cooperation and Competition*

The majority of psychological twin studies report higher levels of cooperation and affiliation between monozygotic (MZ) twins than between dizygotic (DZ) twins. This pattern has emerged despite application of diverse theoretical perspectives and experimental procedures. Most supportive evidence has, however, come from parental ratings and twins' self-reports. The present study examined judges' impressions of MZ (n = 34 pairs) and same-sex DZ (n = 12 pairs) twin children's behaviors during filmed puzzle completion sessions. The mean age of the twins was 8.65 years (SD = 1.42) and ranged between 6.47 and 12.13 years. A multivariate mixed model analysis of variance with Helmert contrasts was applied to the data. MZ twins showed significantly higher cooperation than DZ twins as assessed across six relevant measures: mutuality in goal, nature of interactions, accommodation of behavior to the needs of the co-twin, evidence of role division, involvement in activity and contribution to the finished product. However, significant differences were not found for the contrast between MZ hand-concordant and MZ hand-discordant twin pairs. Results from this particular approach to twin relations concur with findings from more objective assessments. Specifically, they support the view that individuals respond to, rather than create, twin group differences in social relations. Further applications of twin-based approaches to examining contributions of genetic relatedness to social-interactional processes and outcomes are discussed.

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11:20AM

- Lieberman, Debra (U. of California, Santa Barbara)

*Factors Governing The Development Of Moral Sentiments Regarding Third Party Sibling Incest*

The origin of moral sentiments regarding incest avoidance has been a topic of great interest among social scientists. According to Edward Westermarck, the existence of cultural norms prohibiting incest is a reflection of underlying psychological mechanisms mediating the development of a sexual aversion between close relatives. From this perspective, the cues governing the development of inbreeding avoidance between siblings, namely, coresidence during early childhood, should be the same cues regulating the strength of moral sentiments regarding sibling incest. The purpose of this study was to investigate whether patterns of moral sentiments regarding third party sibling incest are influenced by length of coresidence with an opposite sex sibling. Subjects were given a survey that asked a variety of questions including length of coresidence with each sibling and the moral wrongness associated with a set of 19 acts. Results indicate that length of coresidence with an opposite sex sibling best predicts the moral wrongness associated with third party sibling incestuous acts even when controlling for variables such as degree of relatedness, the number of opposite sex siblings, and familial attitudes towards sexuality. Moreover, coresidence with an opposite sex sibling beyond early childhood years was found to significantly correlate with these moral sentiments for males, but not for females, perhaps reflecting the different costs associated with inbreeding. In all, this study supports the notion that there are independent origins of moral sentiments regarding incest versus other culturally transmitted norms.



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11:40AM

- Scheidel, Walter (U. of Chicago)

*How To Be Incestuous: Towards An Explanation Of Full Sibling Marriage In Roman Egypt*

As is well known, Arthur Wolf's work on the Chinese practice of "minor marriage" documents a frequent lack of sexual attraction between couples who had been raised together from early childhood and a positive correlation between the severity of the consequences of this aversion (expressed in elevated rates of adultery and divorce and reduced marital fertility) and the intensity of early childhood association between future spouses. This paper explores the question of whether brother-sister marriage in Roman Egypt triggered comparable responses. Three principal factors can be shown to have affected the success of these unions. (1) Almost half of all sibling couples were too far apart in age to have been subjected to strong sensitization in early childhood. (2) Recent work on the influence of the Major Histocompatibility Complex on mating preferences suggests that prolonged cross-fostering by unrelated wet-nurses may have interfered with early childhood sensitization to kin among siblings who were particularly close in age. (3) Other sibling spouses who were close in age can be shown to have experienced elevated rates of conjugal dissolution. Taken together, these observations make it possible for the first time to reconcile the existence and apparent temporary success of full sibling marriage with biosocial predictions concerning evolved inbreeding avoidance, and thus supersede my earlier attempts in 1996 and 1997 to analyze this phenomenon from an evolutionary perspective.

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## Law, Power, and Multilevel Society Brower Commons ABC

10:00AM

- Rubin, Paul H. (Emory U.)

*Human Evolution and Political Power*

While human males and pre-human ancestors have sought political power as a way of obtaining access to females, humans have tried to avoid being dominated. Through most of human existence dominants had relatively little power because coalitions of non-dominants limited their power. With the beginning of sedentary societies and agriculture, the power of dominants increased substantially. Most of written history is the story of conflicts between various groups of dominants, or between dominants and subordinates. Until relatively recently, dominants generally won. A necessary condition for the increase in democracy and the reduction in the power of dominants was probably socially imposed monogamy. Polygynous societies create bands of unmarried young males, and control of these bands requires a coercive state. Moslem societies, which allow polygyny, are less democratic than others. Asian societies in which significantly more males than females are currently being born may find it difficult to maintain or create democratic institutions. Modern western society limits the power of dominants, and individuals have more freedom now than at any time since our ancestors were hunter-gatherers. Because of the additional consumption opportunities created by capitalism, those in the democratic west have more freedom than humans have ever had in the past. Government power is constrained by several forces, including competition from other hierarchies. There are benefits from limiting government power, and dangers of allowing it to increase. Therefore, it is a puzzle to explain why so many seek to increase the power of government relative to other institutions in society.

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10:20AM

- Dwyer, Megan (Central Michigan U.)
- Colarelli, Stephen (Central Michigan U.)

*No-fault Divorce Legislation and Reproductive Self-Interests of Lawmakers*

Beginning in 1969 with the passage of the first "no-fault" divorce law in California, the liberalization of divorce law coincides with increased rates of divorce. We analyze this phenomenon from an evolutionary psychological perspective, examining the possible relationship between the reproductive interests of male lawmakers and their support of liberal divorce legislation. Evolutionary psychological theory holds that men desire young women who have high reproductive potential and also that men with more resources will have greater access to such women. Male lawmakers generally fit this category. It follows that male lawmakers will seek further their reproductive interests by passing legislation favoring "serial polygamy"-by making divorce easier and thereby increasing their prospects of mating with younger, more fertile women. We expect that lawmakers who have displayed consistent support for no-fault and other liberalized divorce laws will show greater rates of divorce, remarriage to younger women, and fathering more children by multiple women

than to their colleagues who have not supported such legislation. We examine the voting and personal histories of state politicians serving during the years 1950, 1969-1972, and 1985.

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10:40AM

- Wada, Mikihiro (Boston U., Hosei U.)

*Working out on your Fitness? Great... but how is our Law doing? -- "LAW and BIOLOGY" analysis of Japanese Laws*

Is "law" only the written rules that the humans have to abide by? Or are there foundations common to human and other creatures alike, which are expressed in written forms of "law" for humans? Family law and inheritance law have much to do with family/reproduction, human behavior/psychology related to evolution/fitness. This presentation examines those laws in the Japanese Civil Code, using the tool of fitness. It reveals the effectiveness and the limitation of such perspective. Firstly, the articles in the Civil Code are pointed out, which show much in common with animal behavior maximizing their fitness -- reciprocal altruism, incest taboo, or mate guarding. Those are provisions for loan for consumption, lease, incest taboo, presumption of "legitimacy" or determination of paternity of a child, and family support. Secondly, statutory regulations and their reforms are presented, which are not in harmony with the fitness theory. They include articles on degree of consanguinity, testament (will) and heir's legal portion (reserved for the successor at law). Finally, the present writer introduces the concepts of degrees of "fit succession (FS)," of "presumed fit succession (PFS)," and of "inclusively fit succession (IFS)," to evaluate the reforms on statutory share in succession of a spouse (wife) in the Civil Code of Japan, 1898 to present.

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11:00AM

- O'Gorman, Rick (SUNY-Binghamton)
- Wilson, David (SUNY-Binghamton)

*Policing As A Group-Adaptive Mechanism To Facilitate Social Norms: An Agent-Based Model*

Social norms may present adaptive advantages to human groups, resulting in group-level selection while reducing within-group variance. If norms exist due to group-selected traits then it follows that norm violations should be policed and it can be predicted that individuals should pay greater attention to normative information than non-normative information. Such has been shown in previous research (O'Gorman, in prep). To examine the evolutionary viability of this theory, I have modeled groups that consist of individuals who vary with regard to their norm-compliance and willingness to punish violations. Individuals are randomly presented with opportunities to violate norms. Punishment of a violator involves eliminating a social relationship with the violator, so both the violator and punisher suffer a fitness cost (if there is more than one punisher, then the violator suffers the loss of each relationship). Individuals who do not punish but exist in groups with punishers will have higher fitness than punishers in the same group. However, non-punishers in a group with a violator will have relatively lower fitness than the violator as violating a norm brings a fitness increase. Individuals then have an opportunity to reproduce, which is dependent on the average level of norm-compliance for each group and on levels of fitness within a group. Thus, there is a conflict between within- and between- group selection. Various runs of the model have shown that despite being at a within-group disadvantage, punishers remain present in the population at a relatively high level.

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11:20AM

- Kniffin, Kevin M. (SUNY-Binghamton)
- Wilson, David Sloan (SUNY-Binghamton)

*Applications of Multilevel Selection Theory to Human Business Organizations*

Multilevel selectionists advocate a pluralistic framework that tests for selection on multiple levels of organization. This contrasts with approaches such as selfish gene theory that argue that selection occurs at only one level of organization. This paper reviews earlier applications of multilevel selection theory to human social groups, and outlines an approach specific to the study of human business organizations. We present findings from an original case study involving a sample of small firms competing in a shared market, and argue that such context-specific tests are necessary to develop a pluralistic evolutionary framework for the study of business organizations. For the case study, significant between-firm differences are reported with regards to the prosocial and antisocial orientations of firm employees. Additionally, significant relationships are reported between measures of firm performance and variable degrees of prosocial values.

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11:40AM

- Jones, Owen D. (Arizona State U.)

*Prospects for a Biolegal History*

Because evolutionary processes influence human sentiments, we can expect that those processes will be reflected in various aspects of human legal systems. We might therefore expect that the normative content of legal systems will, all over the globe, tend to reflect the behavioral biology of species-typical emotions, even as the details of those legal systems will inevitably vary in many particulars. That is, we might predict that major features of legal systems (such as the law concerning property, family, crimes of passion, and crimes against the person, for example) would be meaningfully similar, rather than randomly varying. And we might also expect that some of the observable variation could be coherently understood within an evolutionary framework. This talk will explore some possible ways by which evolutionary reasoning might help to construct a “biolegal” history ú integrating aspects of biology, psychology, and law.

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### Intermission

- **12:00 PM** Lunch, Brower Commons  
Publications Committee Meeting to be held at Nova Terra, 78 Albany Street, New Brunswick
- **1:30 PM** Afternoon plenary by Allan Mazur: *Biosociology of Dominance and Defense*. Introduced by Ulrich Mueller.
  - Mazur, Allan (Syracuse U.)  
*Biosociology of Dominance and Defense*  
Humans in face-to-face groups form status hierarchies much like the dominance hierarchies of nonhuman primates. Human status hierarchies are importantly modified by the presence of language; nonetheless common status processes appear among all primates, especially nonverbal signalling and, apparently in males, testosterone effects.  
  
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- **2:30 PM** Refreshments

### The Dark Side of Human Mating Multi-Purpose Room A, Rutgers Student Center

Desirable mates are always in short supply compared to the many who seek them. The mating success of one person typically comes at the expense of others. When one triumphs in attracting a desirable mate, desirous rivals fail. An infidelity that offers benefits to defectors simultaneously inflicts costs on those betrayed. A mate jettisoned for a better partner leaves the abandoned partner bereft. Adultery, deception, exploitation, mate poaching, sexual coercion, stalking, violence, and murder abound in the dangerous game of mating. These strategies, many viewed as abhorrent, are nonetheless designed to solve adaptive problems of mating, despite, or in some cases because of, the costs these strategies inflict on others. This session explores some of these darker dimensions of human mating.

Figueredo presents several new hypotheses to explain the comorbidity of socially undesirable traits, notably that assortative mating can produce ‘genetic dregs.’ Duntley and Buss propose that many of the tactics that have been labeled ‘stalking’ are actually components of complex, evolved mating strategies that have had recurrent functional benefits. Shackelford examines evidence about rapes that are followed by the murder of the victim and explores several explanations that might account for these puzzling phenomena. Buss and Duntley propose a theory of mating and murder, suggesting that homicide evolved as one strategy among several to deal with an array of mating problems, from fending off mate poachers to acquiring new sex partners.

3:00 PM

- Vasquez, Geneva (U. of Arizona)
- Figueredo, Aurelio Jose (U. of Arizona)

*The "Dark Side" of Assortative Mating: The "Genetic Dregs" Hypothesis*

Various theories have been proposed that partially explain the commonly observed "comorbidity" of a suite of socially undesirable traits. One of these is the existence of an individually obligate alternative "cheater" strategy, for which there has evolved a co-adapted genome of convergent traits that biologically prepare certain individuals to specialize in antisocial and exploitative reproductive strategies. Another is the existence of a facultative conditional strategy, triggered by the presence of either other socially undesirable traits (that would otherwise put the individual at a socially and sexually competitive disadvantage), adverse environmental circumstances, or a combination of both. A third possible explanation can be derived from Fitness Indicator Theory (FIT) and assortative mating. To the extent that socially undesirable traits are also sexually undesirable in a mate, and that assortative mating is for total mate value rather than for individual characteristics, assortative mating may produce genetic correlations between these traits that lead to their observed comorbidity. Just as fitness indicator traits attract each other, inverse fitness indicators should also accumulate among the "rejects" from the sexual marketplace. As cream rises to the top, dregs sink to the bottom. A fourth, synthetic explanation proposes that a conditional strategy might have evolved that functions to "make the best of a bad job" when this inevitable accumulation of genetic dregs occurs in any individual. This last hypothesis is consistent with "accumulation of risk" models, where unweighted sums of all "risk" factors present predict antisocial behavior better than any hierarchy or specific combination of separate traits.

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3:20 PM

- Duntley, Joshua D. (U. of Texas, Austin)
- Buss, David M. (U. of Texas, Austin)

*Stalking as a Strategy of Human Mating*

The concept of "stalking" has only recently become prominent in our language and legal system, referring to certain kinds of criminal acts that are repetitive, cost-inflicting, and fear-inducing. We argue that stalking tactics have ancient origins. According to this theory, stalking evolved as one among several human mating strategies designed to solve recurrent adaptive mating problems. In certain circumstances, stalking tactics can be remarkably effective at: (1) acquiring a new mate, (2) guarding an existing mate to prevent defection, (3) fending off potential mate poachers, (4) strategically interfering with mateships, or (5) regaining or securing sexual access to a mate who has defected. We hypothesize the existence of a number of distinct, sex-differentiated, design features of a psychology of stalking in men and in women. These include psychological mechanisms that: (1) identify adaptive problems for which stalking may be an effective solution, (2) maintain false beliefs in stalkers about the needs and desires of the objects of their stalking, and (3) implement context-contingent stalking tactics. Evidence from community (N=300) and college (N=600) samples provides support for the hypothesized design features and demonstrates that stalking tactics are sometimes surprisingly successful. Discussion focuses on how co-evolutionary arms races may have shaped the design of a psychology of stalking. We conclude by considering the connections between evolved psychologies of stalking, abuse, and homicide in mating contexts.

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3:40 PM

- Palmer, Craig T. (Colorado U.-Colorado Springs)
- Thornhill, Randy (U. of New Mexico)
- Crabtree, Joshua (Colorado U.-Colorado Springs)
- Fincher, Corey (U. of New Mexico)

*Human Rape: Adaptation or By-Product? Revisited*

Determining whether traits are adaptations or by-products has been at the center of evolutionary explanations since George Williams wrote *Adaptation and Natural Selection* in 1966. Attempts to determine whether human rape is an adaptation or a by-product have been debated in the scientific literature since Donald Symons wrote *The Evolution of Human Sexuality* in 1979. Despite these facts, numerous published reviews of the book *A Natural History of Rape* reveal a failure to understand how adaptations are distinguished from by-products, and in some cases, a failure to even understand the meaning of these terms. This paper attempts to improve upon this situation by reviewing the debate over whether human rape is an adaptation or a by-product. After briefly describing the debate over this issue between Thornhill and Palmer in publications during the 1980s and '90s, the paper presents the position taken by these authors in *A Natural History of Rape*, and how this position has been grossly misrepresented by many reviewers. Finally, it evaluates some recent attempts to answer the adaptation or by-product question and how they illustrate the need to return to the fundamental guidelines provided by Williams in 1966. It concludes by demonstrating how these guidelines can generate empirical tests that will hopefully eventually answer the question of whether human rape is an adaptation or by-product.

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4:00 PM

- Shackelford, Todd K. (Florida Atlantic U.)

*Are Young Women the Special Targets of Rape-Murder? PD*

Working from an evolutionary psychological perspective, M. Wilson, M. Daly, and J. Scheib (1997) hypothesized and found that reproductive age females incur excess risk of rape-murder (being raped and murdered), relative to non-reproductive age females, and that this excess risk cannot be attributed solely to the greater association of young women with violent, young men. The current research provides the first national-level replication of these findings for the United States. I secured access to a national database of homicides occurring in the United States between 1976 and 1994 and selected for analysis cases in which a female was (a) raped and murdered by a male previously unknown to her or (b) murdered in the context of theft by a male previously unknown to her. Results replicate the work of Wilson et al. (1997) and document that (a) young men commit the majority of rape-murders and theft-murders; (b) young, reproductive age women are over-represented among the victims of rape-murder, but (c) are under-represented among the victims of theft-murder. Discussion acknowledges the uncertain generalizability of theoretical and empirical work on rape-murder to rape not accompanied by murder and addresses two challenges to an evolutionary perspective on rape-murder: (a) Why are non-reproductive age females raped?, and (b) Why are raped females subsequently murdered?

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4:20 PM

- Buss, David M. (U. of Texas, Austin)
- Duntley, Joshua D. (U. of Texas, Austin)

*Mating Motives for Murder*

We propose that murder has evolved as one contextually effective strategy among several to solve several specific adaptive problems posed by mating. These adaptive problems include: (1) terminating mate encroachment by rivals, (2) staunching the reputational damage of cuckoldry, (3) terminating the costs of physical abuse from a mate, (4) terminating the costs of sexual abuse from non-mates, (5) eliminating the costs of stalking by mates or ex-mates, (6) eliminating investments in children whose existence decreases mate value, (7) eliminating the future mating competition of one's offspring, and (8) acquiring additional mates as temporary sex partners or spouses. Empirical support for the existence of predicted design features based on this theory comes from new studies of homicidal ideation (N = 3,000), hypothetical scenarios in which people gauge the likelihood of killing in certain contexts (N = 400), and a study of actual killers (N = 800). The deployment of killing as an effective solution is held in check by the evolution of anti-homicide mechanisms specific to the contexts in which potential victim's lives are in danger. Specialized fears, cognitive biases designed to over-perceive threat, specialized mind-reading ability to discern homicidal intent, behavioral precautions, and pre-emptive murder have co-evolved to combat the risks of getting killed in these contexts. Discussion focuses on the menu of evolved solutions to critical adaptive problems posed in the dangerous game of mating.

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## Cooperation: New Theory and Models Multi-Purpose Room B, Rutgers Center

3:00 PM

- Roberts, Gilbert (U. of Newcastle)

*The Stakeholder Theory Of Altruism*

Why perform costly behaviors that benefit others? Evolutionary explanations have focussed on kinship (Hamilton 1964) and reciprocity (Trivers 1971). More recently, the roles of reputation building and sexual selection have also been considered (e.g. Roberts 1998). Nevertheless, explaining many instances of altruism remains a challenge. I present a novel explanation for altruism, based on altruists having a stake in their beneficiary's welfare. Where this is the case, altruists can benefit indirectly through increasing the welfare of others. I use a framework analogous to Hamilton's rule to show that altruism can be favoured when its costs  $c$  are outweighed by the benefits  $b$  to the recipient, devalued by the stake  $s$  that the altruist has in the recipient's welfare: i.e where  $sb - c > 0$ . Reciprocity and kinship can be seen as special cases of this rule, but altruism may be favored without either. I apply the stakeholder framework to reproductive partnerships, to social partnerships and to group-mates, and I show how it can provide important new insights in each of these contexts. In particular, pair bonding and commitment can be better understood in the light of the stakeholder concept. In sum, the stakeholder theory provides a potentially important and widely applicable explanation for altruism.

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3:20PM

- Panchanathan, Karthik (UCLA)

*Social Networks and the Evolution of Indirect Reciprocity*

Human cooperation has long been a real-world phenomenon begging an evolutionary explanation. Most theoretical work on cooperation at the dyadic level has focused on inclusive fitness and direct reciprocity. However as Trivers (1971) noted, once direct reciprocity has evolved, it can be generalized to indirect reciprocity in which altruism is directed to third parties. Helping a stranded driver is an example. If you were subsequently stranded, you would not expect assistance from the driver you previously helped, but from an as yet unknown individual. Recent modeling efforts account for indirect reciprocity through either image scoring or standing assessment. Image scorers cooperate with those that previously cooperated and defect on those that previously defected. Standing strategies also cooperate with previous cooperates. However, they parse observed defections into those that are indicative of a defecting strategy (unjustified) and those that are not indicative of a defecting strategy but rather represent acts of punishment towards defectors (justified). Theoretical analyses indicate that standing strategies are evolutionarily stable while image scoring ones are not. Empirical studies demonstrate that cooperation through indirect reciprocity can emerge when subjects are presented only with image scores. These studies also indicate that implementing a standing strategy may be hindered by working memory constraints and errors in perception. Using an agent-based simulation, I show that the standing strategy can be implemented with realistic decision heuristics requiring limited memory when agents are embedded in social networks. Additionally, I find that this strategy is robust in the face of perception errors.

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3:40PM

- Tooby, John (U. of California, Santa Barbara)
- Cosmides, Leda (U. of California Santa Barbara)

*The Evolution Of Collective Action: An Adaptationist Dissection*

Situations in which largely unrelated individuals participate in collective actions are ubiquitous in human life, posing a series of well-known evolutionary puzzles (e.g., how is the free rider problem solved?). A number of proposals have been advanced to explain the evolution of this set of behavioral phenomena. We think significant progress can be made in evaluating these as well as previously unconsidered proposals by subjecting each to an evidence-informed adaptationist analysis. In particular, this includes evaluating each for its computational plausibility, for the assumptions it makes about the relative frequency of selective events driving design trade-offs in the engineering of the adaptation, and for the assumptions it makes about the cue-structure and the information available in the ancestral world (as well as for the more commonly considered evolutionary replicator dynamics, when the hypothesized adaptation is abstracted from its engineering and reduced to a few formal properties). When this is done, some models of the adaptations (and selection pressures) appear to fit the existing data better than others, although further empirical work is needed to decide among the surviving alternatives and to map untested hypotheses about additional components of these adaptations. For example, each decision-making adaptation requires a psychophysical front end that interprets the situations it faces now according to the cue systems, inferential machinery, and learning rules that evolved in the past in response to the statistical structure of situations that prevailed during the evolution of the adaptations involved (raising questions like, what cues and evolved rules compute "anonymity" estimates?).

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4:00PM

- Aktipis, C. Athena (Reed College/ Portland State U.)

*Behavioral and Cognitive Pathways to the Evolution of Cooperation*

Over evolutionary history, humans have evolved a multitude of cognitive and behavioral mechanisms that allow us to navigate in complex social environment. Some of these mechanisms allowed us to better avoid undesirable social relationships or seek out desirable ones. The evolution of these mechanisms among conspecifics resulted in more favorable conditions for the evolution of cooperation. This series of computer simulations shows that several simple cognitive and behavioral mechanisms can greatly increase the viability of a cooperative strategy. These heuristics include contingent movement rules and simple recognition memory for defectors. Other factors relevant to the evolution of cooperation in humans are investigated using computer simulations, especially the role of 'friendship niches' (Cosmides & Tooby, 1996).

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4:20 PM

- Cory, Gerald A. (Center for Behavioral Ecology and San Jose State U.)

*Hamilton's Rule, Evolved Brain Structure, and the Conflict Systems Neurobehavioral (CSN) Model: Linking Evolutionary Psychology and Evolutionary Neuroscience*

This paper builds on the work of Paul MacLean to bring together new insights into the architecture of human hierarchy, conflict behavior, and reciprocity in the form of the Conflict Systems Neurobehavioral (CSN) model. Hamilton's rule of inclusive fitness or kin altruism is proposed to be the gene's eye complement to MacLean's evolutionary science and the CSN model derived therefrom. The mature expression of our neural architecture is an emergent, developmental process shaped by our social interactions and social institutions. Hierarchy, conflict behavior, and reciprocity are central issues in clinical syndromes of depression, mania, and other social maladjustments. The emerging insights permit integration of the concept of inclusive fitness underpinning evolutionary psychology with MacLean's perspective on evolutionary neuroscience as well as the definition of new challenges for mental health and social stability. The policy implications are indicated. This paper extends material reported in the forthcoming work *The Evolutionary Neuroethology of Paul MacLean: Convergences and Frontiers* (Greenwood) by the author and Russell Gardner as well as other recent publications by the author.

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Mothers, Infants, and the Origin of the Family  
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3:00 PM

- Schlegel, Alice (U. of Arizona)

*The Origin Of The Human Family*

This paper concerns the origin of the family in the human ancestral population. I define the family as a closely cooperating unit of both sexes and all ages, based on reproductive ties through both ancestors and descendants. Its antecedent was probably a chimpanzee-like mating pattern but with male transfer into matrilineal units. The family entails pair-partnership, which evolved due to male provisioning of offspring (not necessarily with meat) beyond weaning. Mating was most likely to have been socially monogamous, with polygynous or polyandrous units forming under specific conditions. The family could have predated language and culture, dependence on intensive scavenging and hunting, and the division of labor by sex. Support for these assertions is provided by universal human social structure, early sex differences, and differential treatment of male and female adolescents worldwide. One effect of the attachment of males to matrilineally bonded females was to intensify social support and its health-enhancing features. These features made it possible for older individuals of both sexes to survive, if they were genotypically predisposed to a longer lifespan. Provisioning of grandchildren by males and females led to greater reproductive success and selection for longevity for both sexes (building on the "grandmother hypothesis" of Kristin Hawkes and her colleagues). This would have set the stage for the reciprocal care and attention that exists to this day between older parents and adult children.

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3:20 PM

- Dissanayake, Ellen (Independent Scholar)

*Is Early Mother-Infant Interaction a Ritualized Behavior?*

In all cultures people's behavior with infants is different from their behavior with adults or even older children. The facial expressions, head and body movements, and vocalizations used with infants are significantly altered from those used in other social interactions: they are simplified or stereotyped, rhythmically repeated, exaggerated, and elaborated -- features that are characteristic of "ritualized" behaviors in other animals. It is generally accepted that human "rituals" of greeting, parting, appeasement, threat, dominance, etc. -- although based on evolved social signals (primarily facial expressions) -- are cultural creations that are only analogous to their evolved, "instinctive" counterparts in other animals. I hypothesize, however, that mother-infant interaction evolved in an ancestral human population as a ritualized interactive affiliative behavior that enhanced the survival of highly altricial infants and the reproductive success of their mothers. Specific characteristics of this interaction -- especially the surprising finding of an implicit underlying shared rhythmic pulse, which allows each partner to anticipate the other's response and facilitates turntaking and synchronized coordination -- seem relevant to current theoretical discussions about other defining adaptations in humans: spoken language; a primary need for mutuality; the male-female pair bond; and the temporal arts (song, dance, and mime).

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3:40 PM

- Monnot, Marilee (U. of Oklahoma)

*Affective Prosody & Infant-directed Speech: Evidence for a New 'Basic' Emotion* PD

It has been shown that a small number of emotions are recognized by individuals from diverse cultural backgrounds, on the basis of facial expressions and vocal cues (anger, sadness, joy/playfulness, fear, disgust, and surprise). Prosody is the nonlinguistic feature of spoken language that includes pitch, intonation range, tempo, pausing, emphasis/stress, and rhythm. Affective prosody denotes the emotion of the speaker and, combined with words and gesture, creates the total communication or message sent from one discourse partner to another. *Affective prosody is injected into the speech stream automatically and subconsciously.* When words and affective prosody do not match, as in sarcasm, neurologically healthy listeners believe the tone of voice rather than the words, and make social judgments based on that opinion. Infant-directed (ID) speech, compared to adult-directed (AD) speech, is the change to simpler phrases, longer pauses, more repetition, wider tone range, and higher overall tone when addressing an infant under three years of age. *These changes are injected into speech automatically and unconsciously by a speaker,* regardless of genetic relatedness to the infant. It has been documented in diverse language groups including click, tone, and sign languages, and has been hypothesized as a universal human trait. A non-human primate homologue has been documented in the squirrel monkey. ID speech appears to have similar attributes to affective prosody, such as automatic injection into the speech stream, and nearly universal usage/comprehension. Therefore, it may be indicative of a new 'basic' emotion of sensitive responsivity or solicitude.

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4:00 PM

- Fidler, Deborah (Colorado State U.)

*Parental Vocalizations and Perceived Maturity in Down Syndrome* PD

Children with Down syndrome retain infant-like craniofacial proportions into early adolescence, and this appearance elicits perceptions of youth and immaturity from others (Fidler & Hodapp, 1999). Beyond a youthful appearance, children with Down syndrome may also possess a set of behavior characteristics that signal youthfulness as well, including immature-sounding language, playfulness, and mimicry. In this study, we examine whether parents of individuals with Down syndrome retain an interaction style characteristic of parents interacting with very young children. Specifically, we examine whether parents of children with Down syndrome speak to their children in accordance with an evolved maternal vocalization pattern tailored to infants and young children when compared to parents of children with mixed etiologies of mental retardation. Subjects in this study were 35 children with mental retardation and their parents (Down syndrome  $n = 20$ ; mixed comparison group  $n = 15$ ). Children in the two groups were matched on chronological age (Down syndrome  $X = 10.17$  years, control  $X = 11.66$  years,  $t[33] = 1.11$ , ns) and Vineland Communication Age Equivalent Scores (Down syndrome  $X = 4.19$ , control  $X = 4.61$ ,  $t[33] = 0.47$ , ns). All children in the study had an MLU of at least 1.0. During a 10-minute interaction, paralinguistic and linguistic features of parental language were compared in the two groups. Baseline linguistic and paralinguistic features for each parent were analyzed in another sample of parent speech to the experimenter. Compared to the mixed etiologies group, parents of children with Down syndrome increased their pitch variance (i.e. spoke in a more sing-song way) significantly more from parent-investigator to parent-child interactions,  $t(33) = -3.98$ ,  $p < .0001$ . In fact, 75% (15 of 20) of parents in the Down syndrome group had variance difference scores over 1000, while only 15.4% (2 of 13) of parents in the comparison group did so,  $c2(1, N = 33) = 11.21$ ,  $p < .001$ . Parents of children with Down syndrome also raised the mean fundamental frequency of their voice (i.e., spoke in a higher register) significantly more when talking to their child,  $t(33) = -2.33$ ,  $p < .03$ . On average, parents of children with Down syndrome raised the mean fundamental frequency of their voices by 45.06 Hz, while the parents in the comparison group raised their pitch by 27.69 Hz. The role of child maturity cues in eliciting parenting behavior in humans is discussed.

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4:20 PM

- Alcorta, Candace Storey (U. of Connecticut)

*The Primacy of Hominid "Secondary" Altriciality*

The altricial state of the human neonate has traditionally been viewed as a secondary consequence of narrow hipped bipeds birthing big brained babies. It is here proposed, however, that hominid altriciality comprises a primary adaptation that both predated and promulgated encephalization, pair bonding, and the evolution of symbolic culture. Altriciality represents a developmental strategy in a species' life history. The costs of altriciality include neonatal immobility and prolonged infant dependence; the predominant benefit of altriciality is brain plasticity resulting from incomplete neonatal neurological development. Such plasticity permits the shaping of individual behaviors through environmentally based learning. Species exploiting highly variable and/or rapidly evolving ecologies that require innovative and/or learned behaviors benefit from such plasticity. Terrestrial predators, including all members of Carnivora and Insectivora, represent such altricial species. The shift to a widely omnivorous diet in the variable and changing savannah ecology of 2-5 million years ago and increasing reliance on hunting as a resource acquisition strategy initiated selection for altriciality in early hominid populations. Altricial neonates unable to locomote or cling reduced the mobility of female hominids. Lack of "trustworthy" kin caretakers in the predominantly



male kin groups precluded non-maternal caretaking of infants during female participation in hunting activities. A gender-based division of labor based on female foraging and male cooperative hunting resulted. With this division of labor, the pair bond emerged as an evolutionarily stable strategy over a range of economic conditions and introduced a kin-based mechanism for the creation of intergroup alliances. Symbolic communication through ritual, increasing encephalization, and the evolution of human culture ensued.

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## FORAGING AND FORAGERS OF VARIOUS KINDS

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3:00 PM

- Sandstrom, Pamela Effrein (Indiana U. – Purdue U., Fort Wayne)

*Information Foraging in Human Behavioral Ecology: Using Optimal Foraging Theory to Understand Scholars' Decision Making* **PD**

This presentation reports findings of a bibliometric study of the field of human behavioral ecology framed within optimal foraging theory. Using an innovative toolkit provided by author co-citation analysis, including cluster analysis, principal components analysis, and multidimensional scaling techniques, the research specialty of human behavioral ecology is visualized at large and also portrayed from the perspective of five active contributors. Author co-citation methods reveal intellectual relationships among authors whose work is repeatedly referenced over time in a vast interdisciplinary literature. Based on data derived from the Social SciSearch citation database produced by the Institute for Scientific Information, author co-citation patterns in the field of human behavioral ecology are used to define the core-periphery structure of the five respondents' own idiosyncratic information environments. These empirical zones of the individual maps are then correlated with data from interviews and questionnaires designed to tap the respondents' information searching and handling behaviors. For an aggregated sample of 180 references cited in their recently published articles, the respondents provided detailed data about how they had discovered and retrieved each cited item. The analysis correlates the different microhabitats of the bibliographic topography with types of socially mediated communication and distinctive information foraging behaviors. Findings support an interpretation that active specialty members conform to foraging efficiency principles as predicted by optimal foraging prey-choice models.

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3:20 PM

- Spink, Amanda (Pennsylvania State U.)
- Cole, Charles (McGill U.)

*Towards an Evolutionary Understanding of Everyday Life Information Seeking*

For millennia humans have sought, stored and used information as they learned and evolved patterns of everyday life information seeking (ELIS) behaviors to resolve their human problems. Information science models the totality of ELIS and individual differences in relation to human use of sources and channels of information, including both passive and active information seeking and use with and without information technologies. Information science is beginning to explore ELIS from two perspectives: (1) a problem solving/sense making process and (2) an information foraging process. This paper discusses the strengths and weaknesses of both approaches and suggests an integrated approach to ELIS that incorporates both approaches within a multilevel ELIS model. Our model also includes a beginning framework for an evolutionary perspective towards ELIS.

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3:40 PM

- Sugiyama, Lawrence (U. of Oregon)
- Chacon, Richard (El Camino College)

*Foraging Skill Acquisition And Life History Evolution: Age Related Foraging Tradeoffs Among Shiwiar And Yora Horticulturalist-Foragers*

Humans life history is characterized by delayed reproduction and long lifespan. One approach to explaining delayed reproduction is that a longer juvenile period allows time for complex skill acquisition that enhances later fitness. In humans, foraging competence has been hypothesized to entail complex subsistence strategies for exploiting difficult to acquire foods, such that one benefit leading to evolution of longer pre-reproductive lifespan was time necessary to acquire foraging skill. However, this hypothesis has recently been contested. Because the time necessary to acquire foraging competence depends on local ecology, foraging technology, and the type of foraging engaged in, data from a variety of societies that practice subsistence foraging are necessary to evaluate the foraging skill acquisition hypothesis. Here we report data on age related foraging efficiency, success rate, and preferred foraging strategy and technology among forager-horticulturalist Shiwiar of Ecuadorian Amazonia and Yora of Peru.

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4:00PM

- Thompson, Barty (Albright College)

*Human Territoriality is Like an Ogre – It Has Layers*

Prior evolutionary research on human territoriality focused on resource procurement (Dyson-Hudson & Smith 1978, Cashdan 1983, Smith 1988). Based on recent assessments of new and existing field data pertaining to human territoriality, it appears as though territoriality arises to exclude potentially hostile conspecifics from home habitats. To fully comprehend the complexity of this mechanism, one must consider social organization, attachment to lands, and potential threats from outsiders. Although territoriality and land attachments do not have to be connected theoretically, empirical data indicates that they are. Land attachments arise between recognized social groups and lands that they inhabit. These recognized social units are loosely synonymous with tribes. Among hunter-gatherers they are represented by related residential hunting units, which periodically aggregate. Feelings of spatial exclusion towards unfamiliar outsiders who pose a threat to group members arise quite strongly for these same lands. This mechanism appears to be facultative so that when the threat of hostile outsiders is minimized, the tendency to exclude them is not expressed. A second layer of mechanisms appears to deal with resource procurement. There is evidence to suggest that this mechanism is more generalized and not specifically tied to territoriality. Feelings of spatial exclusion to monopolize potential food resources arise among residential-foraging units and are much less intense; in fact, spatial exclusion is not usually maintained to protect resources from non-threatening individuals. Instead hunters rely on their own familiarity with their habitat to know who is doing what on their lands.

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**Male Attractiveness and Female Choice**  
**Multi-Purpose Room A, Rutgers Student Center**

4:55PM

- Townsend, John Marshall (Syracuse U.)

*Male Sexual Attractiveness: the Single Best Predictor*

Both quantitative and qualitative data on sexual behavior and partner-selection criteria of certain women (e.g., high-status and/or sexually permissive women) indicate that, although their behavior and attitudes (as reflected in formal measures such as Likert-type scales) may resemble or even match those of comparable men, their underlying goals, motivators, and emotional reactions differ profoundly. Some forced-choice questions that are designed to tap and reveal these differences are proposed. Implications for research on male physical traits, e. g., fluctuating asymmetry, are discussed.

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5:15PM

- Mueller, Ulrich (Philipps U. Marburg)
- Mazur, Allan (Syracuse U.)

*Further Evidence For Male Tallness Being Sexually Selected*

As Mueller & Mazur have shown in lifetime data for a special population - the class of 1950 of the US Military Academy at West Point - that male tallness is positively associated with lifetime reproductive success, independently of the advantages male tallness yields on the labour market, thereby making taller men better providers. These findings supported similar findings from a cross-sectional study of a representative sample of the Polish population.

Now, size of family of origin is known to be a major factor determining own family size targets. Also, body height is known to be highly heritable, it is also dependent of health and nutritional status during childhood and adolescence. Women selecting tall mates for other reasons than their provider potential, can do so for various reasons: assortative mating (if they themselves are tall), good genes, or good health. Clearly, all these factors may be more or less associated with each other: tall men may have more siblings because their parents were better off, healthier, could afford more children. Also, tall men tend to have tall fathers, who in turn were more attractive to women, had a second family more often than short men, and so on. For an additional sorting out between factors on the side of the advertising male, and factors on the side of the selecting female, it is interesting to see, if the fitness advantage of tall men remains even after relative height of tall men's fathers and number of siblings is controlled for: any remaining fitness advantage of tall men would have to be accredited to sexual selection in the narrow perspective of the present generation. In our West Point data set, we have the number of a man's siblings as well as of his uncles and aunts. For a small number (n=54), we even have data on tallness of their fathers, since these were West Point

graduates themselves. Thus, we are able to study the effect of tallness in the marital and reproductive biographies of men with family size of fathers and (for a subsample) tallness of fathers controlled for.

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5 : 35 PM

- Feinberg, David R. (Rutgers U.)
- Jacobson, Amy (Rutgers U.)

*Human Mate Choice and Female Preferences for Male Voices: Correlations with 2D:4D and Sexual Behavior*

Males with lower 2D:4D ratios have been shown to possess more masculine characteristics and in some cases to have higher sperm counts. Studies have also shown that some females prefer certain males with more masculine 2D:4D ratios as mates. This may have to do with the Hox gene complex that controls the expression and development of the gonads and distal appendages. Other research has shown that males with lower pitched voices have more testosterone and testosterone receptors in their larynges at puberty than individuals with higher pitched voices. Both pitch of the voice and 2D:4D ratio are on average, sexually dimorphic traits in humans. Based on this information, we conducted an experiment in which we hypothesized the following: Men with masculine 2D:4D ratios should also have masculine voices. Also, fertile females should prefer, based on playback experiments and viewing pictures, males that exhibit these more masculine traits. The study involved recording the vocal characteristics, taking bodily measurements, and facial photographs of 11 male subjects. Subsequently, 75 females rated each male subject independently for a series of sociosexual variables using their facial photograph and then listening to a series of vowels from each male. The research reported here intends to show that males with more masculine 2D:4D digit ratios also have more masculine voices as measured by fundamental and formant frequencies, the amplitudes thereof, harmonic to noise ratio, jitter, and spectral tilt. We predict that males with feminine voices and feminized 2D:4D digit ratios should be preferred by infertile females as mate partners based on data from morphed photo studies which indicate that in Western societies nonfertile females may be choosing mates based on potential parental investment. This is because while masculine males may indicate higher genetic quality, more feminized males may be associated with characteristics indicative of higher paternal investment and lower genetic quality.

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**Commitment**  
**Multi-Purpose Room B, Rutgers Student Center**

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It is increasingly clear that individuals who pursue direct fitness maximization are often at a selective disadvantage compared to individuals with a capacity for using commitment strategies to strengthen cooperation beyond what is possible by reciprocity, and to make threats effective. Much of the evidence that selection has shaped specific capacities for such strategies comes from studies of guilt and social obligation. In conjunction with costly signaling, ideology, and the high price of joining and leaving tightly organized religious groups, these evolved capacities may help to explain much human behavior that does not fit in a simple self-interest model, and may help to bridge the gap between individual behavior and complex social structures. The presentations in this session build from the theory of commitment to data about actual behavior based on commitments, studies of guilt, and studies of how these capacities help to explain the special structures of religious organizations.

4 : 55 PM

- Nesse, Randolph M (U. of Michigan)
- Kruger, Daniel (U. of Michigan)

*Measuring Commitment: Methods, Importance and Correlates*

A capacity for commitment has been proposed to offer a selective advantage by allowing individuals to benefit from relationships more efficient and deep than those possible from reciprocity, and by making it possible to influence others by making threats that would harm the self more than the other. In order to study these phenomena, we administered a one-hour battery of instruments to a sample of 242 undergraduates. The scales included Machiavellianism, exchange orientation, mood and personality measures. We also asked respondents to complete a series of ambiguous narratives and to describe the situation in their lives when someone had helped them the most with no expectation of payback, when someone had harmed them the most to no obvious benefit, and comparable situations when they were the actors. We found substantial stable variation in tendencies to describe relationships based on exchange vs. commitment, suggesting that this tendency can be used to investigate the phenomenon. Those who tended to see relationships based on commitment differed in significant ways, including more positive perceptions of others ( $r(243) = .128$ ,  $p = .046$ ) compared to those who tended to see relationships in terms of exchange. As expected, relationships involving relatives demonstrated higher levels of commitment. The strength of relationship commitment was significantly related to the cost ( $r(190) = .404$ ,  $p < .001$ ), and benefits, ( $r(190) = .282$ ,  $p < .001$ ). We describe the strengths and weakness of the measures used, and how they can be used and improved to study the capacity for commitment.

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5:15 PM

- O'Connor, Lynn E. (The Wright Institute)
- Berry, Jack W. (Virginia Commonwealth U.)

*Interpersonal Guilt, Psychopathology and Anxious Temperament: An Evolutionary Perspective*

Homo sapiens, being a highly flexible and social animal adapted for group living, has evolved psychological mechanisms that serve to hold the family and the larger social group together, that support food sharing with family and other group members, along with a proneness to take action to help others when feeling empathic concern. Guilt is one underlying mechanism supporting group living. While guilt may serve an adaptive function in many instances and certainly in the EEA, high proneness to guilt in our culture is associated with psychological problems. We have been examining the role of survivor guilt and omnipotent responsibility guilt in psychopathology. Survivor guilt is defined as worrying about surpassing others, getting more than one's fair share, or cheater detection turned inward. Omnipotent guilt is defined as feeling highly responsible for the well-being of others. We will briefly review some of our prior findings as well as present a new study, using Akiskal's measure of generalized anxious temperament (GAT), also referred to as "altruistic anxiety", a biologically based component to personality. GAT may be an adaptation selected by evolution, serving the function of making a person alert to environmental dangers that might bring harm to oneself or one's family. In 173 subjects we found that GAT, when controlling for neuroticism, significantly predicted both survivor and omnipotent guilt. While GAT and guilt may be associated with psychopathology, we propose that they may also play a role in altruism, the capacity to act on empathic responses, as well as in commitment

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5:35 PM

- Irons, William (Northwestern U.)
- Chagnon, Napoleon A. (U. of California Santa Barbara)

*The Unseen Order: How Religion Works as a Hard-to-Fake Sign of Commitment*

William James defined religion as belief in an unseen order combined with a belief that the highest good consisted of bringing our lives into harmony with that unseen order. Most cultural traditions contain beliefs in an unseen order and rituals designed to deal with this unseen order. In more traditional societies, such systems of belief are ubiquitous and the rituals and other activities motivated by these beliefs are often costly in terms of time and energy, and often restrict activities in costly way. Why should human beings have such beliefs and why should they pay such costs? This presentation argues that these beliefs and the associated costs serve as commitments to social groups, and, at the same time, hard-to-fake signals of such commitment. Human beings have an evolved propensity to accept such beliefs and use them to create and strengthen social alliances. Yanomamö shamanism is examined as an example of a set of culture traits that individual Yanomamö can use to signal loyalty to their kin and their community and which they also can use to inspire hostility toward enemies. From the point of view of modern, literate people their belief in an unseen order may seem unduly tied to inter-village hostility. However, religion in general can be either a constructive or a destructive force (by modern standards). What is important is to recognize that it is a powerful force for defining both allies and enemies, and that it makes sense as a strategy for increasing within-group solidarity in an environment of inter-group competition. Religion is often a mirror of political strategy at the supernatural, moral, and "ethical" levels of social action.

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5:55 PM

- Bressler, Eric (McMaster U.)
- Sosis, Richard (U. of Connecticut)

*Cooperation and Commune Longevity: A Test of the Costly Signaling Theory of Religion*

The costly signaling theory of religion posits that religious rituals and taboos can promote intra-group cooperation, which is argued to be the primary adaptive benefit of religion. To test this theory we collected historical data on the constraints and ritual requirements that eighty-three 19th century U.S. communes imposed on their members. All communes must solve the inherent collective action problem of cooperative labor to survive, thus they are an ideal population to assess the impact of ritual and taboo on intra-group cooperation. We evaluate whether (1) communes that impose costlier requirements survived longer than less demanding communes, (2) religious communes impose costlier requirements than secular communes, (3) the costliness of requirements impacts commune longevity independent of religiosity, and (4) costlier requirements enable communes to overcome the inherent problems of collective action in communal life. Our results support aspects of the costly signaling theory of religion, and reveal new avenues for its development. We discuss some of the shortcomings of the costly signaling theory of religion and explore ways to expand the theory that incorporate additional features of ritual and religious belief.

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Cognitive Architecture I  
Room 411, Rutgers Student Center

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4 : 55 PM

- Barrett, H. Clark (UCLA)

*Enzymatic Computation: A New Model Of Cognitive Modularity*

The proposal that the brain is composed of specialized computational devices, or “modules,” has led to many advances in our understanding of the evolution of the mind. The term “module,” however, remains highly contentious. Many theorists, including Jerry Fodor, who initially introduced the term, vigorously deny that the architecture of the mind, aside from perceptual systems, could possibly be modular. Arguments against “massive modularity,” however, depend on assumptions about the nature of modules that might be based more on stipulation than on attempts to capture the correct ontology of evolved computational devices. In this paper, a new model of cognitive modularity is introduced that makes explicit points of analogy to existing, modular, computational devices: enzymes. Enzymes 1) accept information of precisely specified format, 2) perform operations on it, 3) produce output that can subsequently be acted upon by other computational devices, and 4) do not have certain properties that, according to Fodor and others, would render a “massively modular” system impossible. Using enzymes as a model system for cognitive modularity resolves many of the ambiguities in current debates about modularity, and suggests that Fodor's disproof of the "Massive Modularity Hypothesis" relies on an overly narrow construal of modularity, and of computation in general.

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5 : 15 PM

- Boster, James (U. of Connecticut)

*Domain Specific Modules For Biological Similarity Judgment: A Case For Generality.*

Past work (Boster, Berlin, and O'Neill, 1986; Boster, 1987; Boster and D'Andrade, 1989) has shown that diverse groups of humans (U.S. undergraduates, native South Americans, and scientific ornithologists) agree in their recognition of patterns of resemblance among a collection of South American bird specimens and agree also on the attributes of the birds to use in their similarity judgments. We interpreted these results as evidence that cross-cultural agreement in biological classification is the outcome of a pan-human perceptual strategy that selects those attributes of a collection of organisms that yield the most informative classification. Here I report the results of experiments that probe the nature of this shared perceptual strategy. Undergraduates were asked to judge the similarity of Fourier blobs with the same correlational structure as the sets of birds specimens used in the original experiments. They sorted the blobs similarly to the way that the birds that they had been based on were sorted, suggesting that the shared perceptual strategy is quite general in its ability to discern the correlational structure of attributes: the attributes need not be presented as natural biological forms such as beaks, feathers, and talons. Apparently the domain specific modules that have evolved to allow humans to recognize patterns of biological similarity are quite general.

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5 : 35 PM

- MacDonald, Kevin (California State U.-Long Beach)
- Chiappe, Dan (California State U.-Long Beach)

*The Evolution of General Intelligence: The Roles of Working Memory and Analogical Reasoning in Solving Novel Problems*

Evolutionary psychologists have proposed that the mind is a collection of modules — domain-specific and encapsulated mechanisms that map characteristic inputs onto characteristic outputs. These mechanisms present optimal solutions to recurrent problems with a restricted problem space. However, modules are incapable of solving novel problems, or generating novel solutions to longstanding problems — things that humans, and many other animals (e.g., ravens), are capable of doing. To explain how we deal adaptively with novelty we need to postulate mechanisms of general intelligence (g). Mechanisms underlying g include the executive functions of working memory able to activate goal-relevant representations while at the same time inhibiting potentially distracting representations. These mechanisms are critical for constructing, executing and maintaining a plan of action. They are non-modular and domain general. Measures of working memory capacity predict performance across a wide range of tasks (provided they are novel and demanding of attentional resources). They are also unencapsulated: Representations activated in problem solving come from a wide range of domains. A paradigmatic example is analogical reasoning, a capacity known to correlate highly with g. Analogical reasoning involves activating representations associated with a source domain (e.g., “weeds”) and mapping those features onto a target domain (e.g., “rumors”). Properties irrelevant to the mapping are inhibited. The features involved tend to be higher-order, abstract features associated with concepts. The analogy between rumors and

weeds, for instance, depends on the fact that weeds can spread quickly and uncontrollably. The abstract nature of analogy allows for conceptual mappings to occur across semantically very different domains. There seems to be no limit to the domains that humans can bring together to create analogies, including analogies useful for solving novel problems. This is inconsistent with the assumption that the mind is made up of solely modular mechanisms.

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5 : 55 PM

- Dickins, Thomas E. (Nottingham Trent U.)

*What Can Evolutionary Psychology Tell Us About Cognitive Architecture? PD*

Certain brands of evolutionary psychology have argued that a massively modular cognitive architecture is the necessary outcome of natural selection. This argument appears to be predicated upon three core and questionable assumptions - 1) a Classicist Computational Theory of Mind; 2) Marr's (1982) tripartite explanatory project for the cognitive sciences; and 3) the view that adaptive behaviour must come under fairly direct cognitive control. This paper argues that, under these core assumptions, there is in fact no direct support for a modular architecture from an adaptationist analysis. This is because such analyses are always at the behavioural level and there is nothing in the behavioural data to help decide between possible architectures. Behavioural data can only be used to provide an extensional functional analysis and architectural claims are to some extent intensional. This leaves only an argument from theoretical cognitive science and this too is weak. The paper then asks whether an evolutionary perspective can inform models of cognitive architecture at all and concludes that it can, but under a different set of assumptions about the fundamental nature of cognition, that are more in line with connectionist assumptions. Such approaches favour ground up modelling of functions and thereby impose a form of parsimony on algorithmic and architectural speculations. None the less, if the primary use of evolutionary perspectives is to provide theoretical parsimony there are a number of philosophical tensions still to resolve.

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Psychopathology I  
Brower Commons ABC

4 : 55 PM

- Pillmann, Frank (U. of Halle-Wittenberg)

*Risk Taking, Gender And DSM-IV Personality Disorders*

Personality disorders (PDs) are usually conceived as extreme variants of "normal" personality traits. For some PDs, prevalence varies between the genders, but there is no consensus about the reason of these gender differences. An important evolutionary mechanism responsible for gender differences in behavioral traits refers to the relative importance of risk-taking and risk-avoiding behaviors for the reproductive success of males and females, respectively. This paper explores the relationship between (expert rated) risk taking and the gender differences in personality disorders as defined by DSM-IV.

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5 : 15 PM

- Hagen, Edward H. (Humboldt U.)
- Barrett, H. Clark (UCLA)

*Is Postpartum Depression An Adaptation? Evidence From Shuar Mothers*

The standard medical model views investment in offspring as automatic; consequently, pregnancy and postpartum depression, which are characterized by a disinterest and reduction in investment in a new offspring, are viewed as 'mental illnesses'. Given the enormous costs of raising human infants, it is a virtual certainty that mothers evolved to evaluate social support, access to resources, and infant health before committing to a dozen or more years of investment in the new child. Scores of studies in industrialized societies have shown that that latter are excellent predictors of pregnancy and postpartum depression. Here we report results of the first study of pregnancy and postpartum depression in a small-scale, kin-based hunter-horticultural society. These results include prevalence of pregnancy and postpartum depression, indigenous explanations for pregnancy and postpartum depression, and the association between desire for the new offspring and pregnancy and postpartum depression.

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5:35 PM

- Crawford, Charles (Simon Fraser U.)
- Salmon, Catherine (Simon Fraser U.)

*The Reproductive Suppression Hypothesis and Anorexic Behaviour*

A compelling puzzle of Western culture is the disturbing preoccupation of women with body image and dieting. The reproduction suppression hypothesis (Surbey, 1986, Crawford, 1989) for explaining some anorexic behaviours depends on two well known biological relationships. The first is Williams (1966) argument that an organism can improve its lifetime reproductive success by delaying reproduction if current conditions for reproduction are poor, but can be expected to improve. The second is Frisch's (1985) research indicating that the level of body fat in women has an important effect on the likelihood of ovulation. The reproduction suppression hypothesis of anorexic behaviour can explain the distorted body image and desire for thinness in anorexics, why anorexia is more common in females, why it is more common in industrialised societies, and why onset tends to be in the teen age years. We review some evidence supporting the hypothesis, discuss methods of testing it, and explain its limitations for explaining the pathogenesis of anorexia nervosa.

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5:55 PM

- Juda, Myriam (Simon Fraser U.)

*Female Dieting as a Result of a lack of Social Support: An Evolutionary Approach NI*

This study explores the Reproductive Suppression Hypothesis by examining the relationship between partner investment, support from friends, support from family, and measures of female reproductive functioning. Reproductive suppression was measured in terms of scores on three subscales of the EDI (Body Dissatisfaction, Drive for Thinness, and Maturity Fears) and scores on a measure of parental readiness. The results supported the prediction, that reduced support is associated with increased reproductive suppression. Partner investment was significantly negatively correlated with the EDI subscales, and significantly positively correlated with parental readiness. This effect held, even when controlled for length of relationship, support from friends, support from family, stress, and body mass index. Also, support from family was significantly negatively correlated with the EDI subscales and significantly positively correlated with parental readiness, even when controlled for partner investment, and support from friends. Interestingly, no correlation was found between support from friends and the two measures of reproductive suppression. The implications of the results are discussed.

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## Friday, June 21

- 8:30–08:35 AM

### Announcements

Morning plenary by Tim Birkhead: *Post-copulatory Sexual Selection*. Introduced by Helen Fisher.

- Birkhead, Timothy R. (U. of Sheffield)

*Post-copulatory Sexual Selection*

Darwin assumed that the females of most animals were sexually monogamous and hence ignored the possibility that sexual selection might continue after mating. Trivers, building on Bateman's work from 1948 and Parker in particular introduced the concept of sperm competition around 1970. Female perspectives were ignored until the mid 1980s. Post-copulatory sexual selection has since developed into a major area of evolutionary research focussing on: (i) the adaptive significance of copulating with more than one partner for both sexes, (ii) the underlying mechanisms determining fertilisation success, and (iii) the evolution of adaptations associated with post-copulatory sexual selection. In this talk I will review these issues using information primarily from birds but also from other taxa including humans.

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- 9:35–10:00 AM

### Refreshments

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New Developments in Biology  
Multi-Purpose Room A, Rutgers Student Center

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10:00AM

- Trivers, Robert L. (Rutgers U.)

*What's new on B chromosomes?*

B chromosomes are second only to transposable elements for purposes of comparative analysis of selfish genetic elements, having been described in over 2000 species. Recent advances include (1) the discovery that B's are largely limited to outbred species and that independent of this fact, (2) B's are much more likely in species with larger genomes and (3) fewer chromosomes. The meaning of these latter correlations are, at present, obscure. (The data are corrected for study effects which are themselves large.) Recent evidence provides support for (4) the notion that A chromosomes increase recombination in response to presence of B's, in order to reduce their drive, and (5) sex antagonistic genes interact with sex-limited drive, especially in grasshoppers in which there appears to be a struggle by the B chromosome to be preferentially included in the driving sex (females).

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10:20AM

- Camperio Ciani, Andrea (U. of Padova)
- Corna, Francesca (U. of Padova)

*A Family Tree Analysis Shows An Increase Of Reproductive Success In Heterosexual Carriers Of An X Chromosome Factor Partially Associated With Male Homosexuality*

Controversial studies have shown that male homosexuality might be partially associated with a factor on the Xq28 chromosome portion (Hamer et al., 1993; Rice & Anderson, 1999). How it's possible that an allele that somehow influence reproductive success reduction can survive, is truly a Darwinian puzzle. We tested the hypothesis that heterosexual carriers of this X allele have increased fecundity to balance out the reduction of reproductive success of homosexuals. Using a questionnaire we reconstructed reproductive success and sexual orientation of 2123 individuals belonging to the family trees from a sample group of 89 homosexuals. We compared them with 2261 individuals correspondent to the family trees of 100 heterosexuals. We found that in the families of homosexuals the likelihood, associated with this X factor, of being homosexual is approximately .2. To assess reproductive success we controlled for the Genomic Imprinting (Blanchard & Bogaert, 1996), that assumes homosexuals being most often found in large families, with elder brothers. We therefore considered only the families of the 54 homosexuals with no elder brothers. We found that heterosexuals who might share this X factor with homosexuals have significantly .16 - .19 more offspring: mothers of homosexuals 2.5 (n= 54) vs mothers of control group 2.1 (n=78)  $p < 0.05$ ; maternal aunts 1.79 (n=59) vs 1.54 (n=120)  $p < 0.05$ ; maternal uncles 2.0 (n= 31) vs 1.72 (n= 119)  $p < 0.1$ . This is the first evidence that a genetic factor, partially associated with homosexuality, can maintain itself in the population by increasing average reproductive success in heterosexual carriers.

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10:40AM

- Reese, Virgil

*Mutation Repair: A Proposed Mechanism That Would Enable Complex Genomes To Better Resist Mutational Entropy, And Which Suggests A Novel Function For Meiosis NI*

A mechanism is postulated that would enable sexually reproducing organisms to identify, mark and then replace point mutations within some highly conserved genes. Because mutations in otherwise highly homozygous regions will appear as isolated heterozygotes, they are potentially identifiable during the homology search preceding meiotic homologous recombination (HR). Even though individual genomes have no way of determining which of these two alleles is the likely mutation, it is hypothesized that in some highly conserved genes, regions that harbor atypical isolated heterozygotes are identified and marked during (or just preceding) meiotic HR, and that after fertilization this mark acts to promote HR in the new organism. Because HR produces stretches of hybrid DNA in which isolated heterozygotes become base pair mismatches, and then repairs these mismatches in favor of the allele on the non-initiating strand, this HR would tend to replace these atypical alleles with their likely wildtype counterparts on their new 'unmarked' homologous chromosome. It is assumed that this replacement would take place during the following meiosis, since meiosis is when HR occurs most extensively, and since this would effectively remove these likely mutations from the new organism's germ cell line. Suggestions are offered as to how regions containing these atypical alleles might be altered so that they promote meiotic HR in s subsequent meiosis; and it is argued that the potential relevance of such a mechanism to the questions of how species avoid mutational entropy, and of why sexual reproduction prevails, warrants a closer look at this idea.

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11:00AM

- Rushton, J. P. (U. of Western Ontario)

*Evolution of Social Responsibility: A Twin Study*

Behavioral genetics may be able to contribute to the evolutionary synthesis that is taking place. Human beings are a highly intelligent social species that evolved to construct ideologies of social responsibility to make communal living more effective. People differ, however, in how inclined they are to act in a socially responsible manner. Although most evolutionary psychologists look at the "average" human being, in fact, evolution is the science of variation and selection. Adoption studies and twin studies show that much social behaviour is heritable. Two previously published twin studies by me used the U. of London Institute of psychiatry Twin Register and found that 50% of individual variation in altruism, aggression, and delinquency is genetic and 50% is due to environmental factors (see the 1986 Journal of Personality and Social psychology, and the 1996 issue of Psychiatric Genetics). The data presented here extend those findings with a sample of 233 pairs of adult twins drawn from the same U. of London Twin Register using a 22-item questionnaire to measure social responsibility. Comparing the responses of the 127 pairs of identical twins (who share 100% of their genes) and 106 pairs of fraternal twins (who share 50% of their genes), I found the underlying trait of social responsibility to be 50% heritable.

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11:20AM

- Pound, Nicholas (U. of East Anglia)

*Social And Behavioural Influences On Human Semen Parameters*

It is widely believed that the quality of human semen has declined over the past 50 years, most likely due to impairments to spermatogenesis caused by the toxic or endocrine disruptive effects of environmental pollutants. However, little attention has been paid to sources of within-male variability in semen parameters that make it difficult to assess the true magnitude of this decline. For a particular man, semen parameters may vary considerably from one specimen to the next, in part due to variability in the conditions under which the specimens are produced. Clinicians have tended to treat this variability as "noise" but some of it may in fact be attributable to evolved responses of males to adaptively relevant changes in the social environment. In this talk, I shall review some experimental evidence and archival data suggesting that semen parameters such as sperm concentration and ejaculate volume can be affected by social stimuli and male sexual behaviour. Moreover, I shall go on to argue that some of the apparent decline in human semen quality over the last half-century may in fact be due to significant changes in the social environment and patterns of sexual behaviour, rather than spermatogenic impairments.

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11:40AM

- Steklis, H. Dieter (Rutgers U.)

*Nature in Nurture: The Construction of the Human Environment and Culture*

Developments in evolutionary psychology and the recent mapping of the human genome have re-ignited the long-standing nature vs. nurture debate. Epigenetic, interaction, and behavior-genetic models seemingly solve the dichotomy by specifying or allowing for both genetic and environmental contributions to human behavior. These models fail, however, in that, for methodological convenience, they all acknowledge and therefore reify the separate contributions of genes and environment. Neuro-embryological and twin studies strongly argue for the organisms' construction of its own environment – the evolved genotype's definition of the salience of experiential input. "Niche-construction" theory recognizes the organism's active role in constructing its environment, but it has not fully explored the role of individual cognitive and personality characteristics in defining the environment. Moreover, a broader and stronger view of human niche construction yields fresh insights into the relationship between biology and culture and co-evolutionary models.

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Reproductive Strategies  
Multi-Purpose Room B, Rutgers Student Center

10:00AM

- Garver, Christine E. (U. of New Mexico)
- Gangestad, Steven W. (U. of New Mexico)
- Simpson, Jeffrey A. (Texas A&M U.)
- Cousins, Alita J. (U. of New Mexico)
- Christensen, P. Niels (San Diego State U.)

*Women's Preferences For Male Behavioral Displays Change Across The Cycle*

Research has shown that women's mate preferences change across the menstrual cycle. Just prior to ovulation, women prefer the scent of symmetrical men (Gangestad & Thornhill 1998; Rikowski & Grammer 1999; Thornhill & Gangestad 1999; Thornhill et al. 2002) and greater facial masculinity (Johnston et al. 2001; Penton-Voak et al. 1999; Penton-Voak & Perrett 2000). The shifts were predicted from the theory that ancestral women could obtain genetic benefits from men other than primary mates but at some cost. Because benefits could be obtained only when women were fertile but costs paid continuously, selection may have shaped preferences for markers of genetic benefits to be conditional on fertility status. Consistent with this idea, women are more attracted to masculine faces mid-cycle when rating men as sex partners but not as long-term mates (Penton-Voak et al. 1999). The current study examined whether women's preferences for men's behavioral displays shift across the cycle. Normally ovulating women (N = 225) watched one-minute videotaped segments of 36-40 men being interviewed for a potential lunch date and rated men's attractiveness as sex partners and long-term partners. For each woman, we calculated preferences for two characteristics based on coded behavior: Social Presence and Direct Intrasexual Competitiveness. As women's fertility risk increased, they had greater preference for men who evidenced Social Presence and Direct Intrasexual Competitiveness as sex partners, but not as long-term mates. Results provide further support for the idea that female sexual attraction to men is conditional on fertility status.

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10:20AM

- Leonetti, Donna L. (U. of Washington, Seattle)
- Nath, Dilip C. (Gauhati U.)
- Hemam, Natabar S. (Gauhati U.)
- Neill, Dawn B.

*Cooperative Breeding Effects Among The Matrilineal Khasi Of N. E. India*

As a hallmark of our species, mothers of small children generally require and receive help from others in their reproductive efforts of parenting, in what can be called cooperative breeding. This help appears to affect the frequency of births and the success of reproductive efforts as measured by the health and survival of children. The nature of such effects in family systems organized around women and in which women control resources holds interest with respect to the evolution of the human species. The matrilineal Khasi tribe of N. E. India are swidden agriculturalists characterized by low socioeconomic resources and high natural fertility (average is 6.7 children). Women are economically active in the fields, markets, and in home ownership. Khasi households, which may have several married or single women and men are organized around the matriline, often consisting of three generations. A woman is free to choose her own husband who may or may not join the household. Our data represent 773 households providing lineage and reproductive histories comprising 3,274 births. Dependent variables include interbirth interval, cumulative net reproductive success by age of mother, and child nutritional status and mortality (172 deaths). Within this strongly matrilineal context, we examine measures of reproductive success in terms of local resource enhancement and resource competition models with respect to sibling and older offspring effects (depending on sex, age and birth order). We also examine the effect of husband's presence and of grandmother's help at the birth of a child, and her continued presence in the household.

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10:40AM

- Schmitt, David P. (Bradley U.)

*Patterns of Sociosexuality Across 52 Nations: Do Sex Ratios, Fertility Rates, Resource Levels, Pathogen Loads, and other Environmental Stressors Adaptively Moderate Human Reproductive Strategies?*

The International Sexuality Description Project (ISDP) is a research collaboration involving more than 100 psychologists sociologists, biologists, and anthropologists with interests in human sexuality and personality. Over the past 2 years, ISDP collaborators from over 50 countries administered self-report surveys of sex and personality to approximately 100 men and 100 women from their local culture. Data from the ISDP were used in this study to evaluate several evolutionary hypotheses concerning variation in sociosexuality across cultures.

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11:00AM

- Cvorovic, Jelena (Arizona State U.)

*A Pilot Study: Sexual And Reproductive Strategies Among Serbian Gypsies*

This paper deals with a full range of sexual and reproductive behavior among the Serbian Gypsies. The assumption is that the Gypsies in Serbia exhibit an r-strategy sexual and reproductive behavior. This hypothesis is tested on genetic and traditional traits. The examined genetic traits include variables of fertility, birth spacing, mortality, age distribution and physical parameters among Gypsies. In addition, variables of Gypsies' tradition referring to the culturally prescribed sexual behavior are also examined. Besides the traditional variables, another set of variables is developed, to see how the reported, ideal behavior corresponds to the real behavior. The data used are obtained from the fieldwork in the hospital "Narodni Front" in Belgrade, shelters for abandoned children, the available police records on crime, child abuse and neglect and the reports on health and STD's on the Gypsies population in Serbia. The Serbian Gypsies are found to exhibit more r-oriented sexual and reproductive behavior than the Serbs.

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11:20AM

- Cristiani, Michelle (U. of New Mexico)

*Female Adolescents' Strategic Behavior in Romantic Relationships*

At sexual maturity, females choose between commencing reproduction and delaying it in favor of gathering skills and information. New skills allow a female to make more effective choices once she begins her reproductive career, but she faces costs of delayed reproduction in return for her gains in knowledge. Clearly, then, adolescence is a critical time in a woman's life history. Should she begin to reproduce? Should she learn more about males? Or, should she learn about her value compared to other females? This presentation addresses the above trade-off, with data on the romantic behavior of 250 female students in a large Southwestern high school.

Three romantic strategies are assessed: the "committer" focuses on long-term relationships and stability/reliability in partners; the "self-information gatherer" assesses her own mate value in relation to other girls (i.e., same-sex competitors); and the "male-information gatherer" evaluates males' behavior in a variety of social situations.

The investigator developed a 46-item survey, called the Commitment and Choosiness Inventory, that features questions addressing the above three strategies. The strategies are not mutually exclusive preferences. Thus a principal components analysis was used to generate composite "strategy" scores that will be used as predictors of age at first dating, relationship duration, and reasons for relationship dissolution. The investigator also will discuss predictors of the strategy scores, including demographic and social variables.

Michelle Cristiani  
Albuquerque, NM

United States

11:40AM

- Waynforth, Schuyler
- Waynforth, David (U. of New Mexico)

*Minding the Baby and Demographic Transition*

The precept of evolutionary theory is that the goal of organisms is to maximize their genetic representation in future generations. To achieve this goal, organisms must produce as many surviving offspring as they can. These surviving offspring must be high quality: they should be capable of having many offspring themselves. The demographic transition is in part characterized by a steep decline in reproductive rates. Hence, individuals in post-demographic transition populations appear to be reducing their genetic representation in future generations. This inconsistency with evolutionary theory, as Daniel Vining (1986) pointed out, threatens its applicability as an explanatory framework for understanding reproductive patterns and behavior, especially in industrialized economies. We propose that a key to sub-optimal fertility levels seen in industrialized economies is the reduction in direct care available for children, which occurs when populations move from either foraging or subsistence farming to participation in industrialized economies. Direct childcare is defined as time-based childcare, such as holding, playing with, and monitoring children. We argue that changes in availability of direct care for children affect fertility via evolved mechanisms that fit fertility to available care in pre-industrialized or EEA conditions, and which produce fertility levels which maximize individual reproductive success under these conditions but not in industrialized societies.

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Social Perception and Misperception  
Room 411, Rutgers Student Center

The talks in this session demonstrate shifts in social perceptions that coincide with expected adaptive payoffs. Using an innovative methodology, Scheyd documents the novel finding that women overperceive men's sexual intent, but only in a very specific context--when they evaluate the interest of highly sexually attractive men in a short term sexual fling. Scheyd suggests that this effect reflects an evolved bias designed to reduce the likelihood of missing highly beneficial reproductive opportunities. In a somewhat different domain, Smurda and Haselton document another potential evolved bias. They show, as predicted, that relative to people not currently involved in relationships, people involved in committed relationships overperceive the sexual interest of same-sex rivals.

Andrews applies costly signaling theory to perceptions of honesty in a simple attribution task. He shows that under conditions in which a man has a motive to deceive, it is only when he foregoes benefits that he is perceived to be truly interested in a long-term committed relationship (rather than a deceptive short-term one).

Franklin & Penton-Voak test new predictions about variation in how male faces are perceived. They predict that women who adopt particular life history strategies are more likely to perceive masculine faces as attractive. They also show that women prefer faces indicative of good genetic quality near ovulation. Lastly, Ketelaar discusses the widely studied, 'losses loom larger than gains effect.' He suggests that this effect should not be understood as an, 'irrational' utility function, but rather an evolved perceptual bias designed to prevent organisms from the larger adaptive costs of losses relative to the benefits of gains.

Kirkpatrick will discuss implications of these findings with particular focus on alternative models of social perception derived from the literature in social psychology. One interesting implication of many of the findings, for example, is that biases should perhaps be considered adaptive features of design, even if they produce more 'errors' than alternative designs. Overall, the talks in this session suggest that if there is a 'there' out there, it is only by virtue of many evolved mechanisms that we (think we) know what it is.

10:00AM

- Scheyd, Glenn J. (U. of New Mexico)

*Estimating The Sexual Intentions Of Others: The Mediating Role Of Physical Attractiveness*

Men are known to systematically overestimate the sexual intent of women. Error Management Theory (EMT; Haselton & Buss, 2000) explains this bias as an evolved feature of men's sexual psychology designed to minimize lost reproductive opportunities. This study examines the mediating role that physical attractiveness plays in assessments of others' interest in oneself. In the first of two sessions, a photograph was taken of each participant. In the second, each participant rated the desirability of the opposite sex individuals (from first session photos) on different dimensions, including "as a short-term sexual partner" and estimated the ratings he/she would receive from a randomly drawn individual in one of the same photos. As expected, men significantly overestimated the ratings they would receive; the degree of overestimation was independent of the woman's desirability. Overall, women's estimates of their own desirability did not differ significantly from perfect accuracy; however, the man's desirability was a significant predictor, positively correlated with the degree of overestimation of the women's ratings.

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10:20AM

- Smurda, Julie Dreon (UCLA)
- Haselton, Martie (UCLA)

*Effects of Relationship Status and Sexual Strategy on Perceptions of Intrasexual Rivals' Sexual Intent: Preliminary Evidence for the "Interloper Effect"*

Error Management Theory (EMT; Haselton & Buss, 2000) proposes that psychological mechanisms are designed to be predictably biased when the costs of false-positive and false-negative errors were asymmetrical over evolutionary history. This theory explains phenomena such as men's tendency to overperceive women's sexual intent. Research has demonstrated that individuals involved in long-term relationships tend to underestimate their partner's interest in attractive members of the opposite sex (Simpson, Blackstone, & Ickes, 1995). EMT suggests that this effect should be fairly limited in scope. Although relationships may be protected from divisive conflict when partners underestimate each other's attraction to potential alternative mates, it seems unlikely that they would be protected when partners underestimate the interest of potential interlopers. We propose the "interloper hypothesis," which predicts that individuals in committed relationships will overestimate the sexual interest of potential interlopers. This effect was demonstrated in the current study (n = 265 women; n = 305 men). Women in committed relationships rated other women's sexual intentions significantly higher than women not in committed relationships. A similar effect was found for men. Further tests revealed that mated men with a long-term mating orientation rated other men's sexual intent higher than unmated men with a long-term mating orientation. Among men oriented toward short-term relationships, there was no difference between mated and unmated men's ratings of potential rivals' sexual interest. No effect of mating orientation was found for women.

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10:40AM

- Andrews, Paul W. (U. of New Mexico)

*Attributing Honesty To A Signal Purporting To Reveal Mental State*

Costly signaling theory (CST) is a part of the broader set of principles used by evolutionary psychologists to study and make predictions about human behavior, cognition, and communication. CST suggests that, in situations where signalers have a potential incentive to deceive, signals are more likely to be honest when they are costly to produce. An attribution model based on CST for how observers distinguish honest signals of mental state from deceptive ones predicts: (1) that a signal of mental state will not be perceived as honest unless there is some cost associated with it; (2) in some situations, a signal will not be perceived as honest unless the costs associated with it exceed some threshold value; and (3) in determining whether a signal is honest, observers will also take into account the costs of any opportunities that the actor forgoes in pursuit of the strategy that underlies the signal. This last prediction requires observers to link distinct behaviors (e.g. foregoing an opportunity and an oral statement) to a common, underlying mental state. All three predictions received support across two experiments.

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11:00AM

- Franklin, M.L. (U. of New Mexico)
- Penton-Voak, I.S. (Stirling U.)

*Facial Preferences Change With Levels Of An Ovulation-Regulating Hormone, Thereby Illuminating Tradeoffs Between Symmetry And Degree Of Masculinization*

Research has shown that females shift their preferences independently toward higher symmetry or greater masculinization during high risk of conception. At this point in a woman's menstrual cycle, a mate's genetic quality would have the most direct impact on her offspring. Genetic quality in terms of symmetrical mates means greater developmental stability, while in Zahavian fashion testosterone-related features may indicate an ability to afford more exaggerated dimorphism despite immunosuppression. Yet, if the basis for female preference shifting is solely to gain genetic quality at conception, then what is driving female preferences in the opposite direction at non-fertile points in the cycle? In order to investigate this question, novel facial stimuli were created by Ian Penton-Voak at the laboratories of Dave Perrett in Scotland. Original photos of males were manipulated to vary systematically in degree of masculinity and symmetry. At both low and high conception risk (confirmed by hormone detection), female subjects viewed photo variants of any one male at once, putting the photos in order of attractiveness as a forced choice task. At some point in the ordering task, females had to make a tradeoff as to which trait would take precedence; symmetry or masculinization. An additional effect on female preference of masculinization, apart from presumed immunocompetence, was expected to surface in females with particular life history experiences. This very specific effect builds loosely upon past research findings that there exists an inverse relationship between a perceived willingness to invest and masculinity.

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11:20AM

- Ketelaar, Timothy (UCLA)

*Perception Of Gains & Losses: Adaptive Designs And Bird-Brained Utility Functions*

Much of the literature on emotion and judgment portrays emotions as a source of irrational bias in judgment and decision-making. For example, the emotional over-representation of losses relative to gains (the so-called "losses loom larger than gains" effect) is commonly observed in human judgment and is typically presented as evidence of irrational utility functions. Yet, in the behavioral ecology literature, these very same results ("losses loom larger than gains") are observed among foraging animals and these findings are treated as examples of adaptive design. This paper presents an adaptationist view of emotion in which emotional feeling states are viewed as strategic mental states that represent the affordance structure of the current environment. In a series of four experiments, it is shown that emotional reactions to gains and losses correspond to several key descriptive properties of Utility functions, including the well-known "Losses loom larger than gains" effect. These findings are discussed in terms of their implications for understanding the proximate and ultimate functions of emotion in social judgment.

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11:40AM

- Kirkpatrick, Lee A. (College of William & Mary)  
Discussant

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Culture and Other Emergent Phenomena  
Brower Commons ABC

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10:00AM

- Aunger, Robert (U. of Cambridge)

*Major Transitions In Technology*

Contemporary Western technology exhibits two novel characteristics that make it something altogether new: certain classes of artifacts, such as computers, are acquiring intelligence, while others can self-replicate. Micro-agents operating inside computers such as computer viruses are the most obvious examples of the latter skill, but advances are also rapidly being made on the creation of self-replicating nano-scaled machines.

I argue that a theory developed in biology to explain the evolution of increasing organic complexity should be used to explain the increasingly life-like qualities of artifacts. Maynard Smith and Szathmary (1995) argue that "major evolutionary transitions" result when new ways of transmitting information create new evolutionary agents. In effect, a new unit of selection is born that becomes the focus of novel selection pressures. In the first step of a transition, agents cooperate to achieve a novel degree or type of organization. Step two requires that the agents consolidate the new organization. Accomplishing this goal may require that existing, lower-level organizational features are restructured, or that new supporting structures are provided, leaving the previously independent agents as parts of a new interdependent whole. The classic example of an evolutionary transition is the emergence of multi-cellular organisms from unicellular ones.

The primary objective of the presentation is to extend this theory from the domain of biology to that of technology. In particular, I will identify how changes in information transmission or organization arose with the development of tools, machines, writing and the "digital revolution," and qualify them as major transitions in technology.

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10:20AM

- Corning, Peter A. (Institute for the Study of Complex Systems)

*Synergy Goes to War: an Evolutionary Theory of Collective Violence*

Synergy - otherwise unattainable combined effects that are produced by two or more elements, parts or individuals - has played a key causal role in the evolution of complexity, from the very origins of life to the evolution of humankind and complex societies. This theory - known as the "Synergism Hypothesis" - also applies to social behavior, including the use of collective violence for various purposes: predation, defense against predators, the acquisition of needed resources, and the defense of these resources against other groups and species. Among other things, there have been (1) synergies of scale, (2) cost and risk sharing, (3) a division of labor (or, better said, a "combination of labor"), (4) functional complementarities, (5) information sharing and collective "intelligence" and (6) tool and technology "symbioses". More important, the incidence of collective violence - in nature and human societies alike - is greatly influenced by synergies of various kinds, which shape the "bioeconomic" benefits, costs and risks. Synergy is a necessary (but not sufficient) causal agency. Though there are notable exceptions (and some significant qualifiers), collective violence is, by and large, an evolved, synergy-driven instrumentality in humankind, not a mindless instinct or a reproductive strategy run amok. The thesis that various forms of collective violence were of vital importance in human evolution and are not a recent, "historical" invention will also be briefly reviewed in this paper.

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10:40AM

- Wallace, Robert G. (City College of New York)
- Wallace, Rodrick (The New York State Psychiatric Institute)

*Rubbernecking Sociobiology's Wreck: Towards A Cultural Immunology*

Despite John Alcock's say-so, sociobiology has been largely a disappointment in the study of human natural history. Why? Sociobiology appears trapped in the triumph of Fisher's fundamental theorem and Hamilton's inclusive fitness, ignoring evolutionary theory that has since developed. The approach also generates a false epistemological hierarchy that situates culture as an epiphenomenon arising from the "true" "biological" inputs into human behavior. We jettison such thinking in favor of Robert Boyd's postulate that culture is as much a part of human biology as the enamel on our teeth. In this light we address the immune system, seemingly an evolutionarily ancient and biologically engrained physiology. It is ancient, to be sure, but immunal function is a condensation of genetic and cultural causalities and greatly intertwined with social structure.

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11:00AM

- Steadman, Lyle B. (Arizona State U.)
- Palmer, Craig T. (Colorado U.-Colorado Springs)
- Stevens, Cassandra E. (Colorado U.-Colorado Springs)

*Taking the Magic Out of Magic: A New Evolutionary Approach to Religion*

As evolutionary psychology attempts to explain an ever greater number of human behaviors, it faces the challenge of how to incorporate traditional cultural behaviors such as religion within the evolutionary paradigm. This paper uses the example of traditional practices of magic to suggest ways to approach this challenge. At the level of proximate causation, the first suggestion is to restrict hypotheses to only identifiable variables. This means avoiding the temptation of following the nonevolutionary social sciences in the practice of basing explanations on unverifiable guesses about what beliefs (or "memes" in evolutionary jargon) may or may not inhabit people's brains. To illustrate how this can be done, we contrast the popular hypothesis that magical practices result from beliefs (or memes) that promote confidence and reduce anxiety, with our hypothesis that magic is a form of communication that promotes cooperation and often avoids anti-social behavior. Finally we suggest that this effect of increased cooperation could explain why traditional forms of magic have probably existed and had significant positive consequences for the reproductive success of participants for 30,000 years, and perhaps much longer.

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11:20AM

- Kameda, Tatsuya (Hokkaido U.)
- Nakanishi, Daisuke (Hokkaido U.)

*Does Social/Cultural Learning Increase Human Adaptability: Roger's Question Revisited.*

It is often taken for granted that social/cultural learning increases human adaptability, because it allows us to acquire useful information without costly individual learning by trial and error. Rogers (1989) challenged this common view by a simple mathematical model. Rogers' model assumed that each agent engaged in either costly individual learning or cheap social imitation under uncertainty. Fitness of social imitators declines with the increase in the frequency of other imitators in the population (i.e., imitating other imitators), whereas fitness of individual learners who completely disregard social information is frequency-independent. This relation yields a mixed equilibrium, where individual learners and social imitators coexist in the population at a stable ratio. Rogers showed that mean fitness of such a mixed "cultural" population at the equilibrium is exactly identical to the mean fitness of an "acultural" population consisting only of individual learners. Hence, no special adaptive advantage that we usually ascribe to a cultural population accrues from social/cultural learning. We revisited this thought-provoking argument through use of psychological experiment, and by a series of evolutionary computer simulations that extended Kameda & Nakanishi (2002). The simulation results indicated that, if agents can utilize the two learning modes selectively (cf. Boyd & Richerson, 1995; Henrich & Boyd, 1998), a "cultural" population indeed outperforms an "acultural" population in terms of mean fitness for a very wide range of parameters. A psychological experiment that implemented a non-stationary uncertain environment in a laboratory setting provided empirical support for this thesis.

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11:40AM

- Newson, Lesley (Exeter U.)

*Mothers Know Best When It Comes To Inclusive Fitness NI*

Humans have the capacity to influence one another's behaviour by giving advice, warnings and supplying or withholding information. I will present evidence that people use this capacity as a means furthering their own inclusive fitness and diverting the reproductive effort of competitors. 169 women, living in England, who had at least one child over the age of 18 were asked to imagine the advice an older woman would give to a younger woman who was considering whether she should start a family now. Participants were randomly given scenarios which described one of four situations and for each situation, half the participants were told the women were mother and daughter and other half were told they were close friends. In all the scenarios, reasons were given why it might be better for the younger woman to delay starting a family or remain childless. The women imagining the advice given by a mother to her daughter were more likely to give advice which would optimise the younger woman's reproductive effort. For the three scenarios in which the younger woman is in her thirties, the "Mother" group were more strongly in favour of pregnancy than the "Friend" group. It was the opposite for a scenario in which the younger woman was only 22. A very high proportion of the social contacts modern humans experience are with non-kin. This evolutionarily novel social environment may help to explain the decline in birth rate which occurs when societies modernise.

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## Intermission

- **12:00 PM** Lunch, Brower Commons  
 Afternoon plenary by Stephen Stich and Ron Mallon: *Odd Couple: The Compatibility of Social Construction and Evolutionary Psychology*. Introduced by Robert Trivers.
  - Stich, Stephen (Rutgers U.)
  - Mallon, Ron (U. of Hong Kong & U. of Utah)  
*Odd Couple: The Compatibility of Social Construction and Evolutionary Psychology*  
 Evolutionary psychology and social constructionism are widely regarded as fundamentally irreconcilable approaches to the social sciences. Focusing on the study of the emotions, we argue that this view is mistaken. Much of what appears to be an empirical disagreement between evolutionary psychologists and social constructionists over the universality or locality of emotional phenomena is actually generated by an implicit philosophical dispute resulting from the adoption of different theories of meaning and reference. We argue that once this philosophical dispute is recognized, it can be set to the side. When this is done, it becomes clear that the two approaches to the emotions productively complement, rather than compete with, one another.
  
- **1:30 PM**

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- **2:30 PM** Refreshments

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**Intersexual Competition**  
**Multi-Purpose room A, Rutgers Student Center**

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3:00 PM

- McBride, Dennis (George Mason U.)
- Tennyson, Stephanie (Virginia Tech)

*Hemline Trends Explained As A Product Of Female-Female Competition*

Within-sex competition is clearly recognized as an important component of sexual selection, and thus, of evolution. Darwin adumbrated the process in the 1800s, and important conceptualizations have followed, from those of Ronald Fisher, to those of Amotz and Avishad Zahavi. Among humans, same-sex strife has been of interest in accounting for several variables including psychiatric phenomena such as eating disorders—*anorexia nervosa*, in particular. Focusing on non-clinical observations, we extend female-female competition to explain a time series relationship discovered between variations in economic indicators and changes in quantity of leg exposure that is mediated by way of women's hemline trends (skirt, dress length). Specifically, through the examination of female clothing changes over the past century, as described and illustrated by subject matter experts, we calculated correlation coefficients between economic variables such as Standard and Poor's index, with concurrent measures of popular skirt length. The (statistically significant) correlations suggest that approximately 30% of the variation in one variable is accountable for by variation in the other. That is, as the economy goes up, so go hemlines, and vice versa. This confirms that so-called "hemline theory," described without much critique in the popular, news, and even economic literatures. Due to the resolution of the data that we were able to produce, no lead-lag relationship could be identified. We discuss female-female competition by examining these and other proxy measures.

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3:20 PM

- Rucas, Stacey (U. of New Mexico)
- Winking, Jeff (U. of New Mexico)
- Gangestad, Steve (U. of New Mexico)

*Mate Competition in the Medium of Television: An Evolutionary Analysis of Intrasexual Competition*

Many modern television programs exploit the voyeuristic nature of viewers demanding shows that are ever more real and competitive. To accomplish this, many programs have begun to rely on the evolved competitive drives of males and females to form the content of their shows. We utilized this medium of reality-television to analyze intrasexual mate competition on the television show *Eliminate*. During this show, four same-sex individuals compete with one another to be chosen by a target mate, who systematically eliminates all but one contestant. Derogatory, complimentary, self-disparaging, and boastful remarks were all recorded and assigned to one of 21 categories that were developed during a previous pilot study. These included references to age, intelligence, aggressiveness, promiscuity, questioning masculinity or femininity, jobs and achievements, character traits, strength and physical performance, excitement, social class, credibility, sexual performance, and appearance. In addition, coders rated each competitor's attractiveness and overall level of aggression. Based on evolutionary theory, individuals were expected to derogate the traits in competitors that were most sought after by the target mate in



attempt to increase their relative mate-value. Additionally, we expected individuals to vary their tactics based on their own intrinsic qualities. Analyses illuminated many significant sex and quality-based differences in the predicted direction for various categories of comments. These were explained with evolutionary and sexual selection theory.

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3:40 PM

- Egan, Vincent (Glasgow Caledonian U.)
- Weiss, Alexander (U. of Arizona)
- Figueredo, Aurelio José (U. of Arizona)

*Sensational Interests as a Form of Intrasexual Competition*

Sensational interests, i.e., a curiosity for the violent and macabre, are reputedly common in mentally disordered offenders. However, well-adjusted individuals are also interested in these topics. We tested the hypothesis that individual differences in sensational interests reflect intrasexual competition for status. Several predictions derive from this hypothesis. Firstly, age and sex should be directly related to individual differences in mating-effort (the degree that an individual devotes resources to finding and guarding sexual partners). Secondly, mating-effort should directly influence sensational interests. Thirdly, there should also be direct effects of age and sex on sensational interests. To test these predictions we collected data on 972 U. undergraduates using the Revised Version of the Sensational Interests Questionnaire (SIQ-R) and the Mating-Effort Scale (MES). A structural equations model revealed that a single factor accounted for the majority of the variance of the three facets of the SIQ-R, violent occult, militarism, and criminal interests. This model also included direct effects of age and sex on the MES and two facets of the SIQ-R and direct effects of the MES on the SIQ-R. Model fit statistics indicated that this model was a good fit to the data. We conclude that, even in a non-clinical sample, sensational interests are a form of intrasexual competition.

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4:00 PM

- Salmon, Catherine (Simon Fraser U.)
- Crawford, Charles (Simon Fraser U.)
- Dane, Laura (Simon Fraser U.)

*The Impact Of Female-Female Competition And Male Attention Stress On Measures Of Body Image And Dieting*

We explored the hypothesis that women's passion for thinness and dieting may be understood, in part, as the result of psychological mechanisms for adjusting ancestral women's reproductive effort to expected current and future reproductive costs and benefits. High levels of stress, that in an ancestral environment would have had led to the adaptive temporary delay of reproduction may currently be experienced at an intensity that exaggerates the costs of current reproduction. One result may be symptoms that could have delayed ancestral reproduction: dieting and body image concerns. We report five scenario studies of the effects of female-female competition, undesired male attention, gardening, exam, hospital visit, and media exposure stress on measures of the Drive for Thinness, Body Dissatisfaction, and Maturity Fears taken from Garner and Garfinkle's Eating Disorders Inventory. The manipulations had a significant effect on the dependent variables. The largest effect was for female-female competition. Women's susceptibility, assessed by Ineffectiveness, Interoceptive Awareness, and Interpersonal Distrust from the eating disorders test also had a significant effect.

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4:20 PM

- Faer, Lisa Marie (U. of Arizona)
- Hendriks, Alexandra (U. of Arizona)
- Figueredo, Aurelio Jose (U. of Arizona)
- Abed, Riadh (U. of Sheffield, UK)

*Anorexia and Bulimia Nervosa: Female Competition for Mates or for Status?*

The relationship between eating disorders and female intrasexual competition was studied. More specifically, it was hypothesized that female intrasexual competition for mates would have a stronger causal relationship to Bulimia, and that, in contrast, female intrasexual competition for status would have a stronger causal relationship to Anorexia. 202 undergraduate women sampled from the U. of Arizona, mainly from undergraduate classes, filled out surveys that contained the following measurements in mixed order: a Female Competition for Mates measure, a Female Competition for Status measure, a General Competitiveness measure, the Eating Disorders Inventory, and an additional measure for eating behavior that is specific to Anorexia. The internal consistencies of the measures were computed using Cronbach's Alpha, and the measures were found to have adequate measurement reliability. Correlations were computed and a Structural

Equation Model was constructed for all the subscales within the measures. The resulting model demonstrated that Intrasexual Competition for Mates was ultimately the driving factor that contributed to Female Competition for Status, General Competitiveness, Perfectionism, Body Dissatisfaction, Drive for Thinness, and both Bulimia and Anorexia. Contrary to initial expectations, the results supported a mostly spurious causal relationship between Female Competition for Status and Anorexia, with the only indirect causal effect being through the influence of Perfectionism, which was uniquely on Anorexia and not on Bulimia. The role of perceived personal and ideal partner mate value was also explored. Although they were strongly positively related to each other, these were shown to have nearly equal and opposite effects on body dissatisfaction.

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## Symmetry

### Multi-Purpose Room B, Rutgers Student Center

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3:00 PM

- Mealey, Linda (College of St. Benedict)
- Townsend, Grant (U. of Adelaide)
- Pinkerton, Sandra (U. of Adelaide)

#### *Do Parents Show Favoritism for their Symmetric Children?*

In a previously published study (Mealey, Bridgstock & Townsend, 1999), we were able to demonstrate that among pairs of identical twins, the more symmetric twin was consistently rated as the more attractive, and that the magnitude of the difference in perceived attractiveness of co-twin pairs was directly related to the magnitude of difference in their symmetry. More recently, Mealey (2001) has suggested that study of monozygotic (but not truly "identical") twins might provide a new method for mapping experiential differences onto phenotypic differences and differences in life history strategy. As an initial attempt to use this methodology, we recontacted twins from the symmetry study and asked them to complete questionnaires about their perception of their parents' parenting style. We suspected that the more symmetric twin of a pair would likely have received preferential treatment by parents, and would thus report more favorable perceptions of their experience than would their less symmetric co-twin. We also tested the same prediction using the more standard methodology, by ignoring twinship status and correlating individuals' symmetry with individuals' perceptions of parental style. This talk will address implications of both the results and the methodologies of this study.

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3:20 PM

- Jacobson, Amy S (Rutgers U.)
- Trivers, Robert L (Rutgers U.)

#### *Attractiveness And Potential As A Friend In Jamaican Children As A Function Of Bodily Symmetry Of Chooser And Chosen*

The social psychology literature has established that facial attractiveness is not only something that humans have a universal preference for, but also one which has many associated personality and psychological characteristics. Recent investigations into the biological components of facial attractiveness reveal that symmetry of the human face is correlated with ratings of facial attractiveness. The Rutgers Jamaican Symmetry Project, a long-term study of fluctuating asymmetry and its correlates in children, provides an opportunity to test whether personality judgements correlate with symmetry measurements of the face, both of the individual being chosen and the individual doing the choosing. Symmetry measurements for 220 Jamaican children will be compared to their assessments of peers from photographs for "Pretty/Handsome," and as "Friend," categories as rated on a 5-point scale. The null hypothesis was that all children, regardless of their own symmetry would choose individuals with high levels of symmetry as attractive, and friends. In fact, individuals choose attractiveness assortatively by degree of symmetry, asymmetrical individuals being much more likely to find less symmetrical individuals more attractive. By contrast, symmetry has weak effects, if any, on who is chosen as a friend. Results will be discussed with special reference to implications for the role of symmetry in social interactions and assessments.

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3:40 PM

- Ellis, Patricia (Harvard U.)

#### *Correlations Between Symmetry and Sperm Count, Mobility, and Morphology in a Sample of Boston Men NI*

If ovulating women find men with a low degree of fluctuating asymmetry (FA) attractive, then it's possible that low FA is a signal of one or more heritable fitness traits. One such trait might be fertility; indeed, Manning et al. (1998) have found a significant relationship between FA and aspects of sperm viability. My project: 1) attempts a replication of Manning et al.'s study, using 50 men recruited from newspaper ads, 2) investigates possible correlations between specific sperm morphologies and FA, and 3) investigates correlations between

testosterone levels, FA, sperm quality, and variables such as height, weight, age, marital status, number of children, average number of sexual partners per month, and perceived current stress levels. Preliminary results reveal significant correlations only between different sperm morphologies and FA. Men with lower FA have a lower number of abnormal sperm tails, but a greater number of abnormal sperm heads, than men with higher FA.

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4:00 PM

- Prokosch, Mark (U. of New Mexico)
- Yeo, Ron (U. of New Mexico)
- Miller, Geoffrey (U. of New Mexico)

*Evidence For A General Fitness Factor: Psychometric Estimates Of G Predict Correlations With Body Symmetry*

Intelligence is sexually attractive. We propose that this sexual preference arose because general intelligence (the g factor) is a reliable indicator of “good genes” and developmental stability. Just as bodily symmetry advertises developmental stability at the morphological level, intelligence may advertise developmental stability at the level of brain development and cognitive functioning. In line with this hypothesis, Furlow, Armijo-Prewitt, Gangestad, & Thornhill (1997) showed that body symmetry correlates positively with performance on one intelligence test (the CFIT). Our results go further in establishing the existence of a general ‘fitness factor’ superordinate to both g (intelligence) and symmetry (bodily developmental stability). For a sample of 78 male U. students, we measured body symmetry (using an average of 10 measures) and performance on five different mental tests: Ravens Progressive Matrices, WAIS III Vocabulary, Shipley Vocabulary, Digit Span Forward, and Digit Span Backward. G was estimated in two ways – as total Ravens score and as the first principle component of the total test battery. Body symmetry predicted higher Ravens scores ( $r = .394$ ), as well as the first PC ( $r = .268$ ) but not second PC. Vocabulary scores also predicted symmetry ( $r = .266$ , for WAIS III,  $r = .245$  for Shipley), but digit span scores did not. These results suggest that general ability or g is more strongly related to developmental stability than other more specific cognitive factors are. Thus, g may be highly valid indicator of resistance to developmental instability, which may explain its sexual attractiveness.

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4:20 PM

- Gangestad, Steven W. (U. of New Mexico)
- Thornhill, Randy (U. of New Mexico)
- Miller, Robert (U. of New Mexico)
- Scheyd, Glenn (U. of New Mexico)
- Knight, Julie (U. of New Mexico)
- Franklin, Melissa (U. of New Mexico)

*Preferences For The Scents Associated With Symmetry And Features Of The Major Histocompatibility Complex (MHC): Testing Models Of Sexual Selection*

Previous research indicates that the scent of developmental stability—low fluctuating asymmetry (FA)—is particularly attractive to women during days of the cycle at which they are at high conception risk (the few days preceding ovulation), but not to other women or men. Prior research also indicates that the scent of dissimilarity in major histocompatibility complex (MHC) genes may play a role in human mate choice, but has not addressed whether MHC-related scent preferences are affected by women’s conception risk. We studied the scent attractiveness to the opposite sex of t-shirts worn for two nights’ sleep. As in prior studies, fertile women particularly preferred the scent of symmetry, which may be an honest pheromonal signal of mate quality. Men, but not women, showed a preference for the scent of MHC dissimilarity. Furthermore, women’s preferences for MHC dissimilarity were unaffected by conception risk. Women did prefer men who were relatively heterozygous at MHC loci, perhaps particularly when at low conception risk. Men preferred the scent of common MHC alleles, which may function to avoid mates with rare alleles that exhibit gestational drive. Men also preferred the scent of women at fertile cycle points and facially attractive women. Neither FA nor facial attractiveness correlated with MHC dissimilarity to others, heterozygosity or allelic rarity. Associations between FA and specific MHC alleles, possibly mediated by disease susceptibilities, were observed. Results bear on theories of good genes mate choice: choice for intrinsic good genes, choice for compatible genes, and choice for diverse genes.

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Philosophy of Evolutionary Psychology  
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3:00 PM

- Speelman, Tom (UCSB)

*Evaluating Evolutionary Psychology: A Perspective From Contemporary Philosophy Of Science* **NI**

Is evolutionary psychology (EP) scientifically defensible? To ask this question is to raise what philosophers of science call the demarcation problem. When addressing this problem, one must first ask whether evolutionary psychology can be considered a science, which would then require concrete criteria for demarcating science from non-science. If EP fulfills these criteria and is considered a valid scientific research program, then the general demarcation issue can be addressed. This general version of the problem asks if EP is a better science than its predecessors or competitors within and outside the research tradition. Both of these questions are discussed within a contemporary philosophy of science framework. I will claim that the first question is actually a non-issue if evolutionary psychology is evaluated according to the same criteria used to appraise other scientific research programs. The second is a much more difficult one to answer. I will argue that recent work in the philosophy of science offers a framework with scientific criteria and desiderata that can be used to accomplish the difficult task of neutrally evaluating the merits of EP relative to other competing theories and research programs.

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3:20 PM

- West, Kenneth (U. of Colorado at Colorado Springs)

*The use of Artificial Neural Networks to Find Human Nature* **NI**

If the basic thesis of evolutionary psychology is correct and there is a human nature, then human activity will not be at random; but will follow a pattern. Given enough data, an Artificial Neural Network, a mathematical model of the function of the human brain, should be able to find this pattern. Artificial Neural Networks have been used for decades to recover weak radio signals from background noise. The same should apply to human nature, with the background noise being the traditional inheritance. To test this thesis an aspect of human nature was chosen where a lot of data is readily available and there is little traditional learning—rape. Data fields were chosen from the uniform crime reports on rape which might have some bearing on human nature, specifically the sex Vs power controversy. The results of the trained network were amazing. It could pick out the potential rape victim with 99.3% accuracy. Only four factors were found to be significant in being selected as a rape victim: age, being alone, living in a neighborhood with a lot of people below the poverty line, and living in an area with a lot of unemployed males between the ages of 16 and 24. The conclusion is that rapist are not men seeking power; rapists are powerless men seeking sex! This unexpectedly strong mathematical validation of its basic thesis moves evolutionary psychology from the realm of the soft sciences; psychology, sociology, astrology, etc., to the category of the hard sciences; chemistry and physics.

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3:40 PM

- Koppl, Roger (Fairleigh Dickinson U.)

*What is Verstehen?*

The central concept of the German-language “Verstehen” tradition, “understanding,” is obscure and may even seem unscientific. Evolutionary psychology offers a new way to understand understanding. Understanding is clever guessing. It is the intuitive grasping of human meanings. We are good guessers because human evolution has produced a special “module” for understanding each other, the “theory of mind module.” Thus, our intuitive understanding of others is similar to our intuitive understanding of nature as with color vision or landscape preference. In all cases our intuitions are the result of hidden processes of inference. Both kinds of intuition are fallible. And in both cases, the hidden processes were shaped by biological evolution. If the argument is sounds it helps to establish consilience without reduction. It may also helps to bridge the “two cultures” of the humanities and the sciences.

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4:00 PM

- Kaag, John J. (The Pennsylvania State U.)
- Kurland, Jeffrey A. (The Pennsylvania State U.)
- Kurland, Samuel M. (The Pennsylvania State U.)

*The Evolution Of Philosophers: A Darwinian Perspective On Academics*

Darwin discovered a "universal acid" (Dennett 1995) for the analysis of nonhuman traits. However, it has only been employed in limited domains for humans. Given deception and self-deception, it is perhaps not surprising that we resist a Darwinian deconstruction of our personal lives. We have therefore tried the next best thing. Based on data from over one hundred "modern" (post-Descartes) philosophers, we find that "philosophical position" (epistemology) statistically explains much of the variance in estimated lifetime reproductive success

(RS). Even, when we control for nationality, cohort, socioeconomic and professional status, pragmatists and empiricists have higher RS than do idealists or post-modernists. Over the short generation time we survey, the more a philosophy conforms to the cultural norm of "common sense," the more evolutionarily successful it is. Paraphrasing the illustrious 19th century sociobiologist, Karl Marx, reproductive effort is reflected in ideology; the forms of consciousness are determined by the relationships to the means of reproduction. Our study is neutral with respect to the direction of causality and the intervening psychological mechanisms, nonetheless, we suggest that it is not the consciousness of humans that determine their reproductive effort, but, on the contrary, their reproductive effort determines their consciousness. Like much else in the forms of life, self-conscious and rarefied epistemological attitude may operate as a rationalization for human action and belief. This research was partially supported by a grant from the Henry Luce Foundation to JAK, co-PI; Robert Marshall, PI, Department of Economics, The Pennsylvania State U.

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4 : 20 PM

- Russell, James C. (Fordham U.)

*The Future Of Human Evolution*

In the final chapter of the Cambridge Encyclopedia of Human Evolution, British geneticist Steve Jones concludes: "The rapidity of human evolution may be partly due to our tribal structure, whose genetic effects were increased by repeated bottlenecks experienced as human populations spread into new parts of the world. Increased mobility means that this phase of history is now at an end, and perhaps, that human evolution is now almost over." Although an immediate effect of contemporary global genetic exchange may be a temporary reduction in genetic diseases, Jones warns that this trend may not be without dire consequences. He states that "this phase cannot last: sooner or later the harmful genes will again reappear in double dose, so that future generations may have to pay the price. . . ." The following questions become apparent: Is the direction toward genetic globalization causing irreparable damage to our species? Is there a relationship between the suppression of speciation and extinction? Can anything be done to reverse this trend? Should anything be done? What should be done?

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**Psychopathology II  
Brower Commons ABC**

3 : 00 PM

- Keller, Matthew (U. of Michigan)
- Nesse, Randolph (U. of Michigan)

*Subtypes Of Low Mood Provide Evidence For Their Adaptive Significance*

Many researchers agree that low mood is some sort of adaptive reaction to non-immediate threats to one's fitness. However, does low mood serve a general purpose, such as goal regulation, or does it serve different purposes depending upon the situation? Using a sample of 193 participants who had indicated that particular low mood arousing situations (death of a family member, loss of status, winter depression, etc) had occurred in their lives recently, we demonstrate a compromise between these positions. Low mood seems to be a common pathway for many situations in which an adaptive response is to withdraw from goals and to conserve energy. However, particular symptoms of low mood, such as crying, seeking social support, low self-esteem, and changing of eating and sleeping habits differ depending on the context in ways that are suggestive of an adaptation. For example, situations in which social support would have been beneficial, such as following the death of a loved one or loss of a social conflict, do not induce the levels of social withdrawal typical of non-social instigators of low mood. Self-abasement on the other hand is a common reaction following the loss of a social conflict, but is not a typical reaction following the death of a loved one. Many such differential patterns of symptoms are demonstrated and their possible adaptive significance is discussed.

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3 : 20 PM

- Berry, Jack W. (Virginia Commonwealth U.)
- O'Connor, Lynn E. (Wright Institute)
- King, James (U. of Arizona)

*Chimpanzee Psychopathology and Subjective Well-being*

Personality attributes related to Axis I (clinical) disorders (Anxiety and Depression) and Axis II (personality) disorders (Antisocial, Schizoid, and Borderline) were assessed in 145 zoo-housed chimpanzees. Axis I and Borderline Personality Disorder were negatively

associated with Subjective Well-being. Two Axis II disorders (Antisocial and Schizoid Personality Disorder) were uncorrelated with SWB, suggesting that, as in humans, personality disorders tend to be ego-syntonic. Adult females were higher than adult males in traits related to Depression. Adult males were higher than females in traits related to Anti-Social Personality Disorder and in subjective well-being. This resembles differences found in humans. Psychopathology subscales correlated meaningfully with behavioral observations in a subsample of 46 chimpanzees.

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3:40 PM

- Masters, Roger D. (Dartmouth College)

*Behavioral Effects of Water Toxicity*

Is modification of brain chemistry and behavior by environmental toxins relevant to experimental studies in evolutionary psychology? The question is raised by a study by Crabbe, Wahlsten and Dudek, who conducted six experiments with eight mouse strains at three laboratories (Portland, Oregon; Albany, New York, and Edmonton, Alberta). Results were influenced by unanticipated local factors. Reanalysis of this study suggests that local drinking water, used in all sites, may have contributed to a tendency for lower behavioral inhibition in Edmonton, where public water supplies are treated with hydrofluosilicic acid. Although this chemical and sodium silicofluoride is widely used in the U.S., neither of the silicofluorides is added to the water in Portland or Albany. Previous epidemiological data have associated silicofluoride treated water with enhanced uptake of lead from the environment as well as increased disinhibition of behaviors likely to be influenced by lead neurotoxicity (e.g., violence and drunkenness). Granted prudence is needed when interpreting correlational findings, two methodological conclusions follow: first, important behavioral experiments may need replication in different sites; second, even an apparently innocuous variable such as tap water may be a source of behavioral neurotoxicity.

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4:00 PM

- Mysterud, Iver (U. of Oslo)
- Poleszynski, Dag Viljen

*Expanding Evolutionary Psychology: Violence as a case*

The "mainstream" evolutionary psychology model is currently under criticism from other perspectives that want to expand the model or make it more realistic in various ways. We argue that a focus on the environment as only consisting of social (or sociocultural) factors is too narrow if evolutionary approaches are to understand the behavior of modern humans. Focusing on violence as a case, we argue that numerous novel environmental factors of nutritional and physical-chemical origin should be considered as relevant proximate factors. The common theme is that several aspects of the biotic or abiotic environment are able to change brain chemistry, thus predisposing to violence and aggression in given contexts. Aggressive behavior can be seen as having had a number of useful functions of importance to our ancestors' survival and reproduction. However, there are a number of conditions in our novel environment that either can lower the threshold for aggression or release of such behavior in contexts that could have been adaptive in our evolutionary past, something that no longer is the case. It is high time evolutionary approaches to violence include the possibilities that violence may be triggered by nutritionally depleted foods, reactive hypoglycemia caused by habitual intake of foods with a high glycemic index (GI), food allergies/intolerances and exposure to new environmental toxins (heavy metals, synthetic poisons).

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4:20 PM

- Weekes-Shackelford, Viviana A. (Florida Atlantic U.)
- Shackelford, Todd K. (Florida Atlantic U.)

*Methods of Murder by Stepmothers and Genetic Mothers*

M. Daly and M. I. Wilson (1994, *Ethology & Sociobiology*) proposed that the different methods by which stepparents and genetic parents kill children may provide insight into parental psychology and underlying motivational factors. Daly and Wilson (1994) hypothesized and found that stepfathers were more likely than genetic fathers to kill children by methods revealing an underlying rage and resentment, such as bludgeoning to death. Genetic fathers, in contrast, were more likely than stepfathers to kill children by methods that produced a quick death, such as an execution-style shooting, revealing a concern with minimizing pain and suffering. Other research suggests that murders by genetic fathers (relative to murders by stepfathers) are more often accompanied by fantasies of "rescuing" or "sparing" a child from some unpleasant fate. Using a national-level homicide database spanning two decades (the Federal Bureau of Investigation's Supplementary Homicide Reports for 1976-1994), we investigated whether murders by stepmothers and genetic mothers are methodologically distinct, following the differing patterns of murders by stepfathers and genetic fathers.

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### Status and Dominance Multi-Purpose Room A, Rutgers Student Center

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4 : 55 PM

- Snyder, Jeffrey K. (The College of William & Mary)
- Kirkpatrick, Lee A. (The College of William & Mary)

#### *Opposite Sex Mating Preferences: The Roles of Dominance and Prestige*

Previous research has indicated that women preferentially select males who are high in dominance, presumably because dominance may imply social status, good financial prospects, and ambition. However, if dominance is marked by aggressiveness, authoritarianism, oppression, and domineering behaviors, dominant mates may also pose adaptive problems for females and their offspring. Prestige, like dominance, directly implies social status, good access to resources, and ambition, but also implies additional qualities such as kindness, willingness to help, and generosity, which are related to the ability to invest, willingness to invest and good parenting skills in ways in which dominance is not. Because prestige has the potential to solve similar adaptive problems for females as dominance, with less potential cost, we predicted that females would prefer high prestigious males to dominant males as potential mates. Study 1, in which participants compared high-dominant targets to high-prestige targets relative to each other, confirmed this prediction with respect to target desirability as a relationship partner (in both sexes), but women preferred dominant to prestigious men with respect to attractiveness. Study 2, which manipulated dominance and prestige independently of one another, suggested that dominance and prestige separately and additively increased women's perceptions of male attractiveness, whereas only dominance affected long-term preferences. The latter result may be moderated by perceptions of promiscuity.

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5 : 15 PM

- Jackson, Russell (U. of Texas at Austin)

#### *Male Physical Dominance As An Intensifier Of Mate Attractiveness*

Evolutionary theories of dominance outline its importance in male intrasexual and intersexual selection. Dominance is a diverse category composed of status, resource access, and physical components. Larger male size conceivably aided ancestral women in overcoming adaptive problems and gained men intrasexual success in ways different from other forms of dominance. Prior dominance studies have not investigated the effects of physical dominance without the potentially confounding effects of the other two forms. Two hundred and eighty-two participants in this experiment rated the members of a pictured couple on a 104-question questionnaire of attractiveness, personality, and relationship characteristics. The between-subject picture depicts a couple varying by two levels on two dimensions: size relative to one another, and attractiveness of the female. I hypothesized that males might rate the female as less attractive when she is paired with a large male because large paired males are more threatening to interlopers. However, because females benefit from large male size, a female's mate's size indicates some of her mate value; therefore I hypothesized that males might instead find a female more attractive when she is paired with a larger mate. Instead of exclusively supporting one of my hypotheses, however, these data unexpectedly supported (and rejected) elements of both. When the stimulus female is initially less attractive, males find her even less attractive when she is with a large mate. When she is initially more attractive, males find her even more attractive when she is paired with a large mate. Possible explanations and implications are discussed.

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5 : 35 PM

- Gross, Sabine (Philipps U. Marburg)
- Mueller, Ulrich (Philipps U. Marburg)

#### *Personal Dominance as a Predictor of Reproductive Success*

There are findings from almost every investigated vertebrate species, for males as well as for females, that high rank comes with higher lifetime reproductive success (RS). For animal rank are, however, at least three different indicators in human societies: 1) socio-economic status (SES) This measure refers to whole groups of people with similar levels of formal education and of occupational qualifications, who share similar income chances on the labour market. Findings for differential RS by SES have been very inconclusive for societies still within some sort of demographic transition. In traditional societies, SES is positively correlated with RS. 2) individual success in one's own occupational group. Where there is a clear hierarchical order within a closed occupational group (like among professional military officers, or career diplomats), findings are conclusive: occupational success comes with higher RS. In most civilian settings, though, such

hierarchical orders do not exist, or people spend just a few years in any one of them, making it difficult to assume a lifetime effect. 3) dominant personality. individuals who over time display dominant behaviour and manage to command submissive behaviour from many of their interaction partners. The measurement problems are here even greater: by definition, this behaviour is context dependent. Also, dominant behaviour may be expected to influence lifetime RS only when it has the chance to develop into a lifelong trait, which may be dependent on many factors difficult to observe even in very ambitious survey protocols. Findings are presented here from a dataset which contains valid measures of lifelong dominance: reproductive biographies of all chancellors, state governors (minister presidents of the 11 states West Germany was composed of), and all federal ministers 1949 - 1989 in West Germany, from the foundation until unification with East Germany. The dataset also contains such information on all permanent secretaries of state, the highest civil servants in the federal government in the observational period. A substantial proportion of all these males (number of women in the study population is too small to permit separate analyses) were lawyers, allowing to control for the effects of formal education and occupation. Typically, income differences are too small between the subjects of this study to produce significant differences in standard of living. Thus, income effect are controlled, too. The characteristic difference among the subject is the asymmetry in giving and taking orders. The difference allows a transitive ordering by dominance: None of these top politicians took up the position of a top civil servant; only one governor in these 40 years gave up that position in order to become a federal minister, and no chancellor subsequently took up another office. Dominance as measured here came with increased RS.

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5 : 55 PM

- Butovskaya, Marina (Russian Academy of Sciences)
- Levashova, Valentina (Russian Academy of Sciences)

*Walking Speed And Socioeconomic Status: Cross-Cultural Analysis*

Walking fast - ranking high hypothesis (Schmitt & Atzwanger, 1995) was tested in capitals of three cultures: Russian (Moscow), Kalmyk (Elista) and Armenian (Yerevan). Walking speed of 300 pedestrian (150 males and 150 females) per each culture as well as body orientation in space and head position were measured focally on the streets of a three capitals and a brief interview with each focal subject was conducted (data on age, height, weight, occupation, level of education, income, sports etc.). On the basis of data on occupation, income and education the summary socioeconomic status of each focal individual was calculated. No significant correlation was found for males between speed and socioeconomic status ID any of these cultures. For Moscow males (Russians) only the significant positive correlation between walking speed (1,42 ! 0,23) and socioeconomic status was found (0,253,  $p < 0,004$ ). It is suggested that interconnection between the walking speed and male's status is a cultural-specific pattern. Contrary to Western cultures, in the three cultures under study, being fast does not mean being successful for males. In Kalmyk and Armenian samples correlation between the speed and the socioeconomic status were negative both for males and females, although not significant. Instead, erectness of body posture or the quality of clothes could solve a certain indicator of socioeconomic status.

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Gossip, Rumor, and Information  
Multi-Purpose Room B, Rutgers Student Center

4 : 55 PM

- De Backer, Charlotte (U. of Ghent)

*Gossip As A Social Bonding And Control System*

A main hypothesis within the evolutionary psychological approach to language use is the hypothesis of the social brain. According to R. Dunbar the main function of language was, and still is, to exchange social information (gossip in a broad sense) in order to facilitate bonding in larger social groups. I questioned 106 students about their tendency to gossip (considering gossip as the exchange of social information). On almost every topic I questioned, the response was positive; people tend to talk about other persons, their relations, problems, looks,.... And 80% of the respondents even admitted to gossip in the narrow sense of the word; talking negatively about others while those are absent. However, living in larger groups also means that we can cheat on each other much easier, and language is an excellent way to refer to a non-existing or false belief. If we consider the exchange of information as some kind of altruistic act (which bonds people) their needs to be a mechanism to detect cheating, to assure an evolutionary stable system. Gossip can probably also fulfil this role. Gossip can act as a kind of social control. I used paper and pencil tests (that had been used in previous research) and questioned 176 students to analyse this. The results show that, indeed, gossip about cheating behaviour is more easily accepted than gossip about normal behaviour. Matching this to the fact that gossip influences reputations, we come to a possible solution to detect and punish cheating behaviour.

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5:15 PM

- Nakamaru, Mayuko (Shizuoka U. (Princeton U.))
- Kawata, Masakado (Tohoku U.)

*Evolution of Rumor and its Role of Discriminating Defectors*

Discriminating defectors is the key point for cooperation to evolve. In this paper we consider the effect of rumor on the evolution of cooperation. Rumor is defined as spreading or starting a reputation that is passed from one player to another and that is about cooperativeness of players. If players receive a rumor about defectors, they can avoid being defected. If a rumor is not true, players have to distinguish bad rumors from good ones to establish the cooperative relationship. Moreover, a speed of spreading rumors is expected to effect on detecting the defector. In the computer simulations, a pair chosen randomly plays a one-shot Prisoner's Dilemma game. Some of players also spread and start rumors, and some of players choose either cooperation or defection in a one-shot Prisoner's Dilemma game based on rumors. ADVISOR, which is cooperative and starts a rumor about defectors, is not invaded by LAIR, which is defective and tells a lie that "I'm cooperative", even though the same pair can meet again hardly. But if correct rumors are hard to be got and rumors spread fast, ADVISOR is confused by a wrong rumor and ADVISOR is invaded by LIAR. CONDITIONAL ADVISOR, which is like ADVISOR and only spreads rumors given by other players that have cooperated it, is not invaded by LIAR even though a rumors spread fast. On the other hand, in the same condition, a cooperative strategy that plays a PD game based on its own past experience is invaded by LAIR.

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5:35 PM

- Davis, Hank (U. of Guelph)
- McLeod, Lyndsay (U. of Guelph)

*Woman Murders Baby & Eats Family Dog: An Evolutionary Perspective on Sensational News*

People from all walks of life are drawn to sensational news stories. We propose that most sensational news focuses on a non-random array of topics reflecting themes that influenced success in the ancestral environment. To test this view, we examined the front pages of a selection of newspapers from the U.S., Canada, the U.K., France, Germany and Italy, published between 1700 and 2001. Over 600 stories were grouped into 12 categories according to content. The frequency of items in each category were ranked within each of six 50 year time periods. Analysis using Kendall's Coefficient of Concordance demonstrated consistency among the rankings across both culture and time. We suggest that sensational news topics may reflect fundamental characteristics of human nature rather than being socially constructed in a particular time and place. Parallels are drawn between the function of sensational news coverage in large social groups and the use of gossip within smaller groups in the ancestral environment.

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**Cognitive Architecture II  
Room 411, Rutgers Student Center**

4:55 PM

- Sherman, Jeremy (Adaptive Strategies)

*The Lazy Gene: Filling In The Missing Theoretical Links In The Evolution Of Cognitive Architecture.*

Terrence Deacon has developed a theory of the complex self-organizing dynamics within which evolution occurs. With animated Bryce computer models, the author introduces Deacon's theories and applies them in a critique of prevalent HBES assumptions about the evolution of cognitive architecture.

Recent evidence suggests that rather than being a blueprint for phenotype, genes serve as subtle prompters of ontogenetic self-organization whereby traits and behaviors are reinvented in every individual. This seems implausibly inefficient but isn't. Genes are as lazy as they are selfish, doing as little directing of growth as possible, both because entropy erodes any genetic pattern not under selective pressure and because genes can and must work within a vast complex of co-evolving and self-organizing internal and external selective pressures.

Much HBES research implies the assumption that genes, through fortuitous chance mutations that confer advantage under strictly-exogenous selective pressure direct construction of passive organisms. Under these assumptions, human universals are interpreted as evidence for a genetic blueprint in the service of reproductive success. The author illustrates how updating and overcoming classic neo-Darwinian over-simplifications will advance the HBES research program.

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5:15PM

- Ainslie, George (Temple U.)
- Monterosso, John (U. of Pennsylvania)

*Self As A Population Of Reward-Selected Processes: Experimental Evidence For The Emergence Of Self-Control*

The finding that behaving organisms discount expectable reward in a hyperbolic curve has been replicated in several species with several different kinds of reward, excepting only some cases of token (non-primary) reward in humans. This finding predicts that organisms will tend to prefer some smaller-sooner (SS) rewards over larger-later (LL) alternatives only temporarily, in the period just before the SS rewards are due and the hyperbolic discount curves from these rewards are exceptionally high. In a farsighted species like humans hyperbolic discounting would be expected to produce a state of limited warfare among successive motivational states within the individual - in effect creating a population of differently motivated selves which have incentive to behave strategically toward future selves so that these will not impulsively renounce LL rewards. Our research explores a possible mechanism by which such a population could achieve intertemporal cooperation, taking a hint from the venerable advice that making choices in categories rather than singly will decrease impulsiveness. Rats that choose some single SS rewards over single LL alternatives will choose a series of three of the same LL rewards over three of the SS rewards (with identical timing). This confirms a prediction that follows from hyperbolic but not conventional (exponential) discount curves, and shows that a similar finding in college students is not an artifact of cultural suggestion. A single further assumption generates a model of will and other "ego functions" entirely from the dynamics of this population, thus supporting a selectionist approach to the study of higher cognitive functions.

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5:35PM

- New, Joshua (U. of California, Santa Barbara)

*An Evolved Bias In Visual Attention: The Preferential Detection And Monitoring Of Animate Objects In Complex Scenes*

In past change-detection experiments, alterations to animate objects were reliably detected sooner and more frequently than changes to inanimate objects. This animate-advantage in change-detection was proposed to reflect a propensity of the visual system for detecting and monitoring animate objects. These past hypotheses and experiments were derived from an evolutionary perspective--because people and animals persistently constituted both highly informative and dynamic events over evolutionary time the human visual system should have incorporated an attentional bias for their detection and monitoring. However, an alternative explanation for this animate-advantage could be advanced from a domain-general learning perspective wherein people and animals constitute a class of objects that are, relative to inanimate objects, highly prone to change their characteristics. A learned expectation of movement and change would similarly predict a bias for visually attending to people and animals relative to inanimate objects. To discriminate between an evolutionary and domain-general learning account of the observed animate-bias in visual attention, the artifact class used in prior experiments was expanded and divided into artifacts frequently observed to change (e.g. cars and boats) and those incapable of self-propelled motion (e.g. mailbox and bench). In a change-detection task, there was a significant interaction between lability and object class--driven primarily by dynamic artifacts being detected significantly faster, but not more frequently, than changes to static artifacts. Dynamic people and animals were however, not detected more quickly or frequently than static people and animals. Further, the simple expectation of change would appear largely orthogonal to the distinction of animacy. Collapsing across static and dynamic conditions, people and animals were again detected significantly faster and more frequently than changes to artifacts.

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5:55PM

- Hertwig, Ralph (Max Planck Institute for Human Development)

*The Benefits Of Mental Bounds: Why Bigger May Not Be Better*

Human information-processing capacity is limited. This premise is often accompanied by another assumption, namely, that cognitive limits pose a liability. They are suspected of being the culprit behind lapses of reasoning. This paper challenges the seemingly obligatory link between cognitive limitations and human irrationality. Specifically, it is argued that limitations in processing capacity can enable rather than disable important adaptive functions, and decision-making strategies that take limitations into account need not be less accurate than 'unbounded' strategies. The paper concludes with the speculative suggestion that capacity constraints may be a by-product of the evolution of simple strategies.

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Darwinian Epistemologies in Literary Criticism  
Brower Commons ABC

The papers presented in this symposium consider a series of theoretical issues in Darwinian literary criticism and offer several hands-on readings of literary texts made possible by the recent research in cognitive evolutionary psychology. Using Shakespeare's *Twelfth Night* as his case study, Boyd proposes a four-level model of literary explanation that clarifies the advantages of an evolutionary approach and contrasts them with the currently fashionable literary critical model, Cultural Critique. Focusing on ecocriticism, an increasingly influential new form of environmentally oriented literary scholarship, Neasterlin argues that its ethical ends might be best served if its adherents embraced a Darwinian concept of the environment. Neasterlin textual examples come from Jean Rhys's *Wide Sargasso Sea*. Zunshine explores implications of Scott Atran's and Frank Keil's studies of our evolved cognitive capacity to conceive of living kinds as having invisible 'essences'; for the analysis of the literary motif of (comically) transferred self-identity in Plautus, Moliere, Dryden, Kleist, and Tuwim.

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4 : 55 PM

- Boyd, Brian (U. of Auckland)

*Evolutionary Approaches to Literature: A Model*

I propose a four-level model of literary explanation that clarifies the advantages of an evolutionary approach and contrasts them with the currently fashionable literary critical model, Cultural Critique. First, explanation of literary works at the particular level: the work as a problem situation for the author, akin to the problems that any organisms face in their immediate situations and that they meet with a flexibility of response insisted on by, for example, Sarah Blaffer Hrdy. Second, the individual level, the author as an individual organism, whose difference from others is crucial, as it is in the Darwinian model of natural selection, and not something to be ignored or dismissed as a bourgeois predisposition. Third, the local level, of various kinds of larger contexts, historical, political, economic, social, cultural, technological, intellectual, and artistic. This, the primary focus of Cultural Critique, matches the biological awareness of historical contingency interacting with local environmental circumstance, and cannot be treated, as it often is within Cultural Critique, in isolation from either individual variation on one side or phylogenetic continuity on the other. Fourth, the universal level, the level of human nature, which concerns itself with why in evolutionary terms we engage in literature, how we can understand it, why it focuses on the subjects it does and takes the forms and attitudes that it does, questions central to literary theory but often not asked or answered far too narrowly without an evolutionary perspective. I will use Shakespeare's *Twelfth Night* as an example throughout.

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5 : 15 PM

- Zunshine Lisa (U. of Kentucky)

*"If I knew but who I were . . .": A Cognitive Perspective on the Literary Motif of the (Comically) Transferred Self-Identity*

From the plays of Plautus, Moliere, Kleist, and Dryden, to Yulian Tuwim's poems for children the concept of self-identity as defined exclusively by a series of external physical characteristics has remained a source of delightfully absurd comic situations. When in John Dryden's 1690 *Amphitryon*; or, the Two Sosas, the god Mercury assumes the outward form of the slave Sosia, the true Sosia inspects the pretender's "patch upon [his] nose," his "foolish face with a long chin at end on't," his "shambling legs with two splay feet belonging to them," and he has to admit sorrowfully that this stranger is Sosia-"there's no denying it." "But what am I, then?" asks the befuddled character as he feels his identity slipping away from him: "For my mind gives me I am somebody still, if I knew but who I were." Sosia's reasoning is funny because he pointedly ignores our species' "intuitive" knowledge that what defines Sosia is not the patch on his nose covering a (venereal) sore or his shambling legs ending in two splay feet but rather that indefinable "something" that makes him the "true" Sosia and that no plotting god could attain through his crude masquerading. Based on the analysis of similar situations in Plautus, Moliere, Kleist, and Tuwim, this paper will thus suggest that one of the reasons that the age-long literary motif of transferred self-identity continues to retain its comic potential is that it taps what scholars such as Scott Atran and Frank Keil have characterized as our evolved cognitive tendency to conceive of living kinds as defined by their invisible "essences."

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5 : 35 PM

- Easterlin, Nancy (U. of New Orleans)

*Redefining the Environment in Literary Ecocriticism*

Ecocriticism, a form of environmentally oriented literary scholarship, has become a recognizable approach within literary studies in the last fifteen years. As Joseph Carroll has pointed out, critics adopting this approach focus principally on writers who exhibit a love of nature (e.g., Edward Abbey, William Wordsworth, Henry David Thoreau). This is in keeping with their moral motivation to promote the value of the natural world. The paper here proposed will suggest that the ethical ends of ecocriticism might be well served if its adherents embraced a Darwinian concept of the environment. Presently, ecocritics equate "environment" with "natural world" (that is, the physical world of matter and its forms of life other than human); from a Darwinian perspective, the environment is not only in a state of flux, but one of its most significant elements is the presence of other human beings. Adopting such a model of the environment, this paper will suggest that

how individuals feel about nature is inseparable from their relationships with the people who also help constitute their environments and that, therefore, studying the dynamic system of self-others-natural world in literature can reveal why our relationship with nature is sometimes disordered or destructive. Jean Rhys's *Wide Sargasso Sea*, a novel exploring madness in post-emancipation Jamaica, will be adopted to demonstrate the impact of disordered human relations on the individual's perception of the natural world.

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5:55 PM

- Ian Jobling

## Saturday, June 22

- **7:00-8:30 AM:** Breakfast
- **8:30-9:30 AM:** Morning plenary by Wulf Schiefenhoevel: *Human Birth: Cultural and Evolutionary Perspectives*. Introduced by Percy Rohde.

Schiefenhoevel, Wulf (Max-Planck Institute for Behavioral Physiology)

### *Human Birth: Evolutionary and Crosscultural Perspectives*

Human newborns are physiologically premature to counteract the disadvantages stemming from bipedalism (rigid pelvis) and the big brain. Through this and other biological mechanisms human birth has been shaped to reasonable perfection in the course of hominisation. This, however, is not the perspective of modern obstetrics, which is, in some Western countries, allowing for more self-determined birth behaviour than in past decades, but develops, at the same time, new interventive strategies (e.g. painless vaginal birth), carries out a high to very high percentage of caesarean sections and explains postpartum dysphoria and depression as consequences of an upset in the endocrinological balance. I will present data from our documentation of birth in traditional societies of Melanesia, findings on postpartum mood changes and will discuss ways to reduce negative outcomes stemming from a mismatch between complex and finely tuned mechanisms regulating the biology and biopsychology of birth on the one hand and modern obstetrics on the other.

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- **9:30-10:00 AM:** Refreshments

## Love, Jealousy, Betrayal, and Rape Multi-Purpose Room A, Rutgers Student Center

10:00 AM

- Fisher, Helen (Rutgers U.)
- Aron, Arthur (SUNY Stony Brook)
- Brown, Lucy L. (Albert Einstein College of Medicine)

### *The Neural Mechanisms of Mate Choice*

Fisher, Helen, Aron, Arthur, Mashek, Debra, Li, Haifang, Strong, Greg, and Lucy L. Brown. Myriad traits have evolved in birds and mammals via sexual selection in order to attract mates. But the brain mechanisms by which conspecifics become attracted to these traits is unknown. This paper discusses our (in-progress) fMRI brain scanning project designed to establish the neural mechanisms associated with romantic attraction in humans. Then it explores the possible neural systems associated with human/mammalian mate discrimination and mate choice. It theorizes that attraction is part of a triune brain system for mating, reproduction and parenting. The sex drive, or lust, is associated with increased estrogens and androgens; attraction is associated with increased central dopamine and norepinephrine and decreased central serotonin; attachment is associated with increased oxytocin and vasopressin. The sex drive evolved to motivate mammals to court any conspecific. Attraction evolved to enable mammals to discriminate between potential mates and focus courtship activities on particular conspecifics, thereby conserving mating energy; and the neural circuitry for attachment evolved to enable individuals to complete species-specific parental duties. The brain system for attraction plays a significant role in human mate choice, as well as cross-cultural patterns of marriage, divorce, suicide, homicide and clinical depression associated with rejection in love.

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10:20AM

- Rilling, James K. (Princeton U.)

*Imaging the Neural Correlates of Mating Competition in Dominant Male Rhesus Monkeys*

Male sexual jealousy may have evolved by natural selection due to its utility in establishing paternity certainty by way of securing exclusive sexual access to female mates. In this study, we attempted to induce in dominant male rhesus monkeys a psychological state that may be homologous to male sexual jealousy in human males, and we used Positron Emission Tomography (PET) to image the neural correlates of this state. Nine groups of monkeys were formed, each with two adult males and one adult female. In 8 groups, one male emerged as clearly dominant and established exclusive sexual access to the female. Dominant males were placed alone in a cage, injected with 10 mCi 18F-FDG intramuscularly, and then exposed to each of two conditions: 1) a challenge condition in which the subordinate male and female were together in a nearby pair cage and free to mate, 2) a control condition with the female alone in the pair cage. After 45 minutes exposure to each condition, both males were sedated with ketamine (5 mg/kg), blood samples were collected, and a PET scan was acquired from the dominant male. The challenge condition provoked both aggressive responding and increases in plasma testosterone in dominant males. Comparison of images from the two conditions revealed significant alterations in regional cerebral glucose metabolism (rCMRglu) in response to the challenge condition. Voxels were also identified where alterations in rCMRglu were significantly correlated with the changes in plasma testosterone concentrations. Supported by NIH MH12736-01 and the Emory Center for PET.

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10:40AM

- Garretson, Michelle (Princeton U.)

*Gender, Attachment Style And Reactions To Imagined Betrayals Of Trust In Heterosexual Relationships.*

Evolutionary psychologists argue that mate selection processes are driven by the need to be reproductively successful. Women desire emotional fidelity to insure the commitment of males and their resources to offspring. Males, however, desire sexual fidelity to insure that young recipients of resources are their genetic offspring (Buss, 1987). These desires lead to differences in mate selection strategies that should consequently influence reactions to relationship infidelities. However, ultimate evolutionary factors overlap proximate mechanisms that operate on perceptions of betrayal in relationships (Buss & Schmitt, 1993). The present research examined the influences of sex, sex role schemata, and attachment style on reactions to betrayals of trust that were sexual, emotional, or general in nature. Participants imagined general, emotional, and sexual violations of trust while their physiological responses (heart rate, electrodermal activity, and corrugator supercilli contraction) were recorded. Study 1 investigated relationships between sex role typing and Study 2 examined the effects of attachment style on responses to infidelity. Results indicated that traditional participants reported significantly more arousal than androgynous participants. Secure participants experienced greater electrodermal activity, and reported more upset and betrayal, than insecure participants. Overall, imagining sexual infidelity induced a greater response than either general or emotional trust infidelity and, regardless of betrayal type, females were significantly more reactive than males. Findings contrast with simplistic evolutionary views purporting that females are more reactive to emotional infidelity, while males are more reactive to sexual infidelity.

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11:00AM

- Forssell, Stephen (U. of Denver)

*Jealousy in Homosexual and Heterosexual Men and Women: Examining Evolution and Attachment*

An evolutionary model of jealousy emphasizes the role of reproductive fitness in the expression of romantic jealousy. Attachment theory has discerned three robust styles of interacting in close relationships based on internal mental models: secure (valuing, trusting), dismissing (relationships devalued), and preoccupied (emotionally entangled). Romantic attachment theory proposes jealousy is a reaction to the threat of loss of an attachment figure that varies by style. This study consulted evolutionary and attachment theory to examine romantic jealousy in homosexual men (31) and women (22), and heterosexual men (32) and women (52). Subjects were mostly white college students, age 18-25. Consistent with evolutionary predictions, heterosexuals were higher in jealousy intensity than homosexuals. Also consistent with evolutionary thought (e.g., Buss, et al., 1992), differences were found in the salience of jealousy across domains of infidelity. Heterosexual men were more upset over sexual as opposed to emotional infidelity than were women and gay men. Preoccupied attachment style was correlated with jealousy intensity for all 4 groups. Dismissing attachment style was predictive of domain of jealousy salience. For heterosexual and homosexual women, dismissing style was negatively correlated with upset over emotional infidelity. For gay men, dismissing style was negatively related to upset over sexual infidelity. Attachment style was not related to domain of jealousy salience for heterosexual men. It was concluded that both evolutionary and attachment theories are useful in explaining the expression of romantic jealousy in homosexual and heterosexual men and women. Dual evolutionary roles for jealousy - reproduction and attachment - are considered.

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11:20AM

- Conlan, Sean K. (U. of Texas at Austin)

*Mate Expulsion*

Human mateships rarely last a lifetime. Under a variety of circumstances, it would have been reproductively beneficial to jettison an existing mate. Current mates could divert resources to others, begin inflicting costs, or merely lose the value that was inherent in the initial mate selection. Incrementally better mates could become available. A host of costs linked with breakup militate against mate expulsion. These include the disruption of extended kinship ties forged through the mateship, the loss of parental resources for existing children, and potential reputational damage linked with mateship dissolution. Selection would forge decision rules favoring mate expulsion when the net benefits were sufficient to outweigh the costs. Selection would also favor the evolution of cost-minimization strategies designed to attenuate damage, such as reputation management following a breakup. At the same time, selection would forge coevolved defense mechanisms designed to guard against being an unwanted "victim" of a potential mate expulsion. A potential victim, for example, can escalate the threatened costs that the mate expulser will incur as a consequence of a breakup or redouble efforts to increase the value provided to the current mate. This paper outlines a theory of the coevolution of adaptations for mate expulsion and adaptations for defenses against unwanted mate expulsion, and presents empirical data that support specific hypotheses about the decision rules and tactic usage that follow from this theory.

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11:40AM

- Fetchenhauer, Detlef (U. of Groningen)

*Females' Risk Attitudes And Sociosexuality Predict Their Chance Of Being Raped PD*

In females a high level of sociosexuality as well as a high inclination to engage in risk-taking behaviors can be regarded as indicators of a short-term reproductive strategy. Characterizing elements of such a strategy are 1) an early onset of sexual activities, 2) multiple sexual partners, 3) no attempt to find a single man as a stable partner for an extended period of time and 4) selecting partners on the basis of their genetic rather than their parental qualities. The present study tested the hypothesis that one unintended consequence of such a short-term reproductive strategy is an increased probability to become the victim of male sexual violence. The reason for this assumption is that such a short-term mating strategy is in conflict with taking precautionary measures and leads women to be attracted to men that are willing to use violence for the satisfaction of their sexual desires. Using a sample of Dutch women (N = 330, average age 20.6 years) it is shown that women's chances to become the victim of male sexual violence was indeed related to the victims' risk attitudes and level of sociosexuality. For those respondents scoring high (i.e., above median) on both risk attitudes and sociosexuality chances of having been raped in the past were more than three times as high as for those respondents scoring low on both dimensions. Furthermore, both risk attitudes and sociosexuality were negatively related to taking precautionary measures against male sexual violence.

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**Coalitions, Cooperation, and Sharing  
Multi-Purpose Room B, Rutgers Student Center**

10:00AM

- Allen-Arave, Wesley K. (U. of New Mexico)
- Gurven, Michael D. (U. of California Santa Barbara)
- Hill, Kim R. (U. of New Mexico)

*Is Food Sharing Between Close Kin Due to Kin Selection or Reciprocal Altruism? Data Analyses of Ache Food Transfers*

Nepotistic biases are often cited as evidence for the role of kin selection in guiding human social interactions. However, demonstrations that kin prefer to aid or interact with one another provide insufficient evidence to conclude that the nepotistic patterns result from kin selection. Other pathways to altruism, such as reciprocal altruism, may lead to higher levels of cooperation among relatives than non-relatives if kin possess characteristics that make them their preferred social partners. In this presentation, I evaluate predictions of kin selection and reciprocal altruism using food transfer data collected among Ache forager-horticulturalists in northeastern Paraguay. Food sharing patterns on the Ache reservation were consistent with a view that households preferentially exchange resources with their close kin over distant and non-kin. Yet, Ache food transfers between households did not conform to several predictions derived from kin selection theory that attend to the costs, benefits, and directionality of aid. Consistent with the view that reciprocal altruism occurs among kin, closely related households displayed correlations in amounts of food transferred back and forth. Suggesting that reciprocal exchanges are the norm between adult kin, closely related households displayed higher correlations in amounts exchanged back and forth than distantly related and unrelated households. If nepotism in social interactions results from factors such as familiarity, trust, or proximity, kin selection may play a smaller role in the evolution of cooperation among kin than has previously been assumed. Concurrently, the role of reciprocal altruism in the evolution of cooperation among kin may often have been disregarded too hastily.

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10:20AM

- Patton, John (Washington State U.)

*Coalitional Support as a Motivation for Meat Transfers in Conambo*

Conambo is a community of approximately 200 Achuar and Quichua-speaking horticultural foragers in the Ecuadorian Amazon. In this paper, I present data on meat transfers between households in Conambo and argue that current evolutionary explanations cannot account completely for meat transfers. Men in Conambo appear to be transferring meat as part of a strategy for the management of political risk. I argue that they are motivated to provide meat to other households by the desire to shore up and recruit coalitional support. A significant portion of meat transfers in Conambo are not explainable with reference to "showing off" (meat for status), tolerated theft, or costly signaling, and meat transfers can be modeled with confidence as a dependent variable of kinship, reciprocity in kind, and coalitional alliances.

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10:40AM

- Gurven, Michael (U. of California, Santa Barbara)

*Why Do Foragers Share And Sharers Forage? PD*

Inferences made about typical foraging and sharing activities are almost always based on observations of these behaviors in a naturalistic setting, and analyses of the observed variation. Because most observations of modern foraging are done within the context of select individuals departing from a larger base population to participate on foraging treks, several important questions require attention to contextualize inferences made under "self-selecting" observational conditions. 1) To what extent are foraging groups random samples from the larger population? 2) If certain groups of individuals preferentially forage together, do these same groups also preferentially share with each other at the reservation? 3) To the extent that foraging and sharing partnerships are correlated, can we understand behavior in the forest context without consideration of the reservation, and vice versa? 4) Does individual sharing or foraging group preferences reveal any pro-social consistencies in behavior? I show that foraging treks are not representative of the larger population, that individuals vary in the kinds of treks in which they participate, and that those who tend to share together at the reservation are also more likely to forage together on trek. I also show that individuals display consistent preferences for sharing and foraging partners. While individuals interact across forest and reservation contexts, I argue that these results do not invalidate inferences made about forest sharing or reservation sharing patterns.

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11:00AM

- Hibbing, John R. (U. of Nebraska-Lincoln)
- Alford, John R. (Rice U.)

*Accepting Authoritative Decisions: Humans as Wary Cooperators*

The centrality of the payoffs received by others as well as the mechanisms by which those payoffs were determined makes perfect sense from a social-group-centered, evolutionary point of view, but has not been appreciated by the majority of scholars working in the social sciences. This is especially true of political science which is still largely under the spell of the microeconomic, immediate-tangible-reward model. In this paper, using results obtained in original experiments conducted in late 2001, we build on recent research from experimental economics and social psychology that has demonstrated the importance to people of relative as opposed to absolute payoffs. Our results show that subjects are greatly concerned not just with relative payoffs but also with the manner in which the payoff was determined. More specifically, using variations on the ultimatum bargaining game, we find that people react much less favorably to monetary payoffs when those payoffs are derived by a self-interested decision maker than when that same payoff is produced by chance or by desert. Moreover, people also react less favorably to decisions rendered by decision makers who want to be decision makers as opposed to the same payoff coming from those who are forced to be decision makers. As such, these results are consistent with increasingly prominent theories of behavior emphasizing people's aversion to being played for a sucker. Many times, outcomes are important to us not because we so value particular outcomes but because of what we believe the outcomes (and the process) say about our status in the group, a concept perfectly consistent with behavioral theories associated with Tooby, Cosmides, and others.

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11:20AM

- Navarrete, Carlos D (UCLA)
- Kurzban, Robert (UCLA)
- Fessler, Daniel MT (UCLA)

*Anxiety And Ethnocentrism: Coalition Psychology In Two Populations*

Proponents of terror-management theory posit that humans, unique in their knowledge of their own mortality, use their cultural worldviews to buffer themselves from the anxiety that this knowledge creates. Proponents of this theory have shown experimentally that subjects reminded of their corporeal death produce increased positive evaluations of those whose attitudes and values are similar to their own and increased negative evaluations of those with dissimilar views (Greenberg, Solomon, and Pyszczynski, 1997). We agree with terror-management theorists that ethnocentric retreat towards one's cultural worldview in the face of death anxiety is the product of functional psychological systems. However, our alternative evolutionary view holds that the mortality-salience phenomenon can be better explained by reference to an evolved system of adaptive mechanisms that facilitate the formation of social networks, interpersonal bonds and coalitions. We theorize that positive evaluations of norm-conforming behavior and negative evaluations of norm-violating behavior serve to advertise one's allegiance to shared standards and hence one's reliability and predictability as an ingroup member, a status the value of which increases in times of social conflict or danger. This leads to the prediction that exposure to particular type of aversive stimuli, including but not limited to those concerning death, will lead to increases in ethnocentrism or pro-normative attitudes towards one's reference group. Hence, whereas TMT predicts that no stimuli or arousal short of that which elicits thoughts of death will lead to the aforementioned changes in cognitive states influencing social evaluation, we predict that subjects asked to contemplate aversive scenarios, whose real world content would have had deleterious fitness consequences in the environments in which the human mind evolved, would exhibit similar ethnocentric attitudes. Here we present experimental results from two cultures (American undergraduates and Costa Rican nationals) consistent with our view. Our results show that subjects asked to contemplate aversive thoughts without being reminded of their mortality exhibited greater pro-ingroup bias than subjects in a control group. Greenberg, J., Solomon, S and Pyszczynski, T. (1997) Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. *Advances in Experimental Social Psychology*. Vol. 29: 61-139.

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11:40PM

- Hiraishi, Kai (U. of Tokyo)

*Can I Get My Share: Extension Of The Wason Selection Task With The Sharing-Rule.*

On the Wason selection task with a Sharing-rule, "if one is in-group, one gets the share", it was suggested that people were relatively indifferent to failure to share with in-group members by the resource-provider. This paper extends the notion by asking respondents which card(s) they would check when they could check only one, two, or three cards on the Selection task. Study 1 had three conditions varying in perspective of respondents; provider, third party, and recipient. In the third party condition, respondents took the perspective of an in-group member who did not demand the share and checked whether the provider obeyed the rule. In the recipient condition, respondents played a role as a potential recipient demanding the share. A note, this represents you was attached to the in-group card in the recipient condition. We observed enhancement of in-group card selection in the recipient condition. In Study 2, we had two recipient conditions: The self known condition was identical to the recipient condition in Study 1. In the self unknown condition, all the cards were kept anonymous. Selection of the in-group card was enhanced only in the self known condition. Study 3 employed a recipient context and had two in-group cards, one of which represented the respondent. It was observed that the self card was the most selected card while the in-group card was the least selected one. In conclusion, people were sensitive to their own share while indifferent to the share of other in-group members.

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**Father Absence and the Development of Reproductive Strategies  
Room 411, Rutgers Student Center**

Twenty years ago, Draper and Harpending (1982) published their now classic paper on father absence and the development of reproductive strategies. They posited that the developmental pathways underlying variation in children's reproductive strategies were especially sensitive to biological father absence and mothers, sexual attitudes and behavior in early childhood. The current symposium presents a series of four empirical papers that conduct tests of Draper and Harpending's model in five cultures, ranging from hunter-gatherers to modern America. The empirical papers are then followed by a discussion by Patricia Draper. The first paper, by Ellis et al., examines the father-absence hypothesis in community samples of girls in the United States and New Zealand that have been followed prospectively throughout childhood. The second paper, by Quinlan, which employs a large national sample, also examines the father-absence hypothesis in the United States. Consistent with the theorizing of Draper and Harpending, both Ellis and Quinlan found that earlier onset of father absence was associated with



earlier sexual outcomes in girls. Both papers examine mothers, repartnering behavior as a possible intervening mechanism. The third paper by Waynforth, however, does not find support for the father-absence hypothesis. Based on research with a hunter-gatherer group (the Ache) and a largely subsistence-level horticulturalist population (the Maya), Waynforth offers an alternative evolutionary ecological explanation for the data. Finally, Flinn, Noone, and England, in a longitudinal study of patterns of cortisol reactivity in a rural Dominica sample, examine possible physiological mechanisms underlying intergenerational transmission of father-absent reproductive strategies in humans. The discussant, Draper, will attempt to synthesize the findings from the four empirical papers in light of both her original theorizing and her current thinking on the topic.

10:00AM

- Ellis, B.J. (U. of Canterbury)
- Bates, J.E. (Indiana U.)
- Dodge, K.A. (Duke U.)
- Fergusson, D.M. (Christchurch School of Medicine)
- Horwood, J.L. (Christchurch School of Medicine)
- Pettit, G.S. (Auburn U.)
- Woodward, L. (U. of Canterbury)

*Does Early Father Absence Place Daughters At Special Risk For Early Sexual Activity And Teenage Pregnancy: Longitudinal Investigations In The United States And New Zealand*

Four major questions regarding the possible impact of father absence on daughters' sexual development were addressed: (1) Is earlier onset of father absence associated with increasing risk of early sexual activity and adolescent pregnancy? (2) Is this increasing risk accounted for by child conduct problems and familial and ecological stressors that covary with early father absence? (3) Is early father absence a general risk factor for the development of psychopathology, or is it specific to sexual development? (4) Does mothers' dating and repartnering behavior mediate the relation between early father absence and early sexual outcomes? These questions were investigated in two independent longitudinal studies in the USA (N = 242) and New Zealand (N = 520), in which community samples of girls were followed prospectively throughout childhood. In both studies, earlier onset of father absence was strongly associated with elevated risk for early sexual activity and adolescent pregnancy. This elevated risk was either not explained (in the USA study) or only partly explained (in the New Zealand study) by familial, ecological, and personal disadvantages associated with father absence. After controlling for covariates, early father absence discriminantly increased risk for early sexual outcomes but not for educational, behavioral, and mental health problems more generally. Mediation analyses suggested a causal chain in which earlier onset of father absence was associated with greater exposure to maternal repartnering behavior, which in turn was associated with increased risk of early sexual activity, which in turn was associated with increased risk of adolescent pregnancy.

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10:20AM

- Quinlan, Robert J. (U. of Hawaii)

*The Effect Of Timing Of Father Absence On Female Reproductive Development*

One line of evolutionary reasoning suggests that father absence in childhood accelerates reproductive development and leads to promiscuity in adulthood. Timing of father absence may be particularly important. This study tests three hypotheses for the influence of the timing of father absence on reproductive development. Data are for 10,841 women from the National Survey of Family Growth. Timing of father absence was divided into three intervals: (1) parents divorced/separated when the daughter was 0-5 years old, (2) 5-11 years, and (3) 11-17 years. Women whose parents did not divorce/separate served as the reference category. Hazard analysis and logistic regression were used to model the effect of timing of father absence on age at menarche, first voluntary sex, first pregnancy and odds of being above the median for number of sex partners. Number of changes in the childhood family environment was also examined as a potential influence on reproductive development. Results indicate that father absence and changes in family environment had little influence on the timing of menarche. Age at first pregnancy, and age at first sex showed "dose responses" to the duration of father absence. Father absence in adolescence was the strongest predictor of women's number of sex partners. Age at first sex, first pregnancy, and number of sex partners all showed a dose response to the number of changes in childhood family environment. These results suggest that adolescence may be a particularly important time for the influence of father absence on women's number of sex partners. Duration of father-absence, however, increases risk of early first sex and early pregnancy.

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10:40AM

- Grainger, Sara (U. of Liverpool)

*Family Background And Female Developmental Trajectory*

Since the seminal work of Draper and Harpending (1982) and Belsky et al (1991) there has been considerable interest in the link between the family environment experienced as a child and consequent developmental timing and reproductive strategy of females. Predictions from the hypothesis were tested using postal and interview survey data from a cross-section of 415 women in Liverpool, England. No relationships were found between any measure of childhood stability or family background and pubertal timing, mating or parenting behaviour. The results of this study are compared to results from other studies where significant associations have been found, and possible explanations for the different conclusions are considered. In particular, the failure of many researchers to consider the likelihood of type I errors, plus the effects of confounding variables, are discussed.

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11:00AM

- Waynforth, David (U. of New Mexico)

*The Influence Of Father Absence On Reproductive Strategies: Evidence From Two Traditional Societies*

Being raised in a father absent household appears to be associated with precocious sexuality and reproductive function in individuals living in industrialized nations. Evolutionary theorists have used attachment theory to explain the observed patterns. Utilizing data drawn from a hunter-gatherer group (Ache) and a largely subsistence-level horticulturalist population (Maya), I examine whether being raised father absent appears to have similar consequences in traditional societies. This includes tests of being raised father-absent and the timing of first birth, paternal orientation, and testosterone cues in Mayan men. After concluding that the existing evolutionary framework for interpreting reproductive strategies that result from being raised father absent is not consistent with some findings from the Maya and Ache, an evolutionary ecological approach is offered. Instead of being focused on attachment and child development, attention is given to how reproductive payoffs for different categories of behavior (mating effort, parenting, and nepotism) differ for men raised with their father absent as opposed to those raised father present.

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11:20AM

- Flinn, Mark (U. of Missouri)
- Noone, Robert (Family Services Center, Willmette, Illinois)
- England, Barry (U. of Michigan Hospitals)

*Longitudinal Patterns Of Cortisol Reactivity, Father Absence, And Maternal Behavior In A Rural Caribbean Village*

We investigate longitudinal patterns of glucocorticoid (cortisol) stress response, family environment, and parental behavior in a natural (non-clinical) environment. The study involves 317 participants aged one month - 33 years residing in a rural village on the east coast of Dominica. Fieldwork was conducted over a fifteen-year period (1988-2002). Research methods and techniques include: immunoassay of saliva samples (N = 32,034), systematic behavioral observations, psychological questionnaires, health evaluations, medical records, informal interviews, and participant observation.

Analyses of data indicate that cortisol reactivity is associated with family environment. Household composition and temporary changes in caretaker residence are associated with cortisol levels. Children in father-absent households have different cortisol profiles than children in father-present households. In contrast to studies of rodents and non-human primates (e.g. see review in Champagne and Meaney 2001), however, the effects of stress during infancy and early childhood are difficult to distinguish from adolescence, suggesting the lack of an age-specific 'critical period' canalizing the limbic-hypothalamic-pituitary-adrenal (L-HPA) stress system. Because patterns of L-HPA response are associated with maternal attachment and subsequent parenting behavior, these results have important implications for understanding the intergenerational transmission of reproductive strategies in humans.

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11:40AM

- Draper, Patricia  
Discussant

Endocrinology

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 Brower Commons ABC
 

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10:00AM

- Gray, Peter (Harvard U.)

*Marriage, Parenting and Testosterone Variation among Kenyan Swahili Men*

Male variation in testosterone (T) levels may, in part, reflect differential behavioral allocation to mating and parenting effort. This research tests whether demographic indicators of pair bonding and parenting were associated with salivary T levels among Kenyan Swahili men. Men in the sample were either unmarried (N = 17), monogamously married (N = 57) or polygynously married (N = 14), and between the ages of 29 and 52. In contrast with earlier findings among North American men, monogamously married men did not have lower T levels than unmarried men. However, among all married men, men with younger genetic children tended to have marginally lower T levels. Polygynously married men, all of whom had two wives, had higher T levels than all other Swahili men. Possible explanations of higher T levels among polygynously married men are explored.

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10:20AM

- Chen, Jennie Y. (U. of Texas at Austin)

*Does Testosterone Affect Bony Structures In The Face? Are Women Sensitive To Testosterone Markers In The Face? NI*

Researchers have hypothesized that testosterone during adolescence shapes the bony structure in the male face making it more masculine (Thornhill & Gangestad, 1999). Testosterone not only enlarges the jaw, but also facilitates its growth laterally. Another masculine feature is a broad eyebrow (glabella protrusion). But no studies have examined empirical data linking current testosterone levels and the previously mentioned facial features. The current study correlated current circulating testosterone level with jaw size, angularity of the jaw, and glabella protrusion. Then, we examined the relationship with other known testosterone markers including second-digit fourth digit ratio and waist-to-hip ratio. These testosterone markers were also correlated with behaviors and characteristics such as general health, sex behaviors, competitiveness, and social dominance. To explore whether or not testosterone dependent bony markers in the face are indeed used by women to infer the degree of masculinity, frontal and profile photos were rated by women for attractiveness and masculinity as well as how willing they would like to have a long-term and short-term relationship with the male pictured. Past studies have show that women's preference for masculinity change throughout the menstrual cycle, preferring more masculine men when the risk of conception is the highest as a short-term mating strategy, but preferring less masculine men when seeking long-term relationships. Women, who were ovulating, are expected to prefer more masculine men than females who were not ovulating at the time of the experiment.

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10:40AM

- Burnham, Terence (Harvard Business School)

*Testosterone, Overconfidence, And Negotiating Ability.*

We examine the relationship between overconfidence, testosterone, and actual performance in negotiations. Subjects are MBA students who took part in a negotiation course. Before the course, students performed self-assessment on characteristics related to negotiating ability. Throughout the course, the subjects' performance was evaluated via a series of negotiation simulations. In addition, subjects were rated by their peers on the same characteristics as the self-assessment. Finally, baseline testosterone levels were assayed. The correlation between testosterone, overconfidence, and performance is explored.

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11:00AM

- Boothroyd, Lynda (U. of St. Andrews)

*The Effect of Parenthood on Physical Aggression: Evidence from criminal data.*

Campbell (1999) proposed the 'Staying Alive' hypothesis to explain the evolution of sex differences in physical aggression, focusing on the damage physical injury would do to a woman's inclusive fitness. This study tested a hypothesis derived from this theory: that parents would be less physically aggressive than nonparents because of the damage any physical injury would do to their inclusive fitness. Analysis was carried out using the United States federal sentencing records for 1994 to 1999. 277 253 individuals were analysed for any significant differences between parents and nonparents in the violence of their crimes. It was found that nonparents were significantly more likely to be violent than parents. There was no difference in the degree to which parenthood affected men and women. There was also found to be a significant effect of whether or not the individual was married. The results can be interpreted in terms of both evolutionary theory and recent work on the hormonal impacts of marriage and parenthood.

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11:20AM

- Sergeant, M.J.T. (U. of Nottinghamshire)

*The Affects Of Male Sexual Orientation On Female Perception Of Body Odour NI*

Human beings have the ability to express a variety of biological information and noticeably so through the chemicals associated with body odour. In terms of the perceived strength and pleasantness of this odour, marked differences have been previously observed between males and females. Both male and female participants have rated male odour as being significantly stronger and more unpleasant. Current research has yet to examine the effects that sexual orientation could have on individuals' body odour, and how others subsequently perceive it. In order to examine this samples of body odour were collected from groups of heterosexual and homosexual males, using established research protocols to control the effects of external factors. The samples were then presented to female participants who rated them for their perceived strength and pleasantness. Research protocols were again used to ensure that external factors did not affect the chemosensory capabilities of the female participants. The data collected indicates that females found the heterosexual male samples to be strong smelling and unpleasant, as per previous literature, yet the homosexual male samples were perceived as being weaker smelling and more pleasant. Could these consciously perceived differences between the body odour of heterosexual and homosexual males be a clue to a more fundamental difference between these groups? The data is considered in light of a number of theories on the prevalence of homosexuality, including that of McKnight (1997).

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11:40AM

- Miller, Edward (U. of New Orleans)

*Sex, Sex Orientation and Occupational Choice*

It is well known that men and women chose different occupations. However there is massive debate as to the relative roles of biology and socialization. Both biology and socialization predict that men will choose stereotypically male occupations. However, since homosexual males and Lesbian women are socialized as males and females respectively, the socialization hypothesis predicts traditional male and female occupational preferences among them as much as among heterosexual men and women. One biological hypothesis is that certain personality traits relevant to occupational choice are affected by prenatal exposure to hormones that also affect sexual orientation. This would lead one to expect homosexual males to have more feminine occupational patterns than other males, and Lesbians to have more masculine patterns than other females.

Using an unique data set collected by Lee Ellis and others and containing over 10,000 people, the nature of sex differences in occupational interests, and interests relevant to occupations are examined. Not only are there sex differences, but for occupations such as beautician, dress designer, high school coach, electrician, and auto mechanic that the occupational preferences of Lesbians and homosexual men are different from their heterosexual counterparts. Other personality traits and interests for Lesbians and homosexuals appear to differ from those of heterosexuals. Reading and sports interests differ with sex and sexual orientation. For instance Lesbians have more interest in sports and homosexuals less. These differences in interest begin in childhood with homosexuals recalling less masculine interests than heterosexuals.

These observations are more easily explained by a biological theory than a socialization theory.

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**Intermission**

- **12:00–01:15 PM**

Lunch, Brower Commons

Afternoon plenary by Robert Hinde: *The Bases of Moral Codes*. Introduced by Linda Mealey.

- Hinde, Robert A. (St. John's College)

*The Bases of Moral Codes*

- **01:30–02:30 PM**

Religions have been the principal purveyors of moral codes. As world religions lose their appeal to twentieth century minds in the West, there is an urgent need to find new bases for moral codes. It is important to counter the common view that science has nothing to say about morality, and to find the real sources for our moral codes. I suggest we must move beyond prosociality and cooperation to consider a wider range of moral concepts related to status-seeking, human rights, gender, group integration and religious systems. It is useful to distinguish between a very limited number of pancultural basic

moral principles, perhaps only two, and more or less culture-specific moral precepts and values (such as the Ten Commandments). The precepts have been elaborated from the principles, over prehistorical and historical time, through diachronic dialectical relations between human behaviour and each culture's moral code. Insights into how this has occurred can be obtained from the analogy of the development of legal systems. It will be argued that the distinction between "what is" and "what ought to be", beloved by philosophers, is invalid.

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▪ **02:30–03:00 PM**

Refreshments

## Morality and Ethics

### Multi-Purpose Room A, Rutgers Student Center

3:00 PM

▪ Curry, Oliver (Louisiana School of Economics)

#### *A Cut-Out-And-Keep Guide To The Naturalistic Fallacy*

Evolutionary accounts of ethics are routinely dismissed on the grounds that they commit "the naturalistic fallacy". A survey of the literature reveals that there is not one "naturalistic fallacy"; there are seven: 1) The direction of evolution is the direction that we ought to go in. 2) What currently exists ought to exist. 3) Natural is good. 4) Good is identical with its object. (Moore's fallacy) 5) Good is a natural property. 6) You can go from facts to values. 7) You can go from 'is' to 'ought'. (Hume's fallacy). One particular evolutionary account of ethics is that human moral sentiments are biological adaptations for cooperation, and hence that moral goals are the proximate goals of these adaptations. This thesis does not commit 'fallacies' 1, 2, 3 or 4. And if this thesis is correct, then 5, 6 and 7 are not fallacies: one can provide 'factual' accounts of proximate goals, and use these goals to derive normative statements.

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3:20 PM

▪ Teehan, John (Hofstra U.)

▪ diCarlo, Christopher (U. of Guelph)

#### *On the Naturalistic Fallacy: A Conceptual Basis for Evolutionary Ethics*

In discussions about the possible contributions of evolutionary studies to moral philosophy the Naturalistic Fallacy (i.e., deriving values from facts or "ought" from "is") often is invoked as a constraining principle. For example, Stephen Jay Gould asserts that the most evolutionary studies can do is set out the conditions under which certain moral values might have arisen, but it can say nothing about the validity of such values, on pain of committing the Naturalistic Fallacy. Such questions of moral validity are best left, Gould suggests, in the domain of religion. This is a common critique of evolutionary ethics, but one which is based on an insufficient appreciation of the full implications of the Naturalistic Fallacy. The authors argue that the Naturalistic Fallacy, broadly interpreted, rules out any attempt to treat morality as defined according to some pre-existing reality, whether that reality is expressed in natural or extra-natural terms. Consequent to this is that morality must be treated as a human construct. As such, any discipline which sheds light on the conditions under which values originate, and on the workings of moral psychology, may play a crucial role in questions of moral validity. Therefore, the Naturalistic Fallacy, broadly understood, does not exclude evolutionary studies but rather points out an important role such studies in moral philosophy.

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3:40 PM

▪ diCarlo, Christopher (U. of Guelph)

#### *Evolution, Skepticism, and Epistemic Responsibility*

The purpose of this paper is to consider the historical precursors of evolutionary theory, not simply those of science, but of philosophy—particularly, skepticism, and to consider the entailments which follow from such a theory i.e. why is it epistemically responsible to learn and teach evolutionary theory concerning our place in the universe? The Pyrrhonians can be appreciated for their desire to make people accountable for their beliefs. Although this was also evident in the Socratic method as well, the Pyrrhonians were much more systematic in their endeavours. In epistemology and ethics, we can speak in a normative manner in terms of better and worse based on our own criteria. Abduction, or inference to best explanation—although a question-begging concept itself—seems to be a pretty good measuring stick (Peirce). Scientific knowledge is accumulative. We simply do know more about biology now than our ancestors did 2,000 years ago. We have at least increased our conceptual capacity which allows us to do more in terms of prediction of novelty. Our ideas cohere better. Do they

correspond better with Reality? I don't know? Does anyone? And does this really matter? The point of the Pyrrhonian Sceptics, and later the Pragmatists, was that attaining Big T truth does not matter. We conceptually lack this ability. With Darwin, we were given empirical evidence that the possible world in which humans are not distinct from the other animal species in any privileged way, might actually exist. The entailment from this is that the world, the universe, and us, could exist entirely without meaning. This frightens an awful lot of people and is possibly at the core of reactionaries like Creationists and others. Every year I tell this to my first year students and I get the same reaction of dropped jaws and puppy-dog stares, as though I have just shattered their world-views. That this universe could have just as easily come into existence without intention and meaning as that it could, is a shocking revelation for some students. Which makes me seriously question what they are learning in high school. Now, I do believe to side either way, is not within our epistemic realm. We can discuss possible universes where the universe is intended or unintended. But we cannot say which it is. For this is simply untestable.

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4:00 PM

- Roes, Frans
- Raymond, Michel (U. of Montpellier II)

*Belief in Moralizing Gods*

According to Richard Alexander's theory of morality, human societies grew in size while competing for favorable environments. Presumably, larger societies are better able to compete with other societies, but larger societies are also more likely to fission. Morality unites a society, by prescribing not to infringe beyond a certain point on the rights of other society members. If larger societies are indeed more likely to split, more morality (e.g. belief in moralizing Gods) is expected in larger societies. Our analysis of data from several editions of the Ethnographic Atlas and the Standard Cross-Cultural Sample supports this line of thought: More competition between societies is found in environments rich in resources, and larger societies tend to occupy these environments. Large societies are also more often engaged in external conflicts, and more often characterized by a belief in moralizing Gods. Alternative explanations for a belief in moralizing Gods are also tested, and we explore whether morality indeed acts against fission and internal conflicts.

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Personality  
Multi-Purpose Room B, Rutgers Student Center

3:00 PM

- Cosmides, Leda (U. of California, Santa Barbara)
- Klein, Stanley B. (U. of California, Santa Barbara)
- Tooby, John (U. of California, Santa Barbara)

*Are There Cognitive Adaptations For Learning About One's Own Personality: Neuropsychological Evidence For Specialized Learning, Storage, And Retrieval Systems*

Social life can be conceptualized as a series of evolutionary games. The best decision in such games may depend on the behavioral proclivities – i.e., the personalities – of the agents involved, including oneself. Has selection designed a fast access database that contains knowledge of one's own personality? Are person-specific databases constructed for frequent interactants? Dissociations due to brain trauma in adults (e.g., D.B., W.J., K.C.) suggest that the semantic memory system contains separate, functionally isolable, fast access databases for the storage and retrieval of knowledge about the self and important others. But is the knowledge in these databases acquired via learning mechanisms specialized for that purpose? Dissociations due to brain trauma cannot illuminate acquisition mechanisms, but dissociations due to developmental disorders, such as autism, can (Duchaine, 2001). R.J., an individual with autism, cannot retrieve any memories of episodes in his life, and his semantic knowledge of animals, objects, and foods is impaired. Yet R.J. has successfully acquired knowledge about his own personality. This raises the possibility that knowledge of one's own personality is acquired via learning mechanisms that are functionally distinct from those that govern learning about other semantic domains.

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3:20 PM

- Pereyra, Laura (Universidad Nacional Autónoma de México)
- Luna, Gabriel (Universidad Nacional Autónoma de México)
- Nieto, Javier (Universidad Nacional Autónoma de México)

*The Influence Of Assertiveness In Reasoning About Different Contents*

119 undergraduate students answered four Wason Selection Tasks with different contents: descriptive, social contract, precaution rule and threat. Information about each participant's level of assertiveness was collected using Gambrell and Richey's Assertiveness Questionnaire (1974), which has been translated and adapted for a Mexican population. Results showed that people with high assertiveness had significantly better performance in social contract and precaution rule reasoning than people with low assertiveness. Even greater differences were found for reasoning about threats. Performance on the descriptive rule was equivalent for both groups. Results are discussed in terms of individual differences in reasoning mechanisms. Consequences of reasoning in different social domains are also discussed.

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3:40 PM

- Saad, Gad (U. of California (Irvine) & Concordia U.)
- Gill, Tripat (Case Western Reserve U.)
- Nataraajan, Rajan (Auburn U.)

*Effect Of Birth-Order On Consumer Behavior*

Pursuing a programmatic approach of applying evolutionary psychology (EP) to marketing, the authors investigated the effect of birth-order on consumer behavior. A survey-based study tested Sulloway's (1996) hypothesis – namely, that human personality (specifically, “openness to experience”) is an evolved response to the family dynamics (in terms of birth-order) faced in early childhood - in the context of consumer behavior. Fifty-one consumer-specific scales, documented in the existing marketing literature, were identified, and six were chosen based on their relation to risk-taking and “openness to experience”. These scales measured: “attitude toward branded products”, “brand switcher”, “comparison shopping”, “innovativeness (fashion)”, “innovativeness (product)”, and “interpersonal influence susceptibility”. While the former three constructs were indicators of risk-taking when shopping, the latter three indicated “openness to experience” in trying new products/fashions. The results from the study, administered on 333 undergraduate students, revealed that while birth-order had no effect on the constructs associated to risk-taking, it did affect constructs related to consumers' openness to experience. Specifically, firstborns reported being significantly more susceptible to interpersonal influences when purchasing products compared to lastborns. In addition, firstborns reported lower propensity to try new products i.e., “innovativeness (product)”, compared to lastborns. The opposite was found for “innovativeness (fashion)”, though only among females. The latter three effects of birth-order tended to increase with sibship size (i.e., the number of reported siblings). These findings, when viewed under the “EP-lens”, suggest that consumers behave adaptively, such that lastborns are more open to new products and less susceptible to normative influences, compared to firstborns.

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4:00 PM

- Roach, Paul (U. of Oregon)

*Birth Order and Personality in Amazonian Ecuador*

Preliminary analysis of the first cross-cultural test that birth order affects development of personality traits in a non-Western, natural fertility population. Adult Shuar Indigenous Amazonians were asked to rate themselves, one or more of their siblings, and pairs of their post-adolescent children to see if birth order and personality correlations were consistent with those reported by Frank Sulloway. Bipolar adjective pairs measuring conscientiousness, openness, agreeableness, and extroversion were used. Of eleven personality scales employed, eight show birth order correlations of similar strength and direction as those found within Western industrialized populations, two show almost no correlation, and one is in the opposite direction. This preliminary work offers tentative support that birth order effects on at least some personality traits are cross-culturally consistent and may reflect an evolved, patterned developmental flexibility that allows for the establishment of a behavioral niche within a family. Suggestions for follow-up research techniques will be solicited.

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4:20 PM

- Janicki, Maria G. (Simon Fraser U.)
- Salmon, Catherine (Simon Fraser U.)

*Friend And Family Dynamics: Relationships Between Birth Order, Exchange Orientation, And Perceptions Of Exchange*

Previous research on birth order has shown that it has an impact on family dynamics and how one perceives one's role within the family. There is some evidence that middleborns receive less parental investment than first and lastborns. Middleborns also seem to specialize in reciprocal relationships with non-kin. To examine the effects of birth order on reciprocity, the current study examined individuals' exchange orientation, attitudes towards helping others, and assessments of actual exchanges for friend and sibling relationships. There has been little research into how birth order affects individuals' perceptions of the costs and benefits of their exchanges, or their concern about reciprocity. Our results indicate that birth order has significant effects on helping attitudes, closeness of relationships, and some perceptions of exchange. Birth order was not found to affect exchange orientation, however the latter was associated with several relationship characteristics and perceptions of exchange. The relationship between birth order and amount of parental investment was also examined.

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**Evolutionary Psychology is Infrastructural to the Social Sciences  
Room 411, Rutgers Student Center**

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The social sciences raise walls and roofs of theory on foundations of sand rather than the bedrock of our evolved psychology, concealing their psychological assumptions in highly abstract protean concepts such as 'power' and 'agency.' Fortunately, the kind of bedrock research represented by the papers in this session are providing the evolutionary underpinnings required for a scientific social science. From this perspective evolutionary explanation does not consist primarily of finding compatibilities between ethnography and evolutionary/ecological theories of behavior, but of identifying the individual-level evolved mechanisms that underlie sociological phenomena. Thus, the independent variable is usually not reproductive success or other direct measure of fitness but a behavior indicative of an evolved mechanism likely to have led to enhanced fitness in earlier environments (e.g., copulatory opportunity rather than RS). The theme of this session is that of a forthcoming edited volume to which the participants are contributors. However, their actual chapters, though having similar intent, deal with different subject matters than do today's presentations.

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3:00 PM

- Fessler, Daniel M.T. (U.C.L.A.)
- Navarette, C. David (U.C.L.A.)

*Third-Party Attitudes Toward Incest: Evidence For The Westermarck Effect*

More than a century ago Westermarck proposed that, as a result of the detrimental effects of inbreeding, natural selection has produced a psychological mechanism that generates sexual aversion between individuals who interacted frequently during the childhood of one or both of them. A review of available evidence pertaining to this hypothesis indicates that, while many results are consistent with Westermarckian predictions, a number of frequently-cited cases are inconclusive, and many key questions remain unanswered. We therefore developed a new method of testing the Westermarck Hypothesis, one which can be widely employed, is not contingent on naturally-occurring experiments or special circumstances, and does not rely on subjects whose behavior deviates from social norms. We present results from Californian U. students indicating that a history of cosocialization with an opposite-sex individual is associated with increased disgust at, and decreased tolerance of, others' incestuous behavior. Consistent with parental investment theory, this effect is stronger in females than in males. In males, each additional cosocialized sibling increases the strength of the response; in females, ceiling effects apparently preclude a similar pattern. Indirect measures failed to produce evidence of a time-limited sensitive period during which cosocialization has maximal effect. Taken as a whole, these findings lend support both to Westermarck's inbreeding avoidance hypothesis and his hitherto-neglected explanation of the origin of taboos, thereby constituting a first step toward uniting individual and cultural levels of analysis.

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3:20 PM

- Brown, William Michael (Dalhousie U.)

*Cheater Detection and the Social Transmission of Information*

Frank (1988) suggested that index signals (e.g. unfalsifiable non-verbal cues) indicate likelihood to cooperate in social dilemmas requiring trust. Without strong theoretical or empirical support Frank (1988) assumes that 'talk is cheap'. However is talk always cheap? The socio-linguistic context of what is transmitted between conspecifics may reveal a considerable amount about a sender's character. Indeed if the



issue is how much an index signal is under involuntary control (e.g. physiologically constrained) it may be quite difficult to justify the position that all information transmitted linguistically was voluntarily-controlled by the sender. To test the hypothesis that social transmission may facilitate cheater-detection perceivers assessed trustworthiness, selfishness, and employability from the transcribed statements provided in a simulated job interview of selfish, altruistic, and Machiavellian job applicants (i.e. individuals were pre-selected based on their scores on 3 valid questionnaires measuring these attributes). Results contradict Frank's (1988) hypothesis that talk is always cheap, but is consistent with an alternative evolutionary perspective (i.e. Rice & Holland's (1997) signal-receptor coevolutionary arms race hypothesis) that the social transmission of information may assist cheater-detection. Theoretical findings on reliable signalling will be introduced to clarify how signals may be reliable even when they are not costly. Specifically cheater-detection may occur via conventional signals (in which cues are culture-specific and costs are not sender-dependent) and evolved index signals (in which cues are cheap but mimicry is prevented due to physiological constraints). Inter-culture experiments are underway to disentangle the universal from society-bound cues mediating cheater-detection.

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3:40 PM

- Barkow, Jerome H. (Dalhousie U.)

*Evolved Infrastructure Supports Sociological Processes: Some Brief Examples*

Three examples of how our evolved psychology helps generate sociocultural phenomena are summarized. The first example discusses the cultural 'work-around' that permits the social brain to produce technical knowledge. The second example, from past fieldwork, describes how the search for relative standing in the Niger Republic underpinned the spread of a fervent Islam. The third example reminds us of how the fields of advertising and marketing were already massively exploiting our Pleistocene psychology back when psychologists were still playing with Skinner boxes.

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4:00 PM

- Barrett, H. Clark (UCLA)

Discussant

**Adaptationist Literary Study  
Brower Commons ABC**

The purpose of this session is to bring together a group of people who are seriously immersed in sociobiology and evolutionary psychology and who are making advances in integrating scientific information and scientific methods with the traditional materials and methods of literary study. Michelle Scalise Sugiyama brings to bear adaptationist anthropology by looking at literature to see what kind of adaptively important information it conveys. In this paper, she argues specifically that dangerous animals were a consistent feature of the hominid evolutionary landscape and that they are thus a ubiquitous feature of oral narrative. Jon Gottschall is developing techniques for the statistical analysis of broad sociobiological themes, using folklore as a database. In this paper, he presents data on the representation of heroines from a broad range of folk tales. Ian Jobling adopts Richard Alexander's thesis on the human adaptive propensities for delusory self-representations and extends that basic concept to the depiction of protagonists in narrative. Joseph Carroll compares scientific and fictional representations of paleolithic life. He examines scientific hypotheses about the mental experience in Neanderthals and Cro-Magnons, and he uses these hypotheses to assess fictional depictions of confrontations between Neanderthals and Cro-Magnons.

3:00 PM

- Sugiyama, Michelle Scalise (U. of Oregon)

*Lions and Tigers and Bears: Predators as a Folklore Universal PD*

Daly and Wilson posit that the near universality of the Cinderella theme in folklore is an expression of a problem that recurrently beset humans throughout their evolution, namely the conflict of interest between step-parents and step-children. This observation suggests that other universal folklore themes may be expressions of adaptive problems as well. "Little Red Riding Hood" is a case in point: it features a universal theme (i.e., predation) which corresponds to an adaptive problem (i.e., predator avoidance). I have argued elsewhere that storytelling may have originated as an information acquisition strategy, enabling individuals to expand certain knowledge bases and/or refine certain skills without undertaking the costs and risks of firsthand experience. In support of the hypothesis that "Little Red Riding Hood" rehearses the adaptive task of avoiding lethal encounters with animals, this paper re-examines universal features and past interpretations of the tale in light of evidence that dangerous animals were a consistent feature of the hominid evolutionary landscape and are a ubiquitous feature of oral narrative.

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3:20 PM

- Gottschall, Jonathan (St. Lawrence U.)

*Traits of Female Protagonists and Antagonists in World Folktales*

Embedded in traditional folktales, and other narrative forms, are vast banks of raw data that human behavioral biologists can use to more precisely map the contours of human nature. This study represents one of the first attempts to systematically extract some of these data and evaluate them in the context of modern evolutionary theory. Scholars have long recognized strong affinities in the depiction of male heroes in traditional, originally orally transmitted, tales. Many prominent works of scholarship – including Frazer's *The Golden Bough*, Campbell's *The Hero with a Thousand Faces*, as well as others less well known – have documented these congruencies while attempting to solve the mystery of their origin. However, for all the attention scholars have lavished on male heroes, almost no systematic effort has been devoted to discovering universal trends in the depiction of female characters. The goals of this project are four: 1) to begin to establish methodology for reducing complex narrative to a form suitable to empirical analysis; 2) to document any cross-cultural patterns in the depiction of female protagonists and antagonists in a large sample of folktales from around the world; 3) to move beyond defunct theories of narrative universals and establish how any identified patterns measure up against the predictions of evolutionary theory; 4) to express how an empirical approach can enrich our appreciation and understanding of narrative as art.

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3:40 PM

- Jobling, Ian (SUNY Buffalo)

*Faultless Monsters: Positive Biases in Self-Perception and the Nineteenth Century Novel Hero*

Many evolutionary psychologists have argued that positive biases in self-perception, such as the self-serving bias, the self-righteous bias, the false uniqueness effect, and unrealistic optimism, are innate psychological mechanisms that produce adaptive benefits like high self-esteem, happiness, and attractiveness to coalitional partners. In a recent article in *Human Nature*, I argued that the function of heroic narratives was to foster these biases in their audiences through audience members' identification with the hero. In this presentation, using Henry Morton from Scott's *Old Mortality* as my primary example, I will extend my theory to the hero of the nineteenth century British novel. The way this hero is portrayed corresponds in remarkable detail to the way we see ourselves. Commentators have often observed that Morton is distinguished from the rest of the characters in the novel by his freedom from their violence and egoism and his ability to form objective moral judgments about what is going on around him. Moreover, he is, for implausible reasons, spared the punishments that afflict the rest of his companions. Also, while his negative actions are excused by the force of circumstances, his positive actions are seen as the expression of his intrinsic properties. Our identification with this hero fosters our view of ourselves as uniquely benevolent, our unrealistic optimism, and our tendency to excuse our negative actions by blaming them on external circumstances.

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4:00 PM

- Carroll, Joseph (U of Missouri, St. Louis)

*Assessing Scientific and Literary Reconstructions of Paleolithic Life*

I shall examine one distinct sub-genre in the fictional reconstructions of paleolithic life: novels that take as their subject matter encounters between Cro-Magnons and Neanderthals. There are at least eight or nine substantial novels that fit this description, and these novels offer an opportunity to assess the way in which certain criteria of value span the imaginative and scientific domains. The central criterion I shall discuss is that of tough-mindedness. The opposite of tough-mindedness is sentimentality, and this particular sub-genre offers excellent examples of both tough-mindedness and sentimentality. I shall examine an array of standard scientific texts (archaeological, anthropological, and paleontological) and compare them with the novels. I shall weigh the fiction against the science and the science against the fiction. For use as a common measure of tough-mindedness, I shall isolate one specific aspect in both the fictional and scientific reconstructions: the aspect of "ecological integrity." This term is intended to signify depth and consistency in understanding the total stress of particular conditions of life. For each of the novels, I shall concisely identify the shaping effect of ideology or personal fantasy themes. I shall argue that several of the novels, even one that is written by a professional paleontologist (Kurten's *\*Dance of the Tiger\**) betray a fundamental weakness in the grasp of ecological stress, but that some of the examples (especially Golding's *\*The Inheritors\** and Rosny's *\*La Guerre du Feu\**) display a quality of ecological integrity that is concordant with scientific tough-mindedness.

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4:20 PM

- Rhodes, Diana Akers (Hampden-Sydney College)

*Feminist Literary Theory Meets the Challenge of Evolutionary Psychology*

This paper tries to adjust feminist literary theory to developments in evolutionary psychology in ways that do justice to women. It argues that the most basic assumption of feminism, that in a radical sense we are all social constructions, has to go. Society does influence what people become, but it is only one of many influences. In addition, certain capacities, virtues, and vices are all driven by innate tendencies, which are not infinitely malleable. Moreover, the human brain is an organ developed for abstraction, analysis, objectivity, and choice as well as confusion, prejudice, and impulse. Further suggestions are made concerning political leadership and acquisition of wealth, male aggression, ideas about feminine beauty, female sexual freedom, the modern family, career planning, language theory, and human morality.

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Sexual Selection and Creativity  
Multi-Purpose Room A, Rutgers Student Center

4:55 PM

- Miller, Geoffrey (U. of New Mexico)
- Haselton, Martie (UCLA)

*Fertile Women Prefer Poor, Creative Men To Wealthy, Uncreative Men As Short-Term Sexual Partners: Preliminary Evidence For Ovulatory Cycle Shifts In Attraction To Artistic And Entrepreneurial Excellence*

Previous studies show that when women are ovulating, they become more interested in short-term mating, extra-pair copulations, and indicators of male genetic quality. If some creative mental abilities evolved in humans through sexual selection as indicators of genetic quality (as Miller, 2000, argued), then women should become more interested in male creative talent when they are fertile and seeking a short-term mate, but more interested in male resources and status in other phases of their menstrual cycle. As a preliminary test of this prediction, we asked 41 UCLA female undergraduates (with regular cycles, not taking the contraceptive pill) to read four vignettes describing male artists and entrepreneurs, who were either (a) highly creatively talented but poor, or (b) not creatively talented, but rich. Participants then rated each of the four as a possible short-term or long-term sexual partner, and revealed the date of onset of their last menstrual period. As predicted, conception risk correlated significantly ( $r = .39, p < .01$ ) with short-term mating preference for the creatively talented but poor men. Women in low-fertility phases of their cycle rated the untalented but rich men more attractive as both short-term and long-term partners. We suggest that women evolved to maximize the benefits of both male provisioning and male genetic quality by switching their sexual attention adaptively from long-term interest in good-resources indicators during their non-fertile phases to short-term interest in good-genes indicators (including displays of male cognitive and creative abilities) during ovulation.

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5:15 PM

- Coe, Kathryn (U. of Arizona)

*What Sexual Selection Cannot Explain: Traditional Visual Art and Ancestors.*

This paper's first aim is to outline the features that characterize the majority of visual art produced by humans, namely traditional visual art. This visual art is characterized, for example, by its mode of inheritance -- one inherits from one's kin, often one's parent, the right to learn and use certain techniques and motifs. It also is characterized by the persistence of techniques and motifs often across hundreds and even thousands of years. In other words, serious limitations have been placed on one's creativity and ability to use visual art to promote self-interest. As an inherited trait that persists, visual art identifies co-descendants all of whom have inherited the visual art from a common ancestor. The inherited motifs not only call attention to obligations associated with common ancestry, but they distinguish those sharing common ancestry from those who do not. We refer to this using such terms as clan or tribal visual art. While the visual art and its mode of transmission promote cooperation among close kin, they also promote cooperation among individuals who are not, but who are asked to behave as if they were because of shared ancestry. The second aim of this paper is to point out that these features are not consistent with predictions made by sexual selection theory. The final aim is to discuss an alternative approach, taking into consideration individual selection and selfish genes as well as parent-child conflict.

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5:35 PM

- Aiken, Nancy E. (independent scholar)
- Coe, Kathryn (U. of Arizona)

*Sexual Selection Does Not Account for All Art*

In recent years evolutionary psychologists have assumed that art is a product of sexual selection. While human artistic behavior has no doubt been used in male display, it may be counterproductive to limit the study of the evolutionary function of art to sexual selection alone. This paper will explore a couple of other functions of art. First, the eye spot has been well documented as a threat stimulus and is used as such in art to keep others away. Second, badges in the form of body decoration, for example, serve to distinguish in-group from out-group providing security and identity. The adaptive function of each of these examples is to better preserve and maintain individual lives so that their genes have the opportunity to get into the gene pool. Ignoring these and other functions of art will only serve to limit our research and understanding of this most interesting and unique human behavior.

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5:55 PM

- Dissanayake, Ellen
- Discussant
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**Evolutionary Cross-Cultural Psychometrics  
Multi-Purpose Room B, Rutgers Student Center**

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A variety of cross-cultural psychometric studies were carried out in a set of selected sites in Latin America. English-language versions were all piloted in Tucson, Arizona, and some Spanish-Language translations were also piloted in Madrid, Spain. Six study sites were selected in Latin America: three in México and three in Costa Rica. México and Costa Rica were selected as the countries in Latin America having what are among the highest and the lowest, respectively, degrees of social inequality. Three sites were selected within each of these countries representing socio-ecological differences within areas traditionally devoted to three different subsistence economies: farming, herding, and fishing. Within México, México City was sampled as a traditionally farming culture, Hermosillo, Sonora, as a traditionally herding culture, and La Paz, Baja California, as a traditionally fishing culture. Within Costa Rica, San José was sampled as a traditionally farming culture, Liberia, Guanacaste, as a traditionally herding culture, and the port of Puntarenas as a traditionally fishing culture. Although all these areas have now become more economically diverse, we hypothesized that certain social institutions, such as the Culture of Honor, should have been shaped by the original subsistence economies and persisted to this day. Three different questionnaires were administered at varying subsets of these sites and the compared: (1) a Culture of Honor questionnaire, measuring attitudes justifying violence within the context of revenge, (2) a Sexual Coercion Questionnaire, measuring acceptance of violence within the context of a dating relationship under varying levels of male investment, and (3) a Mate Value Inventory, measuring the structural relations between the total mate values of self, best friends of both sexes, and long-term and short-term sexual partners. After an overall evolutionary ethnographic introduction, the remaining three talks will psychometrically compare measures across sites dealing with nonsexual violence, nonviolent sexuality, and sexual violence.

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4:55 PM

- Figueredo, Aurelio Jose (U. of Arizona)
- Tal, Ilanit (U. of Arizona)
- Dumouchel, Elizabeth (U. of Arizona)
- Kirsner, Beth (U. of Arizona)

*Evolutionary Ethnography and Comparative Psychometrics*

Unlike traditional Boasian cultural anthropology, evolutionary theory seeks more than mere description of the diversity of human behavior. It seeks to explain as well as describe. Therefore, an evolutionary approach to ethnography should be motivated by the search for potential causal factors that might help to explain the observed differences between disparate human groups. One way to do this is to judiciously select study sites based on known social or ecological differences, and then use the comparative method to generate possible causal hypotheses regarding any behavioral differences observed. To accomplish this task, an evolutionary ethnographer faces the additional challenge of collecting comparable data from these carefully selected sites. One way to do this is to construct and administer standardized psychometric measures which can be understood to have the same meaning in all sites to be compared. Even when the language can be held constant, as among the successor states of the former Spanish Empire, this often requires the collaboration of local natives in the adjustment of vocabulary to suit all of the local dialects and conform to the potentially different colloquial usages of words. In addition to the gathering of such quantitative data, the administration of such psychometric instruments should be followed up by qualitative methods

emphasizing interaction with the study participants to find out what their reactions might have been to the contents of the measures. This can also provide valuable feedback in improving and adjusting one's cross-cultural measures. Several examples are presented of the products of such efforts.

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5:15PM

- Tal, Ilanit (U. of Arizona)
- Figueredo, Aurelio José (U. of Arizona)
- Guillén, Alfonso (U. of Sonora)
- McNeill, Prentiss

*Farmers, Herders, and Fishers: The Ecology of Revenge*

Often, the motive of a violent act is the perpetrator's desire to defend his reputation. The relative importance of upholding one's reputation is cross-culturally variable, dependent on the degree of a Culture of Honor (COH) (Nisbett & Cohen 1996) in any given society. Nisbett and Cohen's research has proposed that violence related to honor and revenge is more prevalent in herding societies than in farming societies. They further predicted that foraging societies would not show the characteristics of the COH ideology, but did not offer empirical support for this claim. The purpose of this study was to find evidence to refute the latter claim. Using an already validated scale (Figueredo 2000) to measure the participants' disapproval of revenge behavior in specific situations, we sampled two fishing communities: La Paz, Baja California Sur, Mexico, and Puntarenas, Costa Rica. The two foraging sample means on the "Revenge" factor did in fact approximate the means of the herder samples more than the farmer samples, but were nonetheless significantly different from each other. This study is an extension of Figueredo's cross-cultural validation in Mexico and Costa Rica of the COH research done in the United States, thus extending the generalizability of the theory. Understanding the ecology of attitudes towards violence can help people create preventative and corrective programs relevant to their own society. The ability of standard evolutionary psychology (EP) and behavioral ecology theories (BET) to explain these data are compared and contrasted with that of cultural evolution theory (CET) (Paciotti & Richerson 2002).

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5:35PM

- Dumouchel, Elizabeth (U. of Arizona)
- Tal, Ilanit (U. of Arizona)
- Figueredo, Aurelio José (U. of Arizona)

*Date Rape as a Perceived Violation of Social Exchange*

A psychometric experiment was performed in six ethnographic sites in which study participants read and rated a series of third-person vignettes with three variable elements. In all vignettes, the hypothetical characters, John and Mary, were depicted as going out on their third date, after which John attempted to coerce Mary to have sex with him. The Variable 1 variations were: (1) economic investment (John and Mary going Dutch, John gives Mary a \$300 bracelet), (2) intoxication (Mary is drunk, John is drunk, both are drunk), (3) attractiveness (John is better looking, Mary is better looking, and both are good looking), (4) socioeconomic status (both are teachers, John is a doctor and Mary is a waitress, Mary owns her own business and John is a cashier), (5) reputation (both met at a singles' bar, John is sexually active, Mary is sexually active), (6) Mary's attire (Mary takes off her sweatshirt displaying a shirt, Mary takes off her shirt displaying her bra). The Variable 2 variations were: (1) John's level of coercion (John persists, John persists and gives Mary an ultimatum, John persists and forces himself on Mary). The Variable 3 variations were: (1) Mary's resistance (Mary gives in, Mary resists, Mary pushes John out the door, Mary stomps on John's foot and kicks him in the groin, Mary smashes John over the head with a bowling trophy). Culture of Honor ("Revenge") was also assessed and used to predict ratings of approval or disapproval of the behavior of both John and Mary.

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5:55PM

- Kirsner, Beth (U. of Arizona)
- Figueredo, Aurelio José (U. of Arizona)
- Tal, Ilanit (U. of Arizona)

*Friends and Lovers: The Mate Value Inventory*

Evolutionary economic theory can be used to construe the selective pairing of individuals in both romantic partnerships and close friendships as forms of barter. This barter involves the exchange of the sexually or socially desirable attributes of individuals as commodities in social exchange. This theory would predict that the value of one's own sexual or social attributes should determine both the

expected and actual values of different types of social exchange partners to different degrees. Attracting valuable long-term partners would be the most costly in terms of the requisite personal market value; best friends would be the next most costly; and short-term partners would be the least costly. As a demonstration of these principles, participants in four ethnographic sites rated themselves, their long-term or short-term romantic partners, and their male and female best friends on different forms of the Mate Value Inventory (MVI). The MVI is a multivariate composite of sexually and socially desirable attributes sampled from the evolutionary and social psychological literature. The various correlations observed between these ratings were used to illustrate the dynamics of this economic model. Discrepancy functions were calculated as the absolute values of the differences between the MVI ratings of different individuals, for example, between the perceived personal mate value of any given individual and that of their romantic partner. These discrepancy functions were then used as measures of perceived inequities in social exchange. Such barter inequities were expected to create chronic instabilities in long-term relationships and thus predict various outcomes for romantic partnerships.

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### Mathematical Reasoning Room 411, Rutgers Student Center

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4 : 55 PM

- Uller, Claudia (U. of Louisiana, Lafayette)

#### *Developmental And Evolutionary Origins Of Human Numerical Knowledge*

Discussion of the origins of human numerical knowledge to date has given rise to speculations of whether it is fundamentally tied to the human language faculty. The intrinsic relationship between human numerical capacity and human language is a fact: number is expressed in language in morphology, in syntax, in semantics. Is this evolved capacity for number unique to “linguistic” humans?

One way of addressing this question is to investigate the numerical representations of pre-linguistic human infants. Explorations in infant cognition have shown that different kinds of numerical discrimination exist as early as the neonate hours. By ten months of age, infants establish robust representations of sets of twos and threes in discrimination events. At least one format of numerical knowledge, the spontaneous discrimination of number (henceforth, SDN), may indeed be found very early in development. This evidence, however, does not establish that these kinds of representations are uniquely human. An alternative way of addressing the question is to examine the exact same capacities in other organisms.

In this paper, I argue that at least one format of numerical knowledge, SDN, can be found in a species of basal vertebrate, red-backed salamanders (*Plethodon cinereus*). I make the case for focusing on this capacity as the first precursor/primitive of number that may have evolved since the Lower Miocene, 28 million years ago. Finally, I explore the idea that human numerical knowledge has evolved both across classes in the animal kingdom and as a human cognitive specialization.

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5 : 15 PM

- Freedman, Joshua (UCLA)

#### *Selection Pressure To Produce Proto-Mathematical Ability*

What selection pressures could account for the human ability to perform formal mathematics? Since complex formal mathematics is no more than several thousand years old, it must be ancillary to a “proto-mathematical” ability that has survival value. One can postulate a proto-mathematics used by humans to create cognitive “maps” of the physical world that are used for prediction and planning. The constraints and rules for creating these cognitive maps may be being expressed in mathematical reasoning, and one would expect that patterns in the physical world would be mirrored by these constraints and rules. Despite the apparent precision of mathematics in describing the physical world, these proto-mathematical rules could still be approximations of the patterns that govern the physical world, although formal mathematics success in describing the quantum and relativistic realms, which humans have never directly experienced, requires consistent patterns across the physical universe. It is likely that there exist patterns in the physical world that, due to limitations in evolved proto-mathematical ability, humans are fundamentally incapable of perceiving or describing.

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5 : 35 PM

- Leron, Uri (Technion - Israel Institute of Technology)

#### *Application of Evolutionary Psychology to Research in Math and Science Education*

In this talk I'd like to consider the following (admittedly vague) question: Is mathematical and scientific thinking a natural extension of common sense, or is it an altogether different kind of thinking? The possible answers to this question are of great interest and importance

both for theoretical and practical reasons (e.g., in education). I will synthesize recent results from evolutionary psychology and related areas that bear on this question, and compare them with mainstream math education research. The results show that while certain elements of mathematical thinking are innate and others are easily learned, certain more advanced (and, significantly, historically recent) aspects of mathematical thinking (such as formal language, decontextualization and proof) may be in direct conflict with what most people find reasonable and natural. In fact, when solving a problem in which common sense and mathematical reasoning conflict, people mostly prefer the common sense answer, even though mathematically it may be classified as wrong. For example, there are many studies in math education that document the phenomenon, that even advanced students tend to confuse between a theorem (in the form "if P then Q") and its converse ("if Q then P"). Studies by Cosmides and Tooby, though still controversial, suggest that our brain/mind has evolved specific "cheater detection" algorithms, which operate in "social contract" situations, and determine how people interpret such conditional statements. Their results may add another level of support, prediction and explanation to the above mentioned findings from math education research.

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5:55PM

- Dickins, Thomas
- Discussant

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**Barbecue  
Voorhees Mall**

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**Sunday, June 23**

- **07:00-08:30 AM** Breakfast
- **08:30-08:35 AM** Announcement of prize winners by Janel Tortorice  
Morning plenary by Mark G. Frank: *Not All Lies Are Created Equal: Human Lying and Lie Catching*. Introduced by Robert Kubey.
  - Frank, Mark G. (Rutgers University)  
*Not All Lies are Created Equal: Human Lying and Lie Catching*  
This session will focus on the process of telling and detecting lies. Lies are defined as deliberate attempts to mislead, without prior consent of the target; this differs from the broader category of deception, which does not require a deliberate attempt to mislead. Based on this definition, this session will present a theoretical model of what happens when people lie, and what behaviors seem to occur and not occur with lying. What will become apparent in this presentation is that a human lie response does not consist of a specific signal, behavior or behaviors that indicate a lie across all people in all situations (i.e., there is no "Pinocchio response," despite the misperception in some circles such as law enforcement that there is). This has implications for detecting lies, and how and why evolution may have not prepared humans to recognize these signals. The findings for an alleged lie signal is contrasted to emotional signals, such as those signaling anger, fear, distress, and so forth, which do seem to be more relevant to human survival, both in the ancestral environment as well as today, and thus show a pattern of findings expected for evolutionarily derived signals. The implications of this for human lie catching will then be discussed.
- **08:35-09:35 AM**

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SCILS, Rutgers University  
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- **09:35-10:00 AM** Refreshments

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**Mate Choice: New Theory and Data  
Multi-Purpose Room A, Rutgers Student Center**

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 10:00AM

- Johnson, Kerri Lawson (Cornell U.)
- Tassinari, Louis G. (Texas A&M U.)

*The Functional Significance of the Human Body on Interpersonal Judgments: Converging Evidence from a Multi-Method Approach*

We explore the functional role of the waist-to-hip ratio (WHR) and bodily motion in judgments of sex, gender, and attractiveness. Physical characteristics that we hypothesized to have an immediate causal impact on and functional significance for interpersonal judgments were systematically varied in otherwise androgynous human animations. Studies of subjective judgment (Studies 1a and 1b), psychophysiological concomitants (Studies 2a and 2b), and perceptual discrimination (Study 3) provided converging evidence for the primacy of the WHR in categorical judgments of sex. Studies 1a and 1b demonstrated that judgments of sex were tightly coupled to the WHR, whereas judgments of masculinity and femininity were primarily coupled to the motion of the figure. Judgments of attractiveness, furthermore, were sensitive to the congruence between WHR and bodily motion (e.g., the attractiveness of figures judged to be female was enhanced when they moved with a "feminine" motion). Studies 2a and 2b established that visual inspection of such figures was concentrated in the waist and hip region, but that fixations to this region were significantly attenuated when the sex of a figure had been disambiguated. Finally, Study 3, using a categorical perception paradigm, confirmed the perceptual quality of these judgments. Collectively, these results imply that the WHR is a potent determinant of the perceived sex of a human figure, and that such judgments are largely automatic (as opposed to deliberative). Implications for the WHR hypothesis and recommendations for future research are discussed.

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10:20AM

- Hill, Sarah (U. of Texas, Austin)
- Reeve, H. Kern (Cornell U.)

*The Evolution of Human Mating Transactions*

Here we develop a rigorous, evolutionary game-theoretic model of conditional human mating transactions. Our mathematically explicit model incorporates multiple factors such as quality, resources, and outside options into specific sets of high-level decision rules that determine the evolutionarily stable strategies for mate choice in specific contexts. Thus our models make predictions about individuals' mating strategies that depend either directly or indirectly (via the effects on the partner) on: (1) the total value of the focal male, with total value depending both on resource holdings and phenotypic quality, (2) total value of the focal female, (3) the distribution of mate values of the competition, (4) the distribution of mate values in the pool of alternative mates, and on any environmental inputs that predict (5) the ease with which new mates are found, (6) the ease with which males can generate resources to provide to females, or (7) the relative importance of phenotypic quality and resources for offspring success in a given environment. The resulting theory is, to our knowledge, the most comprehensive yet developed for understanding human mating transactions. Our model unifies our understanding of previously disconnected empirical data on human mating decisions and parsimoniously accounts for within sex strategic pluralism, well-documented differences between the sexes, and assortative mating. Additionally, our model generates an extremely rich set of testable predictions about the psychology of human mating, while paving the way for more complex theories of human mating transactions able to generate predictions about pair-bond stability, mate value signaling, and within-pair conflict.

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10:40AM

- Nelson, Leif D. (Princeton U.)

*Mate Ideals and The Symptoms of Resource Scarcity*

Ideals of female body weight follow a consistent cross-cultural pattern such that in cultures with scarce resources, men prefer heavier women, while in cultures with abundant resources thinner women are preferred (Anderson, Crawford, Nadeau, & Lindberg, 1992). In 5 studies (N=1,278) we explore the possibility that this relationship between environmental resource availability and mate preferences may also emerge at the individual level—that is, within a single culture, situational fluctuation in personal feelings of resource scarcity predict individual mate preferences. We operationalized intra-individual "resource scarcity" as personal feelings of financial and nutritional dissatisfaction. We manipulated financial satisfaction by asking some participants to report how much money they were carrying at the time of the survey (Study 2), or by having participants report their savings on scales designed to imply personal financial well or woe (Study 3). In Studies 4 and 5, we manipulated nutritional satisfaction by sampling participants either immediately before eating dinner (hungry) or immediately after dinner (satiated). Thus, we hypothesized that men who either (a) are made to feel financially unsatisfied, or (b) feel hungry, will prefer heavier women than men who feel financially satisfied or satiated. Our data were consistent with these hypotheses. We will discuss these findings in terms of Schwarz's (1990) feelings-as-information hypothesis as well as the evolutionary psychology of mate preferences. Moreover, we argue for an integration of the models and methods of social and evolutionary psychology in an effort to understand the individual level representation of cultural differences.



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11:00AM

- Rohde, Percy A. (U. of Kassel)
- Fetchenhauer, Detlef (U. of Groningen)

*Riskproneness As A Mate-Choice Criterion And Predictor Of Mating Success In Men And Women*

Theory predicts, that in species in which male variance in reproductive success exceeds that of females, a higher male than female level of riskproneness is favored by selection. Sex differences in riskproneness have been found in humans many times, but a systematic evolutionary approach to riskproneness in the mating context is still missing. Using a risk-attitude scale and self-reports, we studied riskproneness as a possible mate-choice criterion and as a predictor of actual mating success in both sexes. In study 1, women, but not men rated their ideal longterm partner as slightly more riskprone than subjects rated themselves, and both sexes rated their ideal shortterm partner as more riskprone than themselves. In study 2, subjects rated the attractiveness of a target person of variable riskproneness. Both men and women regarded highly riskprone targets as more desirable for a shortterm than for a longterm relationship. In study 3, riskproneness predicted number of lifetime sex partners in both sexes, but only in men it was negatively related to age at first sexual intercourse and positively related to the number of partners for whom the subjects were an extrapair-copulation partner. Finally, we will test the hypothesis that highly attractive individuals are also highly riskprone. We discuss observed sex differences and sex similarities on the background of sexual selection theory.

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11:20AM

- Tragesser, Sarah L. (Western Washington U.)
- Lippman, Louis G. (Western Washington U.)

*Gender, Sociosexual Orientation, and Reactions to Flirtatious Joking Comments*

The purpose of the present study was to examine relationships between gender, sociosexual orientation, and reactions to courtship tactics presented in the form of joking comments. Seventeen male and 58 female Western Washington U. students provided demographic information, completed the Sociosexual Orientation Inventory (SOI: Simpson & Gangestad, 1991), and judged items representing flirtatious joking comments. Participants were instructed to imagine that they were meeting a person who was trying to flirt with them and to rate each item according to how favorable their reaction would be to each type of joke. Items were rated on a 6-point Likert-type scale from "extremely negative" to "extremely positive". Results showed that males reacted more favorably to sexual joking comments than did females. There was also a relationship between SOI scores and reactions to sexual comments, such that individuals with higher SOI scores (indicating a short-term sexual strategy) reacted more favorably than individuals with low SOI scores (indicating a long-term sexual strategy). Finally, in keeping with past research, males had higher SOI scores than females. Although gender and SOI were modestly correlated, a multiple regression analysis showed that both variables contributed independently and equally to variability accounted for in rated reactions to sexual comments. When both variables were considered, 44% of the variability in reactions to sexual comments was accounted for. It was concluded that differences in sexual strategies have importance for understanding courtship behavior involving sexual intentions, and that both gender and SOI scores are useful sources of this information.

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**Parental and Grandparental Behavior  
Multi-Purpose Room B, Rutgers Student Center**

10:00AM

- Marlowe, Frank (Harvard U.)

*A Critical Period for Paternal Provisioning among the Hadza*

The importance of paternal provisioning in explaining human pair-bonds is less obvious than once assumed. Among tropical hunter-gatherers like the Hadza of Tanzania, the foods men acquire often contribute less to the diet than women's foods, are acquired with less regularity, and are shared more widely outside the household. This forces us to ask what benefits women stand to gain from being married. Although the Hadza present us with many reasons for questioning the paternal investment theory of pair-bonding, my data suggest Hadza women may nevertheless benefit from their husband's provisioning when they have young nurslings. Married women who have children less than 2 years of age have lower foraging returns and return rates than married women who do not, and their husbands have higher foraging returns. Married men who have biological children under 3 years old bring in more food than men who do not. This difference is not due to meat but rather honey, which is probably easier to get the bulk of into one's household. Even if women are subsidizing their

husbands most of the time, it is possible that gains from provisioning by husbands during this critical period are sufficient to favor pair-bonding.

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10:20AM

- Platek, Steven M. (U. at Albany, SUNY)
- Critton, Samuel R. (U. at Albany, SUNY)
- Burch, Rebecca L. (Colby College)
- Frederick, David A.
- Myers, Thomas E.
- Gallup, Gordon G. (jr.) (U. at Albany, SUNY)

*How Much Resemblance Is Enough To Assure Paternity?*

Unlike females, males react positively towards children's faces that resemble them. We conducted three experiments in order to determine what factors of facial resemblance were implicated in this sex difference. In Experiment 1, we tested the degree to which actual resemblance or social mirror-mediated resemblance accounted for more variance in reactions towards children's faces. Social mirror information affected both males and females in a similar fashion, but males were more likely than females to react positively towards faces that they shared characteristics with. Experiment 2 was conducted to determine a threshold of resemblance necessary to produce a favorable reaction towards children's faces. We presented subjects with children's faces that contained varying degrees of their own characteristics and asked them hypothetical investment questions. Unlike females, males reacted favorably towards children's faces that contained between 25% and 50% of their characteristics. These data suggest that some quantifiable amount of facial resemblance may be necessary to assure paternal investment. In order to determine whether this sex difference is a byproduct of an asymmetry in the ability to detect resemblance we conducted a third experiment. Experiment 3 examined the ability of subjects to match faces to child morph faces. We found that males were no better at matching morphed child faces with adult faces than females, which suggests that males are sensitive to resemblance only when forced to make investment decisions. These data suggest that the male brain might have evolved a sexually dimorphic module that utilizes resemblance when making decisions about investment.

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10:40PM

- Hiraiwa-Hasegawa, Mariko (Waseda U.)
- Hasegawa, Toshikazu (The U. of Tokyo)
- Kurashima, Osamu (The U. of Tokyo)

*Biased Sex Ratios In Illegitimate Births During Pre-War Japan*

Since the establishment of the nation state in 1868 until the end of the Second World War, Meiji Imperial Constitution had been adopted in Japan. It discriminated people in various ways according to their sex and legitimacy status. There were three categories of offspring: legitimate offspring, illegitimate offspring with the recognition by father, and bastard. Only legitimate offspring enjoyed full right of inheritance of father's property, but the illegitimate son with the recognition by father was given precedence to the legitimate daughter in the inheritance. Bastards not only had no right over the inheritance of their biological father's property, but also they could not expect any support of a patriarch because they were registered together with their mother without male household head. This made them strongly disadvantageous in many aspects of their adult life, especially among males. The birth registration records during the period from 1900 to 1940 exhibit normal 105:100 sex ratios for legitimate births. However, it was significantly biased toward sons among illegitimate offspring with the recognition by father, and was significantly biased toward daughters among bastards. Obviously there was the manipulation of legitimacy status of offspring by the parents involved, but the unusually high stillbirth rates among illegitimate offspring, compared to legitimate ones, strongly suggest the practice of infanticide by the mother. This is an evidence of adaptive manipulation of sex ratios of offspring by parents.

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11:00AM

- Mace, Ruth (U. College London)
- Gibson, Mhairi (U. College London)
- Eardley, Jennifer (U. College London)

*Sex Ratio Variation In Ethiopia*

Trivers and Willard (1973) predicted that sex ratio should be adjusted facultatively, if the fitness potential of each sex was dependent on maternal body condition. However, whilst evidence of post-natal sex-biased parental investment in humans is abundant, clear evidence of condition-dependant, facultative sex ratio variation have not been clearly shown. Here, we show that in a food stressed population in Ethiopia, there is clear evidence that thinner women are more likely to give birth to girls. This village-level data is then compared to country-level data on sex-ratio variation, and adaptive explanations are explored.

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11:20AM

- Michalski, Richard (Florida Atlantic U.)

*Grandparental Investment As A Function Of Relational Uncertainty And Similarity*

Relational uncertainty refers to the number of links between two kin members in which cuckoldry may have severed a genetic relationship. Ancestral humans recurrently differed in relational uncertainty to their grandchildren. Using a sample of older adults (mean age = 67 years), we test several hypotheses about grandparental investment. First, we attempt to replicate the finding that maternal grandmothers invest the most in their grandchildren, whereas paternal grandfathers invest the least. Second, we hypothesize that physical similarity and similarity on five major personality dimensions moderates investment most for paternal grandfathers and least for maternal grandmothers. Third, we hypothesize that grandparents will invest differentially in grandchildren as a function of the grandchild's similarity to their biological parents. We predict that investment is most contingent upon the grandchild's similarity to his or her parent for paternal grandfathers, followed by paternal grandmothers, maternal grandfathers, and then maternal grandmothers. Conclusions are drawn from the results of the current self-report study and past research using samples of grandchildren. Discussion elaborates on the significance of the results, limitations of the use of self-reported grandparental investment, directions for future self-report investment studies, and the psychological mechanisms underlying differential nepotism.

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11:40AM

- Sear, Rebecca (U. College London)
- Shanley, Daryl (U. of Newcastle)
- Mace, Ruth (U. College London)
- Kirkwood, Tom (U. of Newcastle)
- McGregor, Ian A. (MRC Gambia)

*The Effect Of Older Women On Their Daughters' Fertility Rates In The Gambia: Implications For The Evolution Of Menopause*

It has been suggested that some of the unusual life history characteristics of human females can be attributed to 'communal breeding': women co-opting their husbands and relatives into helping them raise children. In particular, the grandmother hypothesis for the evolution of menopause suggests that older women gain fitness benefits from investing in their existing children and grandchildren rather than continuing to reproduce themselves. We have used data from a natural fertility population in rural Gambia to conduct an empirical investigation of the effects of older women on the reproduction of their daughters and daughters-in-law. We have already shown that maternal grandmothers improve the survival rates of their grandchildren. Here, we present data which demonstrates that older women also increase the fertility rates of both their daughters and daughters-in-law. We suggest that the increased fertility of women with living mothers (and perhaps mothers-in-law) may be due to older women helping out their daughters (or daughters-in-law) with childcare, domestic and subsistence duties. Social pressures on women from older kin, particularly the husband's family, to bear many children may also be important. Parameters estimated from the empirical analyses of mortality and fertility in this population have been used to build a mathematical model, which has been used to test whether the assistance given by grandmothers is sufficient to account for menopause. We conclude this paper by discussing the implications of this model for the evolution of this unusual trait.

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Faces and Emotions

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Room 411, Rutgers Student Center

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10:00AM

- Duchaine, Bradley (Harvard U.)
- Nakayama, Ken (Harvard U.)
- Sepeta, Leigh (Harvard U.)
- Parker, Holly (Harvard U.)

*Normal Recognition Of Facial Expressions Of Emotion In A Developmental Prosopagnosic*

Neuropsychological, single-cell, and imaging evidence indicate that neural regions involved with the recognition of facial identity are separable from those involved with the recognition of facial expressions of emotion. However, there is little evidence suggesting that these dissociable processes are constructed by different developmental processes. We have assessed the face processing abilities of a number of developmental prosopagnosics, and most show impairments with both identity and emotion recognition. However, one of these prosopagnosic has shown impaired identity recognition with normal emotion recognition. She has scored well out of the normal range on both tests of identity recognition using both familiar and unfamiliar faces. In contrast, she has scored normally on four tests of emotion recognition. Because she developed normal facial emotion processing abilities while not developing normal facial emotion processing abilities, it suggests that these abilities are constructed by different developmental processes.

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10:20AM

- Wilson, David Sloan (Binghamton U.)
- O'Gorman, Rick (Binghamton U.)

*Emotions And Actions Associated With Norm-Breaking Events*

Social norms have a dominating effect on human social interactions but they are only beginning to be studied from an evolutionary perspective. We manipulated the strength of norms and the perspective of the subject in a series of fictional scenarios. Subjects responded strongly to the scenarios with a suite of emotions and anticipated actions. Norms create powerful psychological asymmetries that are likely to decide the outcome of otherwise symmetrical contest situations. Individual differences exist in response to norm-breaking events along the lines predicted by evolutionary theory. Our results are relevant to the study of emotions, in addition to the study of norms from an evolutionary perspective.

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10:40AM

- DeBruine, Lisa M. (McMaster U.)

*Facial Resemblance Enhances Trust NI*

Organisms are expected to be sensitive to cues of genetic relatedness when making decisions about social behaviour. Relatedness can be assessed in several ways, one of which is phenotype matching: the assessment of similarity between others' traits and either one's own traits or those of one's known relatives. An obvious candidate for a phenotypic indicator of relatedness in humans is facial resemblance. I will report the effects of an experimental manipulation of facial resemblance in a two-person bargaining game. Resemblance between the subject's own face and that of an ostensible playing partner raised the incidence of trusting but had no effect on the incidence of selfish betrayals of the partner's trust. Resemblance to a familiar face in place of the subject's own face did not produce any such effects.

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11:00AM

- Hammond, Michael (U. of Toronto)

*A New Model of Uneven Development in Human Neurophysiology: The Enhancement Imperative and the Emergence of Religion*

Paul MacLean's classic model of the uneven development and insufficient coordination of the limbic and neocortical systems of human beings in the evolutionary origin of our species is no longer generally accepted. However, there is another way to look at uneven development and its implications for our emotional life. My model focuses on three uneven changes in our evolutionary history. The first is the massive expansion of our cognitive capacities. The second is the lesser but still significant expansion of our emotional arousal

capabilities. The third is the much smaller change in the preconscious rules for converting additional arousers into rewarding arousal. These rules set the general schedule for when and to what extent arouser additions must be increasingly different than previous stimuli in order to have sufficient arousal release to fuel extended interest. This uneven development means that only a special class of high contrast arousers can tap some of the expanded affective capacities protected by this conversion schedule. It therefore becomes imperative that humans use part of their expanded cognitive skills to create these enhanced arousers. There is a growing body of neuroimaging studies demonstrating this pattern in regard to emotional arousal from enhanced arousers in religion. This suggests that the first historical product of the enhancement imperative was religion. Uneven development provides a proximate mechanism for natural selection to extend social cooperation and reduce psychological anxiety in the new primate.

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### Attractiveness

Thursday Morning Poster Session, 8:30AM – 1:30PM

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- Brase, Gary L. (U. of Sunderland)
- Walker, Gary A. (U. of Sunderland)

*Using Eye Gaze And Eye Fixations To Assess Males' Use Of Physical Attractiveness Cues*

Prior research has documented that several aspects of physical appearance are significant factors in male's evaluations of female attractiveness. In particular, variations in the waist-to-hip ratio (WHR) of female models is a significant predictor of attractiveness ratings, and several aspects of the face are important in judgments of attractiveness. Male subjects were asked to rate the attractiveness and approachability of unclothed female models for either a short-term or a long-term relationship while their eye movements were tracked. Differences in eye gaze duration and number of fixations were observed for the different regions of the model images (waist/hip, chest, and face), with the most attention paid to the face region, followed by the chest region, and then the waist/hip region. Differences within these regions were found across the type of relationship (short-term or long-term) being evaluated and the participants' sociosexual orientation.

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- Chang, H. Y. (U. of Stirling)
  - Bruce, V. B. (U. of Stirling)
  - Penton-Voak, I. S. (U. of Stirling)

*Effects of Motion and Expression on Facial Attractiveness*

Previous studies of facial attractiveness have used static stimuli to test hypotheses derived from evolutionary theory. Such studies, however, do not take into account the fact that judgements of attractiveness are seldom made from static faces alone. The first study investigates what effect motion may have on ratings of facial attractiveness by comparing moving and still images. In addition, a second factor of expression (positive vs. neutral) was included in order to ascertain how different types of movement might influence judgements of attractiveness. Preliminary results suggest that a sex difference may exist. Female faces become more attractive when displaying positive expressions, but ratings are unaffected by motion. Conversely, male faces appear to increase in attractiveness when seen in motion, but positive expression does not influence ratings. Results from a second study—investigating the effects of neutral vs. happy emotional expressions on attractiveness ratings of static faces—are consistent with the sex difference found in the first study. Implications of these experiments for studies of facial attractiveness will be discussed.

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- De Backer, Charlotte (U. of Ghent)

*Gender Differences In Partner Selection: A Content Analysis Of Personal Advertisements In A Belgian Newspaper*

A major topic within evolutionary psychology is mating and partner choice. Evolutionary psychologists state that women are choosy; they want men who can offer security (both material as immaterial). Men, on the other hand, seem less choosy but focus more than women on physical traits. In short, men and women differ in partner choice and also in preference of the duration of a relation. A way to test these findings is analysing personal advertisements. Personal ads are rich in information, since they both cover desired traits in potential partners and self descriptions. Previous research on personal ads has confirmed evolutionary psychological explanations concerning mating, though not all research was based on evolutionary psychological principles. We developed 15 hypotheses based on evolutionary psychology and previous research. 800 advertisements from a general, widespread Belgian newspaper were analysed. We only included heterosexuals, 63% men and 37% women who were looking for a relation. Results show that, on average, women more often describe their selves with physical traits, whereas men mention more traits concerning their status. In the description about their desired partner, women ask more for status symbols and men are more interested in physical aspects. On average, more women than men seek long-term relations and men are

more willing to engage in short term relations. These results affirm the evolutionary psychological statements concerning mating and partner choice and contribute to the worldwide research to investigate if these aspects are universal traits or not.

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- Demarest, Jack (Monmouth U.)
- Alonso, Hugo (Monmouth U.)

*At What Age Does an Attractive Young Female Become Sexually Desirable?*

This study investigated whether the sexual desirability of an attractive young female will fluctuate according to her age. It was hypothesized that there is a lower age limit at which male evaluators will no longer find the female sexually desirable, even if she is highly attractive. 160 college-aged male participants were given a photo of a 12 year old model who was cosmetically made up to look older and highly attractive. A fabricated biography provided information about her modeling career and interests. The photo and the resume were kept constant for each male evaluator, except for the age description. She was described as being one of eight ages; 18, 15, 14, 13, 12, 11, 10, or 9 years old. After viewing the photo and resume, participants were asked to judge her suitability as a model by answering a 13-item questionnaire. Among the items were questions about her attractiveness, sexual appeal, sexual activity, how likely these males would sleep with her, and how likely their male friends would sleep with her. Results showed that the female was not judged to be as sexually desirable when she was 14 or younger as she was when 15 or older. However, when asked about male friends, participants indicated that their friends would want to sleep with her even if she was prepubescent. The implications of the results are discussed within the framework of evolutionary psychology.

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- Fisher, Maryanne L. (York U.)
- Voracek, Martin (U. of Vienna Medical School)

*Bodily Curvaceousness And Androgenousness In Adult Media Actresses*

The question of whether body-mass index (BMI) or waist-to-hip ratio (WHR) is the primary visual cue to human female physical attractiveness (FPA) has gained considerable interest. Experiments on this topic usually consist of participants rating attractiveness of line drawings or photographs and therefore have limited ecological validity and cannot adequately capture the ultimate goal of FPA (eliciting male sexual arousal). Using an unobtrusive measures design, we retrieved movie and pictorial (magazine) starring frequencies of 125 adult media actresses from an adult media company's database. We used starring frequency as the unobtrusive FPA measure, and tested its relationship with actresses' key anthropometric data. Low BMI and a high Agravas-Kirkley androgeny index were related to more movie starring, while WHR, waist-to-bust ratio (WBR) and bust size were not. Contrariwise, low WHR, low WBR, low androgeny index, and larger bust size were related to more pictorial starring, while BMI was not. Mutually partialing out anthropometric and starring measures did not attenuate statistically significant associations. Based on this pattern of differential relationships we conjecture that visual cues to FPA might be domain-specific, with cues of androgenousness (BMI, androgeny index) as more salient for attractiveness evaluation of moving female bodies, whereas curvaceousness cues (WHR, WBR, and bust size) as more salient for posing female bodies. Research on FPA should account for the multimodal nature of FPA by using more ecologically valid stimuli and by assessing dynamic attractiveness information, such as gait patterns and movement quality.

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- Hancock, Peter J B (U. of Stirling)
- Ross, Kerry (U. of Stirling)

*What's A Pretty Face Worth II: Factors Affecting Offer Levels In A Dictator Game*

At HBES 2001, Joergensen and Hancock reported effects of attractiveness on offer levels in an ultimatum game. Here we report effects on a modified dictator game, using the same set of faces. In the ultimatum game, player 1 is given, say, £10, and has to offer some proportion to player 2, who can either accept or reject. If accepted, both players keep their share, if rejected, both get nothing. In the dictator game, player 2 has no say in the matter. Our variant was to imagine finding a £10 note and getting to it just before player B, represented by a face. How much would the participant be prepared to offer to the second person? There were 8 faces, 2 each attractive and unattractive, male and female. After making the offers, the faces were rated for attractiveness and on 10 personality scales, 2 for each of the "Big 5" personality dimensions. Average offer level correlated strongly with average rated attractiveness ( $r=0.81$ ). Many of the personality ratings correlated strongly with attractiveness (Halo effect), but after partialing out the effects of attractiveness, ruthlessness and how affectionate the person looked remained significantly correlated with offer levels. Overall, offer levels were significantly higher to women than men, but there was no significant effect of participant sex. There was also an interaction between attractiveness and recipient sex, with attractive women faring much better than unattractive ones, but less difference between attractive and unattractive men. Similar interactions occurred for ruthlessness and affection ratings.

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- Cronk, Lee (Rutgers U.)
- Campbell, Lorne (Simon Fraser U.)
- Simpson, Jeffrey A. (Texas A&M U.)

*Health and Cosmetics: Can Female Signals of Health and Beauty be Faked by the use of Cosmetics?*

Signaling theory predicts that signaling systems that are primarily deceptive will not persist because signal receivers will evolve or learn to ignore them. The widespread use of cosmetics by American women, which is often perceived as a form of deception, is a challenge to this idea. It may be that cosmetics allow women to send simultaneously both accurate and inaccurate information about their qualities as a potential mate, including personality, sociosexuality, facial attractiveness, and health status. The present research tested the hypotheses that women with poorer health wear more makeup in an effort to appear healthier and more feminine and that cosmetics enhance the degree to which women are perceived as being healthier and more feminine. One hundred forty women completed questionnaires assessing their cosmetics use and health history for the past six months, and had pictures of their face taken while wearing no makeup and then when wearing makeup. Nine female raters independently evaluated each picture in terms of health and femininity. Overall, women who reported poorer health wore more makeup, and did so to appear more healthy and attractive. Also, women who reported wearing makeup in order to look healthier and more attractive were rated as looking less unhealthy from the no-makeup to makeup condition, and were also rated as looking more feminine. It appears that women with relatively poor health were somewhat successful in manipulating signals of health and femininity. Additional ratings from men are being collected to determine how successful women are at manipulating their physical and sexual attractiveness.

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- Perrett, David (U. of St. Andrews)
- Little, Anthony (U. of St. Andrews)

*Measures Of Female Condition Influence Preferences For Sexual Dimorphism In Faces Of Male Homo Sapiens*

Women's preferences for sexually dimorphic characteristics in male faces in short-term partnerships (facial masculinity) have recently been reported to co-vary with self-reported attractiveness (Little et al, 2001) with high 'mate value' females preferring relatively masculine male faces. These preferences vary in a somewhat analogous way to preferences in found other species (e.g. *Gasterosteus aculeatus*, Bakker, Kunzler, & Mazzi, 1999), The current study investigated whether this co-variation would generalize to two further measures of female attractiveness: rated facial attractiveness and Waist-to-Hip Ratio (WHR). Women with a low (attractive) WHR and/or high facial attractiveness showed no differences in preferences between long- and short-term conditions. Women with high WHR and/or relatively low other-rated facial attractiveness preferred more 'feminine' male faces when choosing faces for a long-term relationship than when choosing for a short-term relationship. Such shifts in preferences may reflect diverse tactics in female mate choice strategies, with women trading off putative cues to 'good genes' against cues to potential paternal investment as a function of their own mate value.

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*Human Mate Preference and Parental Involvement in Gujarati Matrimonial Advertisements*

Male and female mate preferences were studied using Gujarati-language matrimonial advertisements published in a daily newspaper from the state of Gujarat, India. Indian matrimonial advertisements differ from lonely hearts or personals advertisements previously studied in Western countries both because they are seeking only long-term mates and because parents are usually intimately involved in writing the advertisements and evaluating respondents. Six predictions were derived from evolutionary theories of mate preference and parent-offspring conflict: (1) male advertisers would seek physical attractiveness more than female advertisers, (2) male advertisers would on average be older than the female advertisers, (3) male advertisers would offer financial resources more than female advertisers, (4) female advertisers would offer physical attractiveness more than male advertisers, (5) female advertisers would seek financial resources more than male advertisers, (6) parental involvement would lead advertisements seeking wives to de-emphasize female attractiveness relative to Western advertisements. Our initial content analysis of the advertisements consisted of 62 advertisements seeking husbands and 68 seeking wives. In addition to features indicative of physical attractiveness and financial resources, we coded for some culture specific features including, caste, religion, horoscope, morality, and fairness of skin tone. All six of the hypotheses were supported. Analysis of a larger sample and collection of data on response rates are planned for the future.

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- Symons, Lawrence (Western Washington U.)
- Dinnel, Dale (Western Washington U.)
- Mixon, Laura (Western Washington U.)
- Dean, Cooper (Western Washington U.)

*Eye Gazes as Courtship Signals in Mixed-Sex Dyadic Interactions*

Eye gaze behaviors are widely accepted as a type of female courtship signal. The majority of studies on this topic rely on either self-reports or real time observations of unknown reliability. No published study directly tests the relationship between observed gazing and self-reported intentions to flirt. The purpose of the current study was to test if gaze behaviors are associated with self-reports of romantic interest and intentions to flirt using multiple-rater assessments of gazing based on video taped interactions. Forty pairs of female and male undergraduates were videotaped for 6 minutes during a waiting room procedure adapted from Ickes, Robertson, Tooke, and Teng (1986). Participants then completed a questionnaire inquiring, among other things, about romantic interest, intentions to flirt, and attractiveness of the other person. Frame by frame computerized digital videos of gaze behaviors were systematically coded using the Queen's U. Video Coder (Baron, Wheatley, Symons, Hains, Lee, & Muir, 2001). Controlling for self-reports of acting coy, a female attempting to flirt and with high romantic interest engaged in more frequent gazing at the male. A male attempting to flirt and with high romantic interest also engaged in more frequent gazing at the female. A male's gaze duration was the best predictor of his interest in the female. Male attraction to the female was the only significant predictor of mutual gaze during the interaction. These results support conclusions from self-report and observational studies that females use gaze behaviors as courtship signals.

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- Fisher, Maryanne L. (York U., Toronto)

*Shapely centerfolds? Temporal change in BMI and WHR*

Evidence for temporal stability of the maximally attractive waist-to-hip ratio (WHR) in human females has been claimed in an influential paper (Singh, 1993). However, this conclusion was based primarily on a partial sample of Playboy centerfolds. Using a similar partial sample, Tovée et al. (1997) reached the conclusion that present-day centerfolds' body-shapes are still more "hourglasses" than "stick insects". Thus, we addressed the question of trends in Playboy centerfolds' bodily measures by analyzing 577 consecutive monthly issues, from the magazine's inception in Dec 1953 to Dec 2001. When correlated with issue number, all centerfold measures except weight showed statistically significant change over the past five decades. Most notably, WHR increased over time, even when age, bust size, and body-mass index (BMI) were controlled for statistically (partial  $r = .45$ ). In contrast, BMI decreased, even when age, bust size, and WHR were controlled for statistically (partial  $r = -.36$ ). It appears that Playboy centerfolds' shapely body characteristics have given way to more androgynous ones. This is supported by the finding of partial  $r = .58$  for Agras-Kirkley's androgeny index (controlled for age and weight). Centerfolds' typical BMI has further descended below corresponding population levels, whereas their typical WHR now approaches population levels. These temporal trends are at odds with claims that stable small-range maxima of sexual attractiveness for female bodily measures exist.

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**Sociality**

**Thursday Afternoon Poster Session, 1:30PM – 6:30PM**

- Blum, Elizabeth (U. of Pittsburgh)

*Tests of a Behavioral Ecological Model of Human Dispersal from the Natal Family*

As part of a larger project which attempts to test, in humans, a component of Emlen's avian behavioral ecological model of the relationship between natal territory quality (NTQ) and dispersal choices, this paper presents tests of a prediction about the relationship between two measures of NTQ (natal family income and father's status) and a measure of dispersal timing (age at first marriage). The application of Emlen's model to the human case has been criticized (e.g., Davis & Daly, 1997). Therefore in this study I attempt to replicate Davis and Daly's work, using what seem to be more direct measures of NTQ and dispersal choice to test one element of Emlen's model. My research uses data from the Panel Study of Income Dynamics (PSID), a contemporary longitudinal sample of U.S. families that covers approximately 30 years, beginning in 1968. For this investigation I chose specific NTQ and dispersal variables (above) in order to compare results from the PSID data with Towner's (2001) paper using corresponding variables from an eighteenth century Massachusetts town.



Emlen's model predicts a negative linear relationship between NTQ and willingness to disperse, while the relationship Towner found was bimodal, with individuals from middle-status families less likely to disperse. Using tests of simple and complex linear and curvilinear relationships, I examine whether a different data set will support Emlen's prediction, whether the results will parallel Towner's, or whether they will yield yet another outcome. Reasons for disparity between the two sets of results are discussed.

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*Cheater Detection and the Fundamental Attribution Error: A Test of Social Exchange Theory*

Abstract Research on social exchange theory (Cosmides, 1989; Cosmides & Tooby, 1992) suggests that the human mind has specialized mechanisms that operate in social exchange relationships to detect violations of cheating on social contracts. In accordance with the evolutionary theory of reciprocal altruism, social exchange theory posits that individuals should be able to recognize cheaters and not just instances of cheating. However, much of the research examining social exchange theory has used the Wason card selection task (Wason, 1966), which limits the focus to detecting instances of cheating. We devised two studies using methodology from the fundamental attribution error literature in social psychology (FAE; Ross, 1977) to examine whether individuals detect cheaters and not just instances of cheating. Most of the FAE literature however, has examined how people make inferences about dispositions and traits in general, without regard to possible differences between kinds of dispositions in eliciting the FAE. We suggest that dispositions associated with dishonesty will more readily activate the FAE than other traits. This hypothesis was tested in two experiments using two different methodologies adapted from previous FAE research. Study 1 uses self-reports regarding trait attributions about the self and another person and Study 2 uses a memory task to examine the role of dispositional inferences in memory encoding. Data are currently being collected.

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- Demarest, Jack (Monmouth U.)
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*Altruism in an Online Fantasy Adventure Game: Gender and Alien Race as Determinants*

Participants worldwide were given an chance to behave altruistically in Everquest, a popular internet fantasy/adventure game. The researcher created male and female characters in six alien races (e.g., troll, wood elf) and made scripted requests for help (i.e., information, or resources used in playing the game). All characters active on a site when a request was made were recorded, and all forms of help were counted and classified by sex and race of the altruist character, and by type of assistance offered. There were 384 altruists and 2593 non-altruists on 144 different game sites. We found that if a player behaved altruistically, he/she helped any character regardless of sex or race. However, non-altruists exhibited gender and race discrimination. Male characters were least likely to help when the request came from a male character, while female characters did not show sex-contingent favoritism. There was less altruism when the request for help came from a character of a different race. In a fantasy game where the rules of society are suspended, where the actual players are completely anonymous and do not communicate personally, where there can be no expectation of reciprocity, and no personal recognition for altruism, stereotypical patterns of helping still appear all around the world. These patterns appear to be deep rooted and are not dependent on real life conditions.

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*Perceived Vulnerability to Disease Predicts Prejudice Against Culturally Unfamiliar Peoples*

Kurzban and Leary (2001) suggest that humans have evolved psychological mechanisms to detect and avoid individuals who are likely to be carrying parasites and thus pose a threat of transmitting disease. An evolved mechanism of this sort may promote prejudicial avoidance of peoples who are perceived to be culturally "strange." This is because cultural "strangeness" implies cultural practices that violate local norms designed to prevent the spread of disease--such as those involved in hygiene and food preparation. One hypothesis that emerges from this line of reasoning is that people who are more fearful of disease are also more likely to be prejudiced against culturally strange groups. This hypothesis was tested in two studies at the U. of British Columbia (which has a student body of predominantly East Asian and European backgrounds). We measured subjects' perceived vulnerability to disease (PVD) with a previously-developed questionnaire, and also measured their prejudicial attitudes toward specific immigrant groups. In one study, PVD correlated positively with prejudicial attitudes toward a subjectively foreign outgroup (East Africans), but not toward two familiar immigrant groups (Europeans and East Asians). In a second study, PVD correlated positively with prejudicial attitudes toward three other subjectively foreign immigrant groups (people from Peru, Qatar and Sri Lanka). A third study verified that subjects perceived Europeans and East Asians to be culturally familiar,

and viewed the other four groups as culturally unusual in terms of hygiene, food preparation, and diet. Taken together, these results support the hypothesis that cultural strangeness is one cue that an evolved anti-parasite defense system uses to detect and avoid infectious diseases.

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*Daughters, Sisters, Wives, and the Making of Male Alliances*

Kin selection theory predicts that individual help and support will be differentially directed toward close kin over distant kin and distant kin over nonrelatives. In addition, studies have shown that large kin groups hold an advantage over smaller kin groups in competitive endeavors. However, few studies have focused on the role of cooperation between nonkin as a strategy for gaining help and support in a highly competitive environment. Peculiar to many primates is the capacity for unrelated males to form bonds to out compete other males during a contest. Unlike nonhuman primates, humans can strengthen these male bonds through marriage alliances. We predict that in a population where competition for power and/or control over resources is high, males can, in the short run, solidify male alliances through arranged marriages. Our study population is the daughters, sisters, and wives of the Czars of Russia from 1670 to 1917 and of the Monarchs of England from 1574 to 1922. We show that males do gain benefits from arranged marriages primarily in the form of acquisition, defense, and/or control of power and resources. We conclude that female relatives not only are the most economical means of forming male networks but also are the strongest ties that bind these alliances.

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*Adopted Children Are Strongly Preferred Over Stepchildren: The Neglected Role Of Sexual Conflict In Explaining Variable Levels Of Conflict In Genetic, Adoptive, And Stepfamilies*

The increased occurrence of conflict in stepfamilies has been explained by Hamilton's theory of nepotistic altruism. However, the fact that some couples adopt unrelated children may seem to contradict this view. We suggest, that both critics and advocates of the nepotistic explanation tend to focus too much on the stepparent-stepchild dyad as the major source of conflict and to neglect the sexual conflict arising from the asymmetric relatedness between the child and the genetic and stepparent, respectively. No such asymmetry is present between partners with either genetic or adopted children. Considering nepotism and sexual conflict together leads us to predict a rank order of preference for genetic, over adopted, over stepchildren. A sample of childless U. students rated how much they agree with the statement that "small children" who were either stepchildren (partner's children from a former relationship) or adopted children (adopted together with the partner) would be as dear to them as their future genetic children. In support of the nepotism hypothesis, most subjects rated adopted and stepchildren as less dear than future genetic children. In support of the sexual conflict hypothesis, adopted children were more often assigned the rank of being as dear as genetic children than stepchildren, and adopted children were generally rated higher than stepchildren. We conclude that a triadic view of the family must be assumed to provide a complete evolutionary explanation of the dissonance in stepfamilies and of the relative harmony in genetic and adoptive families.

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*Disease Avoidance and Prejudice Against People With Disabilities*

An evolutionary model of stigmatization proposes disease-detection systems that respond to heuristic cues signaling communicable pathogens and parasites (Kurzban & Leary, 2001). One set of cues may be morphological abnormalities. This process may contribute to prejudices toward physically disabled individuals. These prejudices may be especially strong among individuals especially concerned with disease transmission. Two studies tested this hypothesis. One study examined the relation between individuals' chronic Perceived Vulnerability to Disease (PVD; Schaller et al., 2002) and behavioral avoidance of disabled individuals. Results revealed that individuals who scored highly on germ-aversion PVD subscale were less likely to have friends with physical disabilities. Another study examined the extent to which both PVD and Sensitivity to Disgust (Haidt et al., 1994) predicted tendencies to implicitly associate disability with disease. A reaction time measure (Greenwald et al., 1998) was used to assess automatic linkages between social categories (e.g., "disabled individuals") and semantic information (e.g., "disease"). Results indicated that people associated physically disabled individuals with "disease." This association was stronger than the association between disability and "unpleasant." Among European participants, the germ-aversion PVD subscale predicted the disability-disease association. Among East Asian participants, several subscales of the Disgust

measure predicted the disability-disease association. These results support the hypothesis that prejudice against people with disabilities is partly due to activation of an evolved disease-avoidance mechanism. In contemporary environments, this process may be most pronounced in individuals who are especially fearful of disease and sensitive to disease-related emotions (disgust), and may be moderated by cultural mythologies pertaining to the origins of disease.

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- Rende Taylor, Lisa (U. of Washington)

*Patterns Of Child Fosterage In Rural Northern Thailand*

Rapid globalization in Thailand has resulted in massive rural-urban migration streams of children and adults seeking employment in Bangkok and abroad. Parental migration, coupled with AIDS, is quickly creating a sizeable pool of parentless children, who are typically fostered by kin. Growing numbers of children are also being fostered to kin after their parents divorce and remarry, even if the mother and/or father remain in the village. This field research explores the patterns of fosterage in two rural villages in northern Thailand via quantitative surveys and qualitative focus groups. These villages were selected in part because of their varying levels of polygyny and serial monogamy. Linear and logistic regression models investigate the characteristics of foster families and foster children from an evolutionary perspective, testing hypotheses based on human behavioral ecology theory (HBE) to predict patterns of foster parents' genetic relatedness (degree and laterality) and perceived quality of care in these two varying environments. The objective of this paper is to present a decision rule explicating the decision parents make when determining which children to foster, and to whom, in environments of varying paternity certainty. As well as immediately informing development projects in the vicinity of the two field sites, this research further aims to demonstrate the utility of applying HBE theory and the resultant decision rules to the creation of successful and culturally appropriate development projects in the developing world.

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- Sell, Aaron (U. of California, Santa Barbara)

*Converging Evidence on the Function of Revenge*

An exploration of the evolved architecture underlying vengeful acts requires a specification of the likely functions of revenge, and the derivation of hypothesized design features from those functions. One potential function of revenge is to deter the target from offending in the future; a second is the maintenance of a reputation for violence. Detering the offender and building a reputation for violence are different adaptive problems, with distinct computational solutions that can be compared to the existing literature and subjected to new empirical research. A broad view of the scientific literature turns up a surprising amount of converging evidence that revenge, especially in males, functions, at least in part, to establish and maintain a reputation for violence. Literature is reviewed from cultural anthropology, economics, game theory, social psychology, behavior ecology, and traditional evolutionary psychology. Original research projects are presented testing the hypothesis that revenge is designed both to deter individuals and maintain a reputation for revenge.

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- Shenk, Mary K. (U. of Washington)

*Homo hierarchicus meets Human Behavioral Ecology: Caste and Class-Based Marriage Strategies in Urban South India*

Marriage is a pre-eminent, and increasingly competitive, life-cycle ritual in South Asia, with an enormous amount of resources being expended to arrange and solemnize matches considered suitable in terms of caste, class, and other markers of social status. In this context, matchmaking is a major form of both mating effort and parental investment, as in the process parents attempt to ensure not only the right kind of spouse for their child, but also his or her continued economic and social status and the quality of the grandchildren which result from the marriage. I present preliminary qualitative results from an ongoing field study on marriage change in Bangalore, India, focusing on social and economic constraints and the resulting strategies adopted by several caste groups and social classes to optimize their performance in the marriage market. These strategies include educational investment in offspring, search methods to locate appropriate matches, the cost/lavishness of the wedding, types and direction of property transfers between families (particularly dowries), the means of financing marriages, and matchmaking decisions conditional on property ownership, occupation, gender, birth order, family size, and physical characteristics of the bride or groom. I further discuss the interaction between caste and class in determining optimal matchmaking strategies, including conditions under which social rules are relaxed or disregarded. Finally, I relate the strategies under discussion to predictions made by behavioral ecological theory with regard to both mating and parental investment, and use them to develop hypotheses to be tested with quantitative data currently being collected.

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Mating, Sex Differences, and Sexual Behavior

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 Friday Morning Poser Session, 8:30AM – 1:30PM
 

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- Beaulieu, David (U. of California - Santa Barbara)

*Meeting the Preferences of Our Ideal Mate: Sexual Selection and Social Comparison*

The purpose of the current study is the investigation of (a) how the mate preferences of the opposite-sex affect one's everyday perceptions of self-relevant domains of social comparison, and (b) how these perceptions aid individuals in forming an evaluation of their mate value (i.e. one's overall desirability to the opposite-sex). It was hypothesized that everyday social comparison processes would reflect the mate selection criteria imposed by members of the opposite-sex, and it was further hypothesized that self-perceived superiority in the characteristics preferred by the opposite-sex would be positively associated with one's self-perceived mate value. In the current sample, sex-differences in mate value criteria were associated with sex-differences in the degree to which different classes of attributes were considered self-relevant, and self-perceived superiority in domains preferred by the opposite sex was associated with higher self-perceived mate value.

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*Information-seeking as the Evolutionary Function of Infatuation*

The evolutionary purpose of infatuation in humans - defined as an emotion "characterized by increased energy and the focusing of attention on a preferred mating partner (Fisher 1999)" - is posed as an information-gathering event, including both display and discernment of cooperation from a potential partner, and practice of cooperative scenarios. Infatuation is likened to an iterative two-person game, borrowed from classic economic theory. As such, an individual applies cheater detection mechanisms to his/her partner's cooperative display.

There are costs associated with this process. The largest of these is defaulting on other current and potential social relationships. Costs decrease as more information is exchanged because the time and energy required for evaluating a partner also decrease. As costs decrease, feelings of attachment increase. There are individual and sex differences in the amount and type of information offered and expected.

The intense focus of infatuation parallels a basic learning paradigm, with similar underlying neurochemistry and physiology. Stimulation of dopaminergic and epinephric neural (pleasure) pathways -- supporting intense ('flashbulb') memory formation -- is a key component of infatuation. Also, practicing cooperation across situations is highly informative and is reminiscent of learning. In addition, sympathetic nervous "fight or flight" physiology -- associated with an increase in alertness and attentional focus -- is also experienced when infatuation occurs.

Helen Fisher, Dorothy Tennov, David Buss, and others have hypothesized that infatuation evolved to secure focus on a potential mating partner. This information-seeking theory is an extension of their previous work on the evolution of romantic love.

Fisher HE, 2000. Lust, attraction, attachment: Biology and evolution of the three primary emotion systems for mating, reproduction, and parenting. *Journal of Sex Education and Therapy* 25:96-104.

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*The Influence of Prestige and Prosocial Orientation on Females' Ratings of Male Desirability*

According to the evolutionary perspective, both prosocial orientation and indicators of a male's position in the social hierarchy are important to female mate choice. Previous research on indicators of position in the social hierarchy has focused primarily on socioeconomic status. In order to expand the domain of social hierarchy indicators, skill at a recreational sport was employed in the present study as an indicator of prestige. It was expected that prestige and prosocial orientation would function independently to influence female mate choice. Forty-four college females were instructed to imagine participating in the events described within a written scenario. The scenarios involved snowboarding with a group of people, one of whom was either a high or low prestige male (expert vs. beginner snowboarder) exhibiting either high or low prosocial orientation (rude vs. agreeable comment to another snowboarder in response to a near-accident). Participants rated the male's desirability both as a date and as a partner. Between-subjects factorial ANOVAs showed that both prestige and prosocial orientation independently influenced ratings of desirability as a date, such that a male with high prestige and high prosocial orientation was the most desirable. Only prosocial orientation influenced ratings of desirability as a partner. It was suggested that forms of prestige other than socioeconomic status could be important to female mate choice, but that prestige in the form of physical abilities may be limited to short term relationships.

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*Mortality Salience and the Moderation of Mate-Choice Copying in Humans* NI

When evaluating potential mates, people tend to see targets as more attractive if other people find them attractive (Kenrick, Sundie, Nicastle, & Stone, 2001). A similar mate-selection pattern has been found with other animals, as the selecting animal will tend to copy the selections made by other members of the same sex (Stohr, 1998). Most interesting though, have been attempts to show that this effect was moderated by the survival pressures of hunger (Dugatkin & Godin, 1998) and potential mortality (Briggs, Godin, & Dugatkin, 1996). We investigated these effects in humans by measuring and manipulating the hunger and mortality salience of the participant. Participants (N=178) were asked how interested they were in sex with a target that either 90% or 0% of past participants had expressed interest in. Some participants reflected about their own death (mortality salient) while others reflected about themselves watching television (control), and all participants reported how recently they had eaten. As predicted, and consistent with the animal models, the preferences of satiated men, relative to hungry men, were more affected by the popularity of the target. Independent effects resulted from mortality salience, as men under high mortality salience were more influenced by the popularity of the target than were men in the control condition. The results are consistent with existing evolutionary theories developed and tested with animal models. In addition, they appear consistent with predictions made by existing social psychological theory (Greenberg et al., 1990), offering a potential integration evolutionary psychology that has been problematic in the past (Buss, 1997).

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*Explaining Sexual Mortality Ratio Variations across Age, Culture and Time*

On the average, men die younger than women. These higher male mortality rates have been attributed to selection for increased mate competition, with some deaths resulting from direct competition and others from investment in competitive ability instead of defenses or tissue repair. To examine this hypothesis, we use data from WHO and the NCHS to compare the sexual mortality ratio (SMR=male mortality rate/female mortality rate) at different ages, in different cultures, in different decades over the past century and a half. Most countries currently show an enormous increase in SMR in early adulthood, with higher peaks in countries with unstable political structures. This peak was low at the beginning of the 20th century but increased rapidly starting in the 1940s to reach a current ratio of 3-6 in most countries. A second peak in late middle age has increased more recently, especially in highly developed countries. We review proximate explanations for these variations, including declining general death rates and changes in rates of accidents, AIDS, atherosclerotic disease. We then interpret these findings in an evolutionary perspective that considers how evolved propensities interact with cultural factors to create profound variations in the SMR over time and place. We conclude by considering whether the area under the SMR curve may be a useful general societal indicator that reflects the extent and kind of male-male competition.

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*Sex Differences In Choices Of Tradeoffs Between Success And Health*

Sexual selection theory predicts that males may be more willing than females to discount the future in the pursuit of short-term gains. Wilson et al. (1996) asked U. students in Canada to make a choice in hypothetical dilemmas and indicated that males tended to choose their financial success at the cost of their health. In the hypothetical situation, the subject males were willing to be transferred from a small town to a new branch in big city for an increase in salary though the city was famous for its smog and severity of illness was high. This result, however, did not enough to show that males are likely to choose tradeoff between success and health. There are some possibilities that the males simply preferred the move to other places or the tradeoff itself was a trigger of the choice. In this study I used another modified hypothetical dilemmas to investigate whether other possible factors affected the choice, as well as confirmed the results of Wilson et al. (1996) with Japanese students.

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- Pietrzak, Robert H. (U. of Connecticut)
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*Do Men Have More Sex Partners Than Women?*

One of the core predictions of Sexual Strategies Theory (Buss & Schmitt, 1993) is that for any given period of time, men will desire more sex partners than women. While several studies have used self-report measures to confirm that men desire more sex partners than women across various periods of time, no known study has been done to determine that men actually have more sex partners than women across

various periods of time. The current study examines this question using data from a nationally representative sample (General Social Survey 1988-2000) by testing the hypothesis that men report more sex partners than women in the past year and past five years. Using multiple regression analyses controlling for marital status, education, religion, and race, results indicate that in the past year and past five years, (1) men reported significantly more sex partners than women, (2) younger men reported significantly more sex partners than older men, and (3) age is inversely related to number of reported sex partners. Discussion addresses limitations of the study and implications for Sexual Strategies Theory.

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*Females' Preferences for Males who Differ in Physical Attractiveness and Socioeconomic Status*

The effects of physical attractiveness and socioeconomic status (SES) on female's rated willingness to engage in varying degrees of involvement with males were examined. Representative photographs of high and low attractive males, as determined by ratings on an internet website, were coupled with multiple exemplars of high, medium, and low SES occupations, accompanied by their respective salaries. In keeping with Townsend and Levy (1990), female college students rated the extent that they would be willing to date, have sex with, and have a serious sexual relationship that could lead to marriage with each individual. Within-subjects factorial ANOVAs showed that only physical attractiveness influenced rated willingness to date or have sex. The finding that SES did not influence female mate preferences for short-term romantic encounters was not in keeping with previous research, but the finding that physical attractiveness influenced females' willingness to engage in willingness to engage in short-term romantic encounters did support hypotheses consistent with good-gene sexual selection. Furthermore, as predicted, both physical attractiveness and SES affected willingness to have a sexual relationship with the potential for marriage, such that females were at least likely to engage in a long-term relationship with low SES males. Results were discussed in terms of evolutionary theories of female mate choice.

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- Toolan, Anne R. (U. of Wyoming)

*Viewing the Personals with an Evolutionary Eye: Preferential Mate Qualities in Same-Sex and Opposite-Sex Partners*

Evolutionary theorists have extensively researched differences in mate attraction in heterosexuals, finding that men tend to seek younger women and display their status, whereas women will state their attractiveness and seek resources (Buss & Barnes, 1986). The current study examined these predictions across men and women seeking same-sex and opposite-sex partners in personal ads. It was predicted that male advertisers would state their own financial status, and seek certain physical attributes in a partner regardless of sexual orientation. Likewise, women were expected to state physical attributes, seek a certain financial status and an older partner regardless of sexual orientation. Personal advertisements (N=352) were analyzed from the Yahoo! Web page from each of the 50 states. Four advertisements representing each of the following categories were randomly chosen: Male seeking male (MSM) or female (MSF); Female seeking male (FSM) or female (FSF). Each advertisement was coded for the presence of age desired, financial status offered and sought, and physical descriptions offered and sought. As predicted, expected age preferences across same-sex and opposite sex partners for each sex were supported, with some additional support for males seeking attractiveness and women seeking resources across sexual orientation. This study reinforces an idea that Kenrick, Neuberg, & Cialdini (2002) discussed, suggesting that homosexuality cannot be oversimplified as an inverted form of heterosexuality. Thus, homosexual men and women may share some commonalities with their heterosexual counterparts but may also share traits expected traditionally in the opposite sex.

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*Strategies for Teaching 'Sexual Strategies Theory' in a Unique Environment*

Sarah Lawrence College is a small coeducational liberal arts college with unique approaches to undergraduate teaching, including small lecture classes combined with smaller group conferences, conducted by the faculty member teaching the lecture. Outside of the sciences such as Biology and Chemistry, the overall teaching and research emphasis is based on something like the "Standard Social Sciences Model" paradigm as described by Tooby & Cosmides (1992). As the first Biological Anthropologist teaching at the college, my course entitled "Sex and Behavioral Ecology" was a novel exposure to scientific and evolutionary approaches to the study of human behavior for most of the 60 students. In the five smaller group conferences of about 10-15 students (meeting every other week), I experimented with a method for teaching issues in behavioral ecology, including the Sexual Strategies Theory (SST) of Buss & Schmitt (1993). Each group chose a question or questions about sexual behavior, derived from behavioral ecology and SST, and then developed hypotheses and studies. Four groups chose to use a questionnaire to gather data related to their hypotheses, and one group chose to employ an ethological approach to human interactions. The successes and drawbacks of this method of teaching scientific approaches to the study of sexual behavior in

such an environment is evaluated. The results of several groups in particular will be also be highlighted, as they took advantage of other unique aspects of Sarah Lawrence College, such as the sex ratio of about .33, and the relatively large population of homosexual individuals.

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**Jealousy and Related Topics**  
**Friday Afternoon Poster Session, 1:30PM – 6:30PM**

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- Burch, Rebecca (SUNY Albany)
- Gallup, Gordon (SUNY Albany)

*Jealousy-evoking narratives fail to predict jealous and abusive behavior*

Although several studies have used hypothetical scenarios to measure jealousy, no one has investigated whether reactions to these scenarios correlate with behaviors in real romantic relationships. In a sample of 781 undergraduate students, few hypothetical responses correlated with actual jealous or abusive behavior. Of the correlations that were found, few were large enough to be meaningful and strongly predict behaviors. However, factual accusations of infidelity and ratings of partner's jealousy did correlate strongly with abusive behaviors. These findings suggest that reactions to hypothetical situations may be fundamentally different from events occurring in the everyday lives of the respondents.

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- Clark, Andrew P. (McMaster U.)

*Mating Strategy Affected By Self-Perception Of Attractiveness In Women*

If human females practice strategic plurality in mating, a woman who perceives herself as being of high quality relative to the population average may well pursue a different mating strategy than one who perceives herself as being of average or substandard quality. I tested this hypothesis by showing women 20 photographs of other women's faces and examining the relationship between their perceptions of these stimuli, particularly in reference to self, and their mating strategy as deduced by the Sociosexual Orientation Inventory (SOI). Each participant rated each face in the stimulus set for attractiveness on a 7-point Likert scale, as well as in relation to self, and then rated her own attractiveness along the same 7-point scale. Each participant then filled out a questionnaire including the SOI items. SOI score was significantly correlated with the number of faces that a participant judged as being less attractive than herself (Spearman's rho = .407, p = .026\*, n = 30). These results suggest that women who consider themselves to be of relatively high quality are more likely to pursue a short-term mating strategy than women who consider themselves to be of lower quality.

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*The Effect of Sex Differences in Jealousy on Lay Perception of Criminal Responsibility in Crimes of Passion*

Although men tend to be more distressed by a partners' sexual infidelity than do women, previous research has focused mainly on theoretical concerns rather than applied implications. At the same time, however, male sexual jealousy is the leading cause of spousal homicide and also seems to be indirectly responsible for less frequent female-perpetrated spousal homicide. Various cultures (particularly historically) have at different times included laws that accept jealousy relating to infidelity as a legitimate motive or mitigating factor for spousal homicide, but what do jurors today think about jealousy, and does it impact on their attribution of responsibility and therefore influence their verdicts? It was hypothesized that sex differences in jealousy would be reflected in attribution of criminal responsibility, and thus jury verdicts, in crimes of passion. It is predicted that males will award more manslaughter rather than murder verdicts, attribute less responsibility and give lighter sentences to perpetrators of sexual infidelity induced homicides than females. 120 undergraduates (60 males and 60 females) completed one of four questionnaires that constituted a 2x2 design of sex of perpetrator (male/female) and type of prior incident (sexual/emotional infidelity). Participants were asked to provide verdicts, percentage of responsibility for the victim's death, and length of sentence for the perpetrator. The results clearly supported the hypothesis in the domain of verdict decisions, but provided more mixed results in responsibility attribution and sentencing decisions.

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*Methodological Issues In Studying Sexual and Emotional Jealousy*

Research has suggested that males exhibit more sexual jealousy than women, and women exhibit more emotional jealousy than men. This study utilized published (Buss et al., 1992) as well as new sexual and emotional infidelity scenarios, added new terms to assess the emotional reaction to the situations, and used both forced choice and rating scale formats for participants' answers. In the forced choice format participants were asked which scenario made them more jealous, upset, angry and sad. In the rating scale format, they were asked how jealous, upset, distressed, angry, and sad they would feel. Sex differences were found in the reactions to the two types of infidelity used by Buss et al. (1992) when asked which situation made them more upset or more jealous. However, almost everyone said the sexual scenario made them angrier, and almost everyone said the emotional scenario made them sadder. The sex differences disappeared with the new sets of scenarios, although the sexual infidelity scenario was again selected as more anger-producing by almost everyone. There were few differences found when the rating scales were analyzed, and when differences were found it was the sexual infidelity scenario that produced the strongest reaction. There was no Sex X Type of Infidelity interaction, and when sex differences were found they generally showed females as more emotional. These results suggest that the wording of the scenarios, the terminology used to assess the emotional reaction, and the answer format all influence how participants report their responses to infidelity.

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*Mate Poaching, Narcissism, and Empathy*

Schmitt and Buss (2001) proposed that mate poaching is a frequently used method of acquiring mates. They linked the use of this mating strategy to various personality characteristics. One personality characteristic that has not been investigated, however, is narcissism. The present study proposed that narcissists would be more likely to pursue the mate poaching strategy (with specific regard to mate poaching of short-term sexual partners), compared to non-narcissists. Further, it was hypothesized that a mediating factor of this predisposition of narcissists to mate poach would be their relative lack of empathy. Correlational analyses revealed that narcissism was positively associated with the retrospective accounts of mate poaching frequency. Further, a measure of empathy adequately mediated this relationship. Therefore, it is suggested that narcissists are more likely to mate poach to the extent that they lack empathy. The results are discussed in terms of studies that are currently being conducted to examine a causal link between empathy and mate poaching behavior. The potential adaptiveness of mate poaching as a mating strategy for narcissists is also discussed.

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*The Human Penis As A Semen Displacement Device: Male Sexual Behavior Varies Following Separation From Female Partner*

In a sample of college students we analyzed reports by both genders of fluctuations in male sexual behavior in response to separation from their female partners. Results showed that when males were reunited with their female partners following vacation, school breaks, or breakup, subsequent sexual behavior involved deeper and more vigorous thrusting of the penis in the vagina. Coupled with previous data we have collected which show comparable effects of allegations of female infidelity on the vigor and depth of thrusting, these results are discussed in terms of sperm competition and semen displacement.

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*What Women Know... And Men Don't: Changes In Women's Sexual Behavior Found As A Function Of Fertility.*

Because of the potential genetic benefits of extra-pair mating, such as higher genetic quality of offspring and genetic variation across offspring, female psychology might be designed to seek extra-pair copulations in certain situations despite the risks inherent in this behavior (Gangestad & Thornhill, 1997). Further, while the potential costs of extra-pair sex are present throughout the menstrual cycle, the benefits can only be reaped if copulation occurs near ovulation. Similarly, the risk to men of cuckoldry covaries with their mates' menstrual phase. There might, therefore, have been selection on both women's and men's perceptual systems to be sensitive to cues of female fertility. We tested predictions derived from this model in a study of 126 women (mean age = 18.78) with regulatory ovulatory cycles and



current romantic partner. Results suggest effects of the menstrual cycle on variables related to women's likelihood to seek extra-pair sex. However, the results failed to indicate effects of women's cycle phase on their mates' behaviors, despite considerable statistical power and several different indicators of jealousy, attention-giving, and male sexual interest. These results suggest adaptive cycle-related regulation of women's preferences and behaviors.

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*Jealousy As A Specific Innate Module: The Selective Input Hypothesis Considered*

Evolutionary psychologists suggest that female sexual infidelity jeopardizes male reproductive success because of the inherent risk to invest limited resources for the benefit of genetically unrelated offspring. Female reproductive success, in contrast, is endangered by male emotional infidelity because of the inherent risk of losing his resources, which are important for raising her offspring. To ward off these risks, men's jealousy module is predicted to be selectively sensitive for cues to a mate's sexual infidelity, whereas women's jealousy module is predicted to be selectively sensitive for cues to a mate's emotional infidelity. To test this prediction, men and women saw a series of cues to either a mate's sexual or emotional infidelity with steadily increasing diagnosticity values. As measures of selective input sensitivity, the participants indicated the threshold cues for (a) feeling first signs of jealousy coming over them, and for (b) the jealousy feeling getting intolerably strong. Additionally, the decision times needed for the determination of the two thresholds were registered. As predicted, men needed reliably less time than women for the determination of the two thresholds with respect to cues to a mate's sexual infidelity, whereas women needed reliably less time than men for the determination of the two thresholds with respect to cues to a mate's emotional infidelity. Furthermore, for cues to sexual infidelity, reliably less cues separated the two thresholds for men than for women, whereas exactly the opposite pattern of results emerged for cues to emotional infidelity.

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*Patterns of Jealousy in Russia*

Although both men and women experience jealousy, there is growing evidence that they experience jealousy about different things. Whereas a woman's jealousy is more readily evoked by a partner's emotional infidelity, a man's jealousy is more readily evoked (than a woman's) by a partner's sexual infidelity. Evolutionary theorists hypothesize that this difference is a human universal that reflects sex differences in the reproductive threats posed by these events. This interpretation has not gone unchallenged. Sociocultural theorists have argued that these differences are a reflection of culture-bound gender rules; they further argue that the significance of this difference has been magnified through reliance on a forced-choice methodology. Although numerous cross-cultural samples have replicated this sex difference (which challenges the sociocultural explanation), most are from regions that may share western values and mores. In this study, we surveyed students from a semi-rural region of Russia (which has experienced minimal western influence) as well as from a semi-rural region of the United States using both continuous and forced-choice versions of the standard "Buss" items. Our results indicate that the sex differences observed elsewhere replicate in both samples, using both type of measures. Preliminary analyses suggest that moderating factors previously identified in U.S. data (e.g., sexual experience and orientation) may replicate as well, further supporting an evolutionary interpretation of the results.

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**Evolutionary Psychology I  
Saturday Morning Poster Session, 8:30AM—1:30PM**

- Baron, Andrew Scott (Harvard U.)
- Burnstein, Eugene (U. of Michigan)

*Are Humans Equipped with a specific Cheater-Detection Module or a more general Person-Impression Module: Evidence from a Face Recognition Experiment*

Subjects were tested whether information that is either diagnostic or non-diagnostic of a person's character influences memory for faces. Subjects were shown faces that were paired with statements relevant or irrelevant to the person's character. Later, a recognition-memory task was administered for the faces alone. Subjects were more likely to recognize a face when it was paired with diagnostic information regardless of whether it indicated a positive or negative character, than when it was paired with non-diagnostic information. No significant difference was found in the memorability of faces paired with behaviors diagnostic of a negative versus positive character. Results from

this experiment suggests that a general character-detection or person-impression module rather than one concerned simply with cheating may exist. These results are discussed in light of Mealey & Krage's (1996) findings that humans show better face recognition for cheaters than cooperators.

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- Ackerman, Joshua M. (Arizona State U.)
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#### *Variation and Reaction Time as Measures of Judgment Stability*

Approaches to impression-based measures have relied almost exclusively on analyses of mean differences. An alternative approach is to re-conceptualize judgment formation in terms of the stability of the judgment – the extent to which it is subject to change. The signatures of this stability should be evident in the consistency of ratings that participants make across a number of targets that share the features of interest but vary along other dimensions. Signs of stability should also be evident in the time that it takes participants to categorize a target, especially in cases where the mean time differences are not informative, as is the case when participants are not under pressure to respond rapidly. Features that are heavily weighted in the judgment process are expected to constrain the variance of responses in the face of changes in other attributes that are more peripheral to the judgment process. But when there are a priori reasons to infer dramatic change in a judgment due to some features over others, a problem of separating the stability of state from stability of response remains. The present method purposes to parse these apart by using reaction times while covarying out a person's categorical judgment to each target. These methods are illustrated in two experiments that factorially cross two important determinants of the attractiveness of female figures: The waist to hip ratio (WHR), and the percentage of body fat. From a functional/evolutionary perspective, we predicted that WHR would give rise to the greatest in the judgment process.

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#### *Remembering The Faces Of Potential Cheaters And Cooperats In Social Contract Situations*

This study examined information people find particularly relevant, or salient, during social exchange situations using a modified version of the Wason (1966) selection task. Participants were first given social contract rules (e.g., if you attend the formal, you must purchase a \$50 ticket). For each one, they saw photos of individuals, one at a time. The photos were accompanied with information stating they had either (a) accepted the benefit, (b) not accepted the benefit, (c) paid the cost or (d) not paid the cost, yielding four conditions. Participants judged whether individuals were potential cheaters or cooperators. In the second part of the study, participants had to judge whether they recognized the individuals. We found differences in how well individuals were remembered across the four conditions. The worst memory was for individuals not accepting a benefit. The other three conditions yielded much better memory. This suggests relevance in social contract situations can be achieved for different reasons. Individuals accepting benefits and those not paying costs may be remembered well because they are potential cheaters, and we may want to avoid them in future exchange situations. Those paying costs may be salient because they are cooperators, and we may want to approach them in future instances of social exchange. Those not accepting benefits, though technically cooperating, may be viewed as opting out of social exchange altogether, and hence are not remembered as well. These results suggest that social contract theories emphasis on cheater detection may be overstated.

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#### *Direct and Indirect Fitness Hindrances as a Predictor of Depression*

Major Depressive Disorder (MDD) is a common public health problem with significant consequences. The high prevalence of MDD has stimulated the development of numerous psychological and physiological theories to help explain and treat depression. Recently, theories of depression have expanded to include an evolutionary approach. A central theme in many of these evolutionary theories of depression is that when individuals perceive that their fitness levels are lower than what they could be, depression then occurs as an adaptive response to solve the problem. More specifically, these theories predict that depressed individuals will have greater levels of fitness-hindering events than those who are not depressed. To examine this postulate, over 100 older adults from a rural community were administered the Geriatric Depression Scale and a standardized interview that queried about fitness-hindering events. Those participants with depression had significantly higher perceived total fitness hindrances than non-depressed participants. This finding suggests that depression may not be

best conceptualized as a “disorder,” but denotes further exploration of the possibility that depression is a psychological adaptation. Further support for this approach will be drawn from examining the role of inclusive fitness on depression scores.

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- Davis, Jennifer Nerissa (U. of Lethbridge)

*Explaining Individual Differences In Food Preference: The Role Of Social Experience*

Why do individual differences in food preferences exist? Foods, such as spinach, coconut, or calamari contain the same nutrient value regardless of who eats them. So why will some people heap their plates full while others completely avoid them? I propose that the answer lies in the nature of our evolved food preference mechanisms. As omnivores, humans tend to be initially suspicious of novel foods. This is an adaptive response that may prevent us from overdosing on a potentially toxic substance in the process of learning whether or not it is edible. But how do we get from there to acceptance, and preference for new foods? One obvious route is through exposure. I review previous research in which I have shown that simple exposure to foods increases preference for them. I have also shown that this exposure is not limited to preference for that particular food, but generalizes to other similar foodstuffs, to the degree that the individual believes them to be similar. In this previous study, exposure consisted of giving participants small samples of the target food to eat. Given the often highly social nature of food consumption situations in humans, and the enormous potential for social transfer of information about food palatability, it seems plausible that social exposure might also affect preference for specific foods. Here I review previous research in this area, and present the results of a recent experiment designed to assess whether simply watching another person eat is sufficient to increase preference for that particular food, in the same manner as eating it would.

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*When Less Is Better: The Ecological Rationality Of Emotional Arousal And The Negation Of The Yerkes-Dodson Law.*

Do high levels of emotional arousal hinder performance? If we accept the Yerkes-Dodson law we might conclude that the answer is yes. The question, therefore, is can we accept the law?

Easterbrook's cue-utilization theory has been widely used to explain the inverted U-shape relationship between emotional arousal and performance. The basic tenet of the theory assumes that a high level of arousal leads to restriction of the amount of information agents can either pay attention to or assimilate. One question we can raise is whether restriction of information or ability to process a larger set of data is fundamentally disadvantageous, or whether under certain circumstances it could have an adaptive function?

Adopting an evolutionary perspective suggests that the instances in which the law has been confirmed do not represent the situations in which high emotional arousal has been designed to be adaptive. That is, past research has been largely oblivious to the idea that context can have an effect, on the results obtained from such experiments.

High states of emotional arousal, we argue, have at least two adaptive functions. First, high emotional arousal can serve as a *stopping rule*. That is, one rule that governs behavior and information processing can be: When a certain threshold of arousal is reached, stop all other activities and react in a pre-programmed way. Second, high states emotional arousal can lead to *restriction of information*, that is, to allocation of *attention resources* towards certain cues in the environment, while neglecting other cues in the environment.

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*Violence and Aggression: Seasonal Effect of Testosterone in an Australian Offender Population*

Research suggests that there is a relationship between testosterone and aggression, though the data are equivocal. As males experience seasonal variations in testosterone and associated changes in cognitive function in North America, (highest endogenous testosterone levels in fall and lowest in spring), this study examined whether there are seasonal variations in aggressive behaviors resulting in prosecution using a large Australian offender population (N = 17,645). Comparisons between the numbers of aggressive acts occurring in Australian Spring versus Fall were made. One might expect that testosterone levels to be higher in Australian Fall, accompanied by a relative increase in the prevalence of aggressive acts by males. However, there were significantly more aggressive acts in the Australian Spring season for all offenders (t = 2.26) and male offenders (t = 2.07).

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*Anxiety as a Stimulus for Nipple Erection*

In this study, nipple (and fingertip) temperatures were measured as an increase in blood flow, using thermal monitors, and were recorded prior to and immediately after females listened to one of three different audio tapes: control, anxiety-provoking and sensual. Nipple, but not fingertip, temperatures increased significantly for both the anxiety-provoking and sensual conditions. An evolutionarily plausible explanation for nipple erection in response to the anxiety-provoking condition is that it may have evolved as an appeasement gesture.

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*An Attempted Replication of the Relationships between Birth Order and Personality*

According to F. J. Sulloway (1996), firstborn children hold positions of dominance and parental favor relative to laterborn children and, as a consequence, develop personality characteristics that coincide with parental interests. Laterborns develop personality characteristics that differ from firstborns, in an effort to secure parental investment. Sulloway (1996, in press) reports support for the hypotheses that firstborn status correlates positively with Surgency and Conscientiousness and negatively with Agreeableness, Emotional Stability, and Openness, after controlling for sex, age, sibship size, and socioeconomic status. We attempt to replicate these findings with self-report data provided by several hundred young adults, including a sample of full, genetic siblings and a sample of mixed (half-, step-, or adoptive) siblings. For the complete sample and the full sibling sample, we replicate the negative relationship between firstborn status and Agreeableness. Contradicting Sulloway's findings, we document in the complete sample and in the mixed sibling sample a positive relationship between firstborn status and Openness. We find no relationships between firstborn status and Surgency, Conscientiousness, or Emotional Stability. Discussion situates the results of the current research with previous attempts to replicate Sulloway's (1996) findings.

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**Evolutionary Psychology II**  
**Saturday Afternoon Poster Session, 1:30PM—6:30PM**

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- Aktipis, C. Athena (Reed College/ Portland State U.)

*Intertemporal Choice in Variable and Stable Environments*

Both economic and evolutionary theories of intertemporal choice predict that uncertainty of the environment should effect the way people allocate resources among present and future time periods. This study examines the hypothesis that uncertainty and variability of the environment cause individuals to discount the future more. Experimental data collected in this study allow for the evaluation of the relative merits of economic and evolutionary perspectives on intertemporal choice. Results from computer simulations show that individuals can evolve to facultatively shift to a higher discount rate when the environment becomes more variable and shift back to a lower discount rate when it becomes more stable.

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*Losses, Gains, and Status in Risky Decision-Making*

An evolutionary perspective suggests that social status may be an important variable influencing risky choice in decision-making when decisions concern relevant status determinants, such as resources for human males. Previous research found that social status affected men's, but not women's, risky choices on a forced choice decision problem about the loss of monetary resources. Specifically, men favored the risky option when they thought they would be viewed and evaluated by others of equal social status. Men were more risk averse when their status differed—in either direction—from that of their alleged evaluators. This pattern did not arise on a structurally equivalent control problem about medical treatments. These results supported predictions from dominance theory. A follow-up experiment replicated this status effect, but showed that this pattern was specific to monetary resource problems involving loss; problems involving gains did not

produce the same effects. Subsequent experiments tested hypotheses about what makes gains different from losses in risky choice in the context of male intrasexual status competition.

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*Delay-discounting of Monetary Choices: Relationship to Risk-taking Behavior*

Individuals vary in degree of future discounting, the evaluation of future versus present benefits and costs, which is predicted to affect risk-taking behavior. A discount parameter can be assigned by calibrating the point of equal valuation of immediate and delayed monetary rewards. We tested the relationship of monetary delay-discounting to risk taking. Participants were an ethnically diverse sample of 132 students (24.2% men, 75.8% women; mean age=25.8) at a private denominational U. in the Midwest. Delay-discounting was measured with 27 monetary choices. Risk-taking was measured with items on health, safety, social, and sexual risks. The Sense of Coherence Scale (SOC) and the Future Lifespan Assessment (FLA) measured future orientation. The discount parameter (k) calculated from monetary choices had a median of .014 (range .0004-.126), indicating indifference between \$34 tomorrow and \$50 in 30 days. The bivariate correlation of k with risk-taking frequency was small ( $r_S=.31$  for women,  $-.03$  for men). In a multiple linear regression model predicting frequency of risk taking, k was entered along with SOC subscales, FLA for age 80, and gender. Good prediction was obtained ( $R^2=.280$ ,  $F[6,95]=6.15$ ,  $p<.001$ ), but k was not independently significant. Discount rate was expected to relate to risk-taking behavior in general, according to life history theory. In this sample, however, it was not as good a predictor of risk taking as were self-reported confidence in the future and estimated lifespan. (Supported by the John D. and Catherine T. MacArthur Foundation, Network on the Nature and Origin of Preferences)

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*A New Mental Disorder Diagnosed by Politicians: Evolutionary Psychological and Group Defenses as Psychopathology to be Treated with Behavior Modification*

Human evolutionary strategies for systems defense and survival are being dismissed and seemingly discredited by associating them with pathology. This stigmatization is used instead of reasoned argument. Ethnocentrism, ethnic self-preference, is mis-diagnosed and called xenophobia, a psychological disorder; its connotations changed in Orwellian distortion. "Xenophobia" is a punishable offence in the European Community. A German government program of behavior modification for children "who express xenophobic views and behavior or who are susceptible to this," was instituted in 2002 with an annual budget of 25 million DM. Ethnic self-preference is a powerful evolutionary strategy for group survival, as is witnessed by Judaism. Using incentives such as "Peace," Harmony, social justice, for popular support, a powerful collectivist oligarchy is successfully suppressing Liberty. Free thought, free inquiry, free expression, are everywhere being oppressed.

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*The Physical and Psychological Dimensions Underlying Adult Perceptions of Similarity of an Infant's Cries*

Many papers purport to demonstrate which features of infant cries govern caregiver responses. However, these studies focus on those cry features that are consistent with researchers' methodological convenience or theoretical preconception. In this study, we employ a methodology (Multi-Dimensional Scaling) that permits participants themselves to nominate salient features of cries. Our results not only confirm traditional observations that perceived pitch, urgency, and level of distress are salient features of infants' cries but also demonstrate that partially voiceless vocalizations and vocal discontinuities such as coughs and hiccups are good predictors of participants reactions. This outcome supports the Respiratory Drama hypothesis that human infant cries are the result of the selection imposed by adult monitoring of infant respiration in the EEA.

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*Thinking Of Your Self: The Nature Of Human Consciousness*

Compared with even our nearest primate neighbors, the appearance of the human mind is such a sudden and drastic departure as to seemingly defy evolution. How did we do it? How can we explain such a complex bundle of characteristics suddenly bursting forth from a race of monkeys into a Person with a knowledge of their place in the world in what amounts to the evolutionary snap of a finger? The basis for human consciousness must lie in an evolutionary change so slight that it is attainable through evolution. It must be so fundamental that it allows infinite diversity yet functions similarly in all human beings.

It is my finding that: THE WAY THAT A HUMAN BEING CONSTRUCTS A SELF IMAGE is the same process by which it constructs a personality, a relationship between two people, a small society, a culture, a government or a religion. CONSCIOUSNESS IS A SPECIAL CONDITION OF THE SELF CONCEPT, defined through comparison and verification. THE SOURCE OF HUMAN CONSCIOUSNESS AND INTELLECT lies in a single, simple, repeated brain function.

My proposal is to explain the origins of human consciousness and intellect with a model so fundamental that I am unable to reduce it further. I find my explanation to be original yet consistent with contemporary neurobiology, social sciences, and evolutionary biology. It is simple and straightforward, but because of its broad implication cannot be satisfactorily confined to any single field.

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*Perception Precedes Stimulation, Information Processing in Humans*

This theory of Perception proposes that the brain stores visual and auditory memories in a linear or flow field format. These memories are constantly being retrieved from memory and projected to areas of the brain involved in perception, slightly in advance of the corresponding incoming stimulus as we travel through a familiar environment. The memories are retrieved in an intense fashion during times of flight from a predator. Long term potentiation is induced by predator stimulus and facilitates the rapid retrieval of the appropriate flow field memory of the route the human is fleeing down. This memory is retrieved and projected to areas of perception slightly ahead of the incoming stimulus. This facilitates decisions involving avoidance of as yet unseen obstacles in the route. This process developed because it assisted humans in escaping from predators while fleeing over familiar territory. The process may also account for a number of interesting phenomenon such as deja vu and the perception of music prior to hearing it when we listen to tapes or cd's of familiar music. When numerous songs are played repeatedly in the same linear arrangement, we perceive the beginning of the next song during the silence that follows the previous song. This is the reason most CD players have random or shuffle buttons that mix up the order of the songs.

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*Adaptive Illusions: Can Evolutionary Psychology Explain The Arbitrary Content Of Qualia?*

Philosophers use the term "qualia" to refer the contents of our subjective experiences as distinct from their physical referents. For example, the experience of the color red is something distinctly different, and separate, from a particular wavelength of light. I will present arguments to suggest that qualia may be appropriately viewed as evolved "adaptive illusions" because they display both evidence of design and functional utility. Qualia are illusions in the sense that they only exist in minds (e.g., electromagnetic radiation has no color). They also qualify as adaptations because they have design characteristics and have functional utility. Some qualia have inherent hedonic tone (are reliably associated with pleasure or pain) and appear designed to help to maximize survival and/or reproductive success (e.g., the sweetness of sugar). I suggest that qualia without inherent hedonic tone were not reliably associated with positive or negative evolutionary outcomes in ancestral environments (e.g., the color green) yet contain information that might be contingently relevant depending on context (e.g., a green banana). However, despite their qualification as adaptations, the question as to why qualia are phenomenologically experienced, rather than simply symbolically processed, remains a mystery. In addition, I argue that it may be difficult for evolutionary psychologists to explain the arbitrary content of qualia (e.g., why evolution produced red, instead of green, qualia in response to a particular wavelength of light).

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- Barreto, Luis (Universidad Nacional Autónoma de México)

*Extreme Sports and Precautionary Reasoning*

The purpose of this paper was to replicate Pereyra's (1998) results, which showed differences in performance in precautionary reasoning between high and low risk-takers. Participants had two different levels of risk-taking, defined by the sport they practiced. High risk-takers (n = 45) were extreme athletes (mountain-climbing, mountain bike, and parachuting), while low risk-takers (n = 26) were runners.

Participants in both groups were semi-professional or professional athletes, who had been involved for several years in the practice of their sport. They answered three Wason Selection Tasks (descriptive, social contract and threat) and a translated version of the Arnett Inventory of Sensation Seeking (1994). Both groups had similar performance on the descriptive rule. However, significant differences were found when comparing performance on precaution rules, and to a lesser degree, in performance on social contracts. Significant differences in levels of sensation seeking were also present. Results are discussed in terms of ease of activation of the hazard management mechanism.

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- Takezawa, Masanori (Max Planck Institute for Human Development)
- Keller, Monika (Max Planck Institute for Human Development)

*Development of core social preferences: Experimental studies*

It is one of the essential propensity of human beings to take into account others' welfare when making a decision that will influence both of one's own and others' well-being. This propensity is often called morality or social preferences. Rigorously designed experimental works, conducted by economists and psychologists, revealed that there seems to be some distinct types of moralistic propensities. The purpose of this study is to show, through behavioral experiments, how these different propensities are related each other and what their proximate causes are. In this study, we focus on the following moralistic propensities; altruism is the action increasing another's benefit at the sacrifice of one's own benefit; strong reciprocity is the action of increasing another's benefit as long as one is treated prosocially but retaliating for hostile actions (Gintis, 2001); righteous indignation or moral punishment is the action of punishing someone who violated social norms even though such violations don't harm one's own well-being; the action is said to be motivated by fairness when a person cares both one's own and another's relative standing in a society and acts to equalize them. Through a series of behavioral experiments with pre-adolescents and adolescents, we will study how these core propensities develop and are integrated.

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- Hoffrage, Ulrich (MPI Human Development, ABC)

*Emotional Adaptations For Judgment And Choice*

Recently, the emotion and decision-making literature has shown a trend towards uncovering more emotion-specific influences on judgement and choice. This development is very desirable since a more emotion-specific focus can be linked with the existing functional approaches used in analyzing the particular effects of human emotions as shaped by the EEA. Still, key questions in this emotion-specific approach remain: How can an evolutionary approach illuminate the distinction between emotional traits and states? What adaptive decision domains are worth looking at in terms of emotions? And how should experimental choice tasks be designed to accommodate an evolutionary perspective? At last year's meeting, Wilke & Todd (2001) found distinct risk preferences following two emotional states, namely fear and anger, using a task of everyday decision making: In a wide range of situations (social, financial, health, etc.) people could choose between safer and riskier options. Building on this finding, we have now put particular emphasis on the underlying choice domains as represented by the different decision-making scenarios. For this reason, existing data was reanalyzed across choice domains and the first results of a follow-up experiment will be presented.

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**Theory and metatheory  
Sunday morning Poster Session, 8:30am - 1:30pm**

- Alkon, Amy (syndicated columnist)

*"Hello, Psycho" -- creating a successful, real-life meme*

Author intentionally created a successful meme to depopularize Sports Utility Vehicles. It was a three-step process -- printing up small, insulting cards to put on the windshields of the vehicles, giving those cards out to others to put on vehicles, and writing about the response to the cards in a Los Angeles newspaper. Author and meme creator is trying her best to write this in "universitese," but humor was an important element of the campaign. The meme spread internationally, including an article in the London Guardian and one to come in the London Independent, hundreds of radio appearances, and email and phone calls from all across the U.S. and the world from people asking if they could print up and distribute her cards as well. See this link for a description (and a good, long laugh):

<http://www.newtimesla.com/issues/2002-04-11/sidecar.html/1/index.html>  
<http://www.guardian.co.uk/Archive/Article/0,4273,4395102,00.html>

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- Mealey, Linda (College of St. Benedict)

*Obituary: Stephen Jay Gould*

Famed paleontologist Stephen Jay Gould died Monday, May 20 at the age of 60, as a result of metastasized lung cancer. A Harvard Professor for most of his life, Gould received his PhD from Columbia University with a dissertation on fossil land snails. Best known for his books of compiled essays (most of which were originally published in the American Museum of Natural History's monthly magazine "Natural History"), Gould was considered to be a popularizer of evolutionary theory and a staunch opponent and vocal critic of "creation science". Among academics he is probably best known for his proposal (with Niles Eldredge) of the punctuated equilibrium model of evolutionary change. Gould received a MacArthur "genius" Award in 1981, and he served as President of the American Association for the Advancement of Science in 1999-2001. Although loved by the public and admired by most evolutionary scholars, Gould was considered a thorn-in-the-side by many evolutionary psychologists whose work he criticized as being reductionist and over-simplistic.

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- Schafer, Lothar (Chemistry Dept, U. of Arkansas)

*On the Possible Origins of Human Behavior in Quantum Reality*

Many pioneers of quantum physics have attested to the fact that the visible order of the universe is the phenotypic expression of a deeper order, whose entities are different than ordinary things. At the level of quantum entities, visible order is created by the interference of non-material probability fields, whose nature is closer to that of a thought than of a thing. Quantum entities can react to "causation by information," as Polkinghorne wrote, and in many phenomena they have revealed quasi-mental, mind-like properties. Therefore, when sociobiologists claim that morality is an illusion created by our genes, it is important to realize that genes are quantum systems and not the terminus of reality, but agents of a deeper order. Through genes the (virtual) order of quantum reality expresses itself in the material world. "Ethics," Ruse and Wilson wrote (in J. E. Huchingson, ed. Religion and the Natural Sciences, HBJ, 1993), "...is an illusion fobbed off on us by our genes to get us to cooperate." In contrast, in the quantum world, genes do not pursue any purpose but, following the laws of physics, they just reveal universal order. Genes are not the great deceivers of humanity, not the authors of any information, just messengers, and all genetic instructions derive from some property of the universal order that produced it. The nature of quantum reality now makes it plausible to propose that genes are relay stations not only of physical principles, but also of principles related to the human mind.

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**If Darwin Had Been a Woman: Alternatives to the Received View of Human Evolution  
Organized poster session, Sunday Morning**

- Brody, James (Evolutionary Psychology, Behavior On Line)

*Alternatives to the Received View of Evolution*

The received view of evolution is that environment selects from options in genes, genetic combinations compete, and differential reproductive success forms species. Natural selection makes conspecifics more similar and variation between individuals represents the lack of selective pressure. Natural selection is thought to be slow and gradual. Discomfort, migration, and extinction are more likely when environmental conditions change and the genetic characteristics of organisms no longer align with them. An alternative view is that genes through organisms turn settings into environments or select between them. Elements of physical settings can be seen in a statistical competition with each other for retention by living systems. Every organism of a species is unique in meaningful ways and boundaries between organisms and environments will be uncertain. Evolutionary changes in metrical traits are more rapid and reversible and somewhat predictable. Changes in non-metrical traits are less certain and apt to be abrupt. Saltation and stasis become more likely and "mismatch" becomes more transient and perhaps a positive selection factor. Human personal will, thus, may rest on these origins and have its functional equivalent in every living creature.

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- Brody, James (Evolutionary Psychology, Behavior On Line)
- Bloom, Howard (New York U.)
- Turner, J. Scott (Syracuse U.)

*If Darwin Had Been a Woman: Alternatives to the Received View of Human Evolution*

Statistical physics has gathered 17 Nobel prizes and models from that difficult science may apply not only to bacteria but also to communities of insects and mammals. We might consider derivation of a common language and eventually a common mathematics for the emergence of order, whether in liquids, gasses, or plasmas or in swarms of starlings or Baptists. Howard Bloom speaks to these points. Second, study of how organisms build environments forces our recognition of those environments as physiological systems. A hive, a stomach or a circulatory system all have a physiology. The idea of a boundary between organism and environment becomes only a convenient peg from which we can organize our study of the many ways that skins are penetrated and microenvironments created. To the extent that organisms make environments out of settings, elements of settings statistically compete for survival on the basis of organismic preferences. Natural selection's arrow reverses. J. Scott Turner will address some of these issues. Third, our traditional preoccupation with environment as an external cause may reflect a mental bias from our evolutionary history. We miss the extent to which organisms turn settings into environments. Further, organisms, following receptor preferences, gather, stabilize, and refine those environments. Mice that dig burrows might be expected eventually to refine and defend them. Thus, evolution proceeds as the cumulative effects of environments on organisms but also the cumulative effects of organisms on environments. Finally, it has been said that evolution tracks a phase boundary between chaos and stasis, variation and stereotypy. Genes, instruction, imitation, and culture are parallel means to that end. James Brody will outline the empirical foundations for these concepts, underpinnings that link both to personal will and to culture.

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- Turner, J. Scott (SUNY College of Environmental Science & Forestry)

*Darwinism's Difficulties: Extended Organisms, Constructed Environments And Emergent Physiology*

If Darwinism explains everything, why is Darwinism still controversial? The scientific critique of Darwinism that still simmers today centers around certain fundamental questions, including: What is an organism? What is life? What is the nature of genetic memory? What is the connection between adaptation and evolution? Our currently "received wisdom" on these questions derives from a materialist/objectivist view of life, heredity and morphology that treats organisms and all that they do as the products of genes, which, through some mysterious power, produce adaptation. Many of Darwinism's current difficulties stem from the disparity between this gene-centered perspective and the nature of adaptation as physiological process. The two can be reconciled, but it will require a change in perspective in evolutionary biology, to one which treats evolution and heredity also as physiological process. Doing so will take evolutionary biology into areas outside its current comfort zone, however. No longer can organisms be neatly segregated from their physical environment, no longer can only organisms have fitness, no longer can strands of DNA be the sole repository of genetic information, and no longer can the interests of selfish genes reign paramount. However, a physiological view of evolution has the potential to unify the currently fractured disciplines of biology into a comprehensive philosophy in which Darwinism's explanatory power reaches its full potential.

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