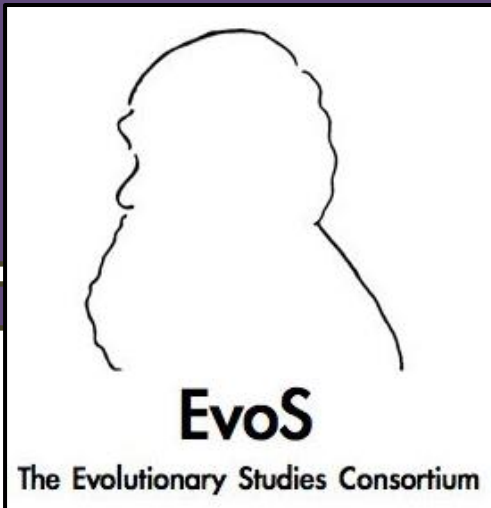


EvoS Illuminate

Newsletter of the EvoS Consortium



July 2015

What's New in EvoS?

The official Newsletter of the EvoS Consortium is excited to announce some new additions to the EvoS Journal, interviews with all-star professors and researchers, info on the first ever New Paltz Summer Institute, and much more!

Regarding the EvoS Journal, we have a new Undergraduate Editorial Review Board, including:

- * Michael Annese SUNY Buffalo Economics
- * Toe Aung Albright College Psychobiology
- * Melissa Hopkins Bucknell University Psychology & Philosophy
- * Emilio Jacintho University of Nevada, Las Vegas Anthropology & Psychology
- * Ananna Kazi Binghamton University Integrative Neuroscience
- * Saara Knapp Binghamton University Biological Anthropology & Biology
- * Eric Kubacki University of St. Francis Biology
- * Benjamin Seitz Binghamton University Psychology & Evolutionary Studies
- * Steve Tortora Binghamton University Philosophy
- * Rafael Schulman - Binghamton University - Integrative Neuroscience & Evolutionary Studies

We also welcome Hadassah Head, the Binghamton University EvoS coordinator, as Associate Editor and Michael Frederick of the University of Baltimore as Editor-in-Chief.

Since its inception, created as part of an NSF grant, EvoS Journal has published more than 45 peer-reviewed articles on various facets of evolution education - and we look forward to great future contributions under this new leadership team!

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**SOUTHEastern EVOLUTIONary
PERSPECTIVES SOCIETY**

CALL FOR PROPOSALS

SEEPS invites proposals for papers, posters, workshops, performances, and creative activities broadly related to studying and promoting evolution perspectives and education.

The inaugural SEEPS meeting will be held Friday, February 12 (**Darwin Day!**) through Sunday, February 14, 2016 in SUNNY Tuscaloosa, Alabama.

The goal of SEEPS is to integrate natural science, social science, humanities, and applied evolutionary perspectives and include researchers and scholars at all levels.

Separate sessions will be held for student and professional submissions..

Submit 100-250 word proposals for papers, posters, workshops, performances, or creative activities to Amanda Glaze (alglazephd@gmail.com) or Steve Platek (splatek@gmail.com).

Proposals should include title, author, student or professional affiliation, and email contact information. Registration information will be made available.

Submission deadline is July 31

<https://www.facebook.com/groups/SEEvPerspectives/>

NEEPS 2015 in Boston

By: David Chapleau

What is the Northeastern Evolutionary Psychology society (NEEPS)? While most would assume that NEEPS is nothing more a congregation of psychological researchers utilizing Darwinian theory to understand, interpret, predict, and explain human behavior - the truth of its membership and the scholars who are at the foundation of its DNA are far more nuanced and rich than just the blanket term “evolutionary psychologists” does justice. The many members of NEEPS have diverse backgrounds and hail from many different schools of academia and applied areas of work: from psychologists to anthropologists; from clinicians to public policy professionals; from biologists to neuroscientists; and many more in between. The interdisciplinary application of Darwin’s dangerous idea has allowed intellectual curiosity to flourish and has enabled researchers to untie around a common language of evolutionary theory.



New Paltz Evolutionary Psychology Lab with Steven Pinker

This past April marked the 9th annual NEEPS conference held in Boston, Massachusetts, hosted at Suffolk University. To condense all the great research that was demonstrated over the course of a 3 day affair in a brief overview, is simply not doing justice to the hard work and dedication that these researchers have given to their respective fields and to one another. We are a family, in species and in mind, bound together by adaptations that we have all dedicated ourselves to studying.

From listening to Steven Pinker discuss the history of human violence from an evolutionary perspective, to coming to understand the fierce competition that rages on between maternalistic and paternalistic genes within an individual from Robert Trivers, to actually witnessing how children no older than 3 years of age can infer the intentions of other autonomous individuals and the correspondence of that behavior in non-human animals by Felix Warneken, showcases just how diversified research can become when using evolutionary theory as a beacon in the darkness, when all other lights have gone out.

An Interview with Dr. Hamilton M. Stapell



Hamilton Stapell is a professor in the History Department at SUNY New Paltz - and has an avid interest in evolution and human health.

Where are you from, and what are your credentials?

I was born in Monterey, California, but grew up mostly in Gainesville, Florida. I completed my PhD in European History at the University of California, San Diego, in 2004. My specialty is modern Spanish history.

Where are you now, and what brought you there?

After teaching at the United States Military Academy, West Point, for two years, I was hired here at SUNY New Paltz in 2008. The great student body, my amazing colleagues in the History Department, and open academic environment brought me here.

Could you tell us a little about your interest in evolution? How has it shaped your research throughout your career?

I've long had an interest in both evolution and human health. I believe an evolutionary approach is the best way to understand and maximize health and well-being. Many of these ideas can be found in the areas of Darwinian Medicine and the Ancestral Health Movement. Dr. Philip Goscienski's 2002 book, "Health Secrets of the Stone Age," was my first formal introduction to the connections between evolution and human health. The Ancestral Health Movement has come a long way since then, but this was a good first introduction. I am fundamentally interested in the big questions of life. What is the nature of human nature? How should we organize society? How should we treat others? Both History and Evolution give us profound insights into these important questions.

Could you tell us about what you teach and any new projects you're working on or excited about?

I teach a number of different courses about European history. I also teach the first-year humanities seminar for the Honors Program. And I teach an online course about Evolution and Human Health for the EvoS Program. I am currently teaching an online course for the EvoS Program (EVO 201 Evolution and Human Health). I am super excited to be teaching it for a second time this summer. Students have been very interested to learn about how a better understanding of evolution and our ancestral past can improve their health today.

Binghamton Alumni & EvoS Speaker Spotlight:

The Adapted Mind of An Evolutionary Psychologist.

A Conversation with Debra Lieberman

By: David Sloan Wilson

*SUNY Distinguished Professor & Director of the Binghamton University EvoS Program**Reprinted with permission from This View of Life*

[Debra Lieberman](#) is part of the 2nd generation of evolutionary psychologists. I'm proud to have introduced her to evolutionary thinking when she was an undergraduate student at Binghamton University, when I was still teaching a single course on Evolution and Human Behavior and before I helped to start EvoS, Binghamton University's campus-wide evolutionary studies program. She obtained her PhD from the University of California at Santa Barbara with [Leda Cosmides](#) and [John Tooby](#) as her mentors. She is currently an associate professor in the Department of Psychology at the University of Miami in Florida.

Debra's research is an excellent example of how evolutionary thinking can inform a detailed research program in cognitive psychology. She recently visited Binghamton University to give a seminar in our EvoS seminar series, which was a homecoming of sorts. Her full-length EvoS seminar can be viewed at <http://evolution.binghamton.edu/evos/seminars/spring-2015/debra-lieberman>.

Debra, you are doing the most wonderful work on the cognitive psychology of kin interactions and most recently the psychology of gratitude. You did your undergraduate work at Binghamton and then went on to get your PhD with Leda Cosmides and John Tooby—so you're the perfect person to talk with about evolutionary psychology. I wonder if you might begin at the beginning, how you got turned on to this, your experience at Santa Barbara, and then fast forward to present. We want to center this on the whole topic of evolutionary psychology.

Let's see... the beginning. I was always interested in human nature. At Binghamton I was a biochemistry major and when I saw

your class, "Evolution and Human Behavior", I sensed controversy and set sail. We read [Homicide](#) and [The Adapted Mind](#) - two books that changed my life. It was bizarre to me that it was controversial to talk about humans in the same way that we talk about other critters.

I remember you coming into my office and venting your anger and frustration at the other courses you were taking and how they didn't get any of this.

As an undergraduate, you think all your elders are on the same page about what it means to be human and where we all came

from. Talking to biologists it is fine to talk about sexual selection and parental investment but-wait a minute-when you're talking about humans, it's all "learning" and "culture" and I found this strange. Then you talk to psychologists about relationships and they'd say, "Wait, what is this sexual selection and parental investment? No, we're humans." It was a bizarre situation to see that the whole biological world was shaped by these principles, but it just wasn't applied at all to humans. Strange. So there was controversy—I was in.

At the time there were very few graduate programs that did this. You were pretty much the only one, and then because I read the books, I knew about [Martin] Daly and [Margo] Wilson at McMaster, David Buss at Michigan (back then), Randy Thornhill at New Mexico, and John and Leda at Santa Barbara. Those were the four applications I put in for grad school.

When I met Leda, she told me I'd been accepted and that I should come work with her. I was like "Wow, that's why I applied!" Santa Barbara was a great experience and I feel fortunate to have joined John and Leda's lab.

What was the intellectual climate there? Describe your experience.

As a first year grad student, I took a pathogenesis course in the biology department that I loved, because I was intrigued by the idea that disease organisms could manipulate host behavior. I started to work with one of the biology professors who studied fish that, when parasitized, would swim to the top of the water column where the parasite's next host, the bird, would eat the fish. I wanted to understand what the parasite was doing to the neuro-circuitry of the fish that caused the fish to behave this way. So I started in on a project solo, and after a few weeks, John and Leda tapped me on the shoulder and said, "Look, this is interesting, we support you, we're biologists, but if you're going to do

psychology you need to do more with humans or you should think about another program."

So immediately I dropped the project and John said that he and Leda really wanted to look at kinship and to understand the cues to kinship. That's where we started. The "[Westermarck effect](#)" was well known — the idea that early association during childhood leads to an aversion later in adulthood. But we wanted to ask, how do individuals figure out who their siblings are? What are the cues? So we developed a huge questionnaire. I started to analyze the data. I came up with a very weak effect of how co-residence predicts sexual aversions. I thought to myself, this is terrible. It was significant but in psychology an effect size of .2 is nothing to write home about. How could something so powerful as an inbreeding avoidance mechanism -if co-residence was really the mechanism - how could I get a .2 effect size? I always thought that if you truly carve nature at a joint, you should see very large effects! We started thinking about other possible cues and this less us to split the sample into older and younger siblings. It totally changed the results. In our data, for people with younger siblings, co-residence no longer predicted sexual aversions, but for people with older siblings, the effect of co-residence was huge. It was a moment of holy crap! A true eureka moment. We talked about it and developed another survey to further test it. That's what led to our understanding of how siblings recognize each other.

Which is that it differs because of the information available. Maybe you can summarize those results.

We were interested to know if there was a particular mechanism in the brain that lets siblings know they are related. A very reliable cue to knowing that another individual is your sibling is seeing your mother give birth to and care for it-but that's only available if you're the older

child. What does the younger child do? The next reliable cue is seeing who your mom invests in over the long haul and that's what we've come to know as "co-residence duration". This is what happens when you live with someone for a long time and see evidence of shared parental investment. It turns out that if you're the younger sibling you track parental investment: the longer the co-residence duration, the more certain you can be that the older child is, in fact, your sibling. The older siblings use the cue of watching their mother invest in a newborn. They don't also use co-residence duration, presumably because of the reliability of seeing mom care for an infant. But in terms of computations, the two cues could have combined - but they don't appear to.

It looks like one trumps the other.

That's right. With this information in hand, we were off to the races. We thought-is this a strange thing that's happening in Santa Barbara? So I tested it in Hawaii, in Dominica, and working with colleagues we replicated it in Belgium, and in Argentina, so it's been replicated in a number of places.

One of the distinguishing features of the Cosmides/Tooby school of evolutionary psychology is massive modularity: that there are many special purpose adaptations to solve the many adaptive problems of life in the ancestral environment. This is a case of an adaptive problem. You want to help your kin but you don't want to mate with them. Presumably all this cognition came to exist somehow and the supposition is you can't learn this stuff, it doesn't even happen repeatedly.

I would say you *do* learn this stuff. What counts as learning? You're taking in very specific information from your social environment regarding parental investment in another child.

Yes, but it's a very highly structured form of learning, and one that is so context sensitive that

it can be different for an older sibling compared to a younger sibling. All of that has to be scripted and the scripting takes place through a process of genetic evolution. So this becomes a poster example for the concept of modularity. One of the best examples I know, at least. Am I rendering it the right way?

Yes, I would say so. In my work, I like to put together information-processing models: I think, if I were natural selection, how might I have designed the system to achieve inbreeding avoidance or kin directed altruism? [In the case of sibling detection], you have cues from the environment that are input and our data tell us that they're not just added together, they're integrated and that's suggestive of a [neuro] mechanism that's doing the integrating and then calculating the degree of kinship. Is that integrator, that kinship cue integrator, is it specific for siblings? Is it a general mechanism that takes all kinship cues and then estimates relatedness? If so, what are the inputs into this kin detection estimator? Are they specifically sibling cues or is there a separate father detection system, mother detection system, and so forth? These are things we don't know. Right now, I've actually stopped short and not said it's sibling detection but rather it's a kin detection mechanism until there's further evidence that it needs to be split up. The Santa Barbara school of thought is computationally, functionally specific, and until there's evidence that something can be split off, then it should be retained in a more general system (and by general, I mean functionally less narrow). That's what we currently see in the kinship system and my work on disgust is the same: Is there a singular disgust? What might that look like computationally?

That's a good example because we both know from [Paul Rozin's](#) work that disgust is something that has phylogenetic roots but has been culturally elaborated in humans so that we now feel disgust

for all sorts of things. That's a great example of the middle ground I'm searching for which has both these biological and cultural inputs. Your work gravitates toward this middle ground.

Robert Kurzban and Peter Descioli have two papers on the evolution of morality, on the mysteries of morality. They thought through how disgust has a flexible relationship with morality and how disgust can lead to such a rich array of norms.. My ideas about the relationship between disgust and morality really came from the two of them.

Great. Let's now talk about evolutionary psychology. As you know TVOL is doing a multi article theme on it. Talk to me now about evolutionary psychology's reputation – is it deserved, undeserved?

I strive to understand the scientific gripes people have [with evolutionary psychology], not the personal ones, which have no place in science. I often find that people say John and Leda are wrong because they completely misinterpret or ignore what John and Leda say. [Don Symons](#) is fond of saying that you have to understand whom someone is arguing with to understand why they're writing what they're writing. John was arguing with cultural anthropologists and Leda was arguing with social psychologists. So their beef was largely with existing strands of academics that didn't take evolution seriously or didn't believe there could be structure to the mind. The *Adapted Mind* will be a book for the ages—love it or hate it! Some have argued that they went too far. I would say that to make a point you have to go to the wall. I personally don't think they've gone too far in their discussion about the Standard Social Science Model (SSSM) of the mind.

Describe that for our readers.

It's a view that the human mind is blank slate and has content independent mechanisms, which means that you can feed these mechanisms with any content and they will operate under any circumstance with

equal functionality and produce equally effective behavior. That's just not the case at all. Non-human animal studies show the insanity of the SSSM. People might be uncomfortable and squeamish with an evolutionary perspective, [thinking] that it might hold them to a certain moral disposition. But you can follow the principles of evolution, apply them to human behavior and still be a good person—still believe the best in humans. In the *Adapted Mind*, Leda and John say that if you're concerned about genetic determinism, you should be no less concerned about environmental determinism. Another thing that bugs me is the claim that John and Leda ignore culture. Did these folks not read the subtitle of *The Adapted Mind*? It is "the generation of culture". People forget that they were very interested in how we get human culture.

Can you take a few more steps and describe how culture is generated.

Sure, but what do you mean by culture?

I would rely on John and Leda's distinction between evoked culture and transmitted culture. They associate transmitted culture with the SSSM as though people were open vessels and culture is poured into them from the previous generation. Whenever human populations do something different, this could be attributed to transmitted culture. Against that background they made an important point. Since we're all phenotypically plastic, if you place us in different circumstances then we behave differently because our minds react to our environments. That's evoked culture. Evolutionary psychology should embrace both of those. If you were to say, evolutionary psychology is about evoked culture and that transmitted culture is something else, I would not agree with that.

My own research speaks a lot to culture. If we in fact have representations of who counts as siblings, then it's not surprising that we have linguistic terms that map onto these very specific representations. I'm told

that the Chinese language even has different terms for older sibling versus younger sibling, which is fascinating. We delineate different relationships linguistically and so this enters into our culture, but just looking at the kinship terms without the psychology is just strange, since that wouldn't give you a full-fledged understanding of kinship. If you started with the psychological adaptations and had an informed model that you can test and understand, you see that there's a system in all humans that generates representations of different types of kin. And this structures our social interaction and cultures in various ways. One of the tools I gained at Santa Barbara is to get very specific when discussing kinship, and to ask, what domain are we in? What's the system? Is this a novel human thing? Maybe there's not a dedicated system for a particular behavior, or maybe it's piggybacking on something, or maybe it's a byproduct of something else. I try and ask all of these questions. I think evolutionary psychology provides the tools to develop and test the models and to understand the structure of the human mind. It provides predictions about the sort of models out there in the world of culture that you might see. Human culture is not random. There's a lot of flexibility and variety to be sure, but we tend to observe only a limited set of what's possible.

That's a great topic because kinship systems are famously diverse. To quickly cut to an example: the Nuer African tribe were in the process of replacing their neighboring tribe, the Dinka, when contacted by Europeans in the 19th century. Part of the reason is because the kinship system of the Nuer enabled cooperation between the villages. They added an extra tier to their kinship terminology so that you might have someone classified as a kin in some distant village. By virtue of having this kin [which was fictive as far as genetic relatedness is concerned], they combined forces in warfare. Because the Dinka had

another kinship system that didn't extend so far, they couldn't form as large a fighting force. None of these kin were strictly speaking kin and if they were, their coefficient of genetic relatedness would be low. The Nuer even had a convention of ghost marriage where if the Nuer husband died they'd replace the household with a Dinka male who was captured in warfare. This makes no sense genetically but it kept the social organization intact. These are wonderful examples of kinship systems that go way beyond one based on genetic relatedness. This kind of cultural construction can interface with genetic adaptation and will result in some forms surviving and replicating better than other forms. There is an ongoing process of cultural evolution.

Now I want to go in a slightly different direction, involving another toolkit for understanding these mechanisms. It would be nice to go bottom up through neuroscience. Who is doing that well? Is there anyone you can point to, or is that an area that needs more attention? And how about Leda and John? Are they doing it or encouraging it to be done?

It would be very nice to have the whole story for each psychological adaptation. To have a catalogue of human psychological adaptations and describe the genes that are required all the way through the regions of neural tissue that tend to embody certain functions. I'm interested in describing adaptations at an information-processing level. I'm not as interested in the specific genes or the location. I assume there are genes that associate with kinship systems and they organize neural tissue to do this somewhere. If had multiple lifetimes to completely do it I would explore this.

I know Evolutionary Psychology was inspired by the work on the cognition of vision, which is massively modular, so on that level it has been the main event for neurobiologists for a long time. I want to end by taking about what EP has to say about sex differences. I know some feminists are

critical of EP and that you have an interesting take on it.

What do I think of sex differences? That they exist! I'm impressed more and more about how they exist. Specialized types of sex differences constitute mating psychology. Having been out on the mating market recently, I found myself talking about relationships A LOT. When I would talk to some of my male friends about how to get a mate, I could swear they were speaking English, but it just didn't compute. It has become even more clear that men and women see very different dimensions when it comes to finding a mate.

On a related topic, in Binghamton I read [Camille Paglia](#) and she said something that rang true with me. She pointed out the importance of being responsible for your own actions, and part of that, in my mind is equipping yourself with knowledge and when it comes to sexual abuse and rape, this

A new chapter for sex ed. books referenced below:

means knowledge about the other sex. In a perfect world, women could wear what they want, walk the streets naked if they so desired. But we don't live in that world. Men and women have different psychologies. Understanding psychology would help women understand and navigate the sexual world and also be more safe.

That puts you in agreement [Randy Thornhill](#) and [Craig Palmer](#) who criticized feminism about practical things.

I wouldn't want people to interpret what I say as justifying rape. I am not blaming the victim. The fault is with the person who does harm and forces himself on another person. The question is, could it have been prevented? I think it's preventable if women have greater knowledge about male psychology.

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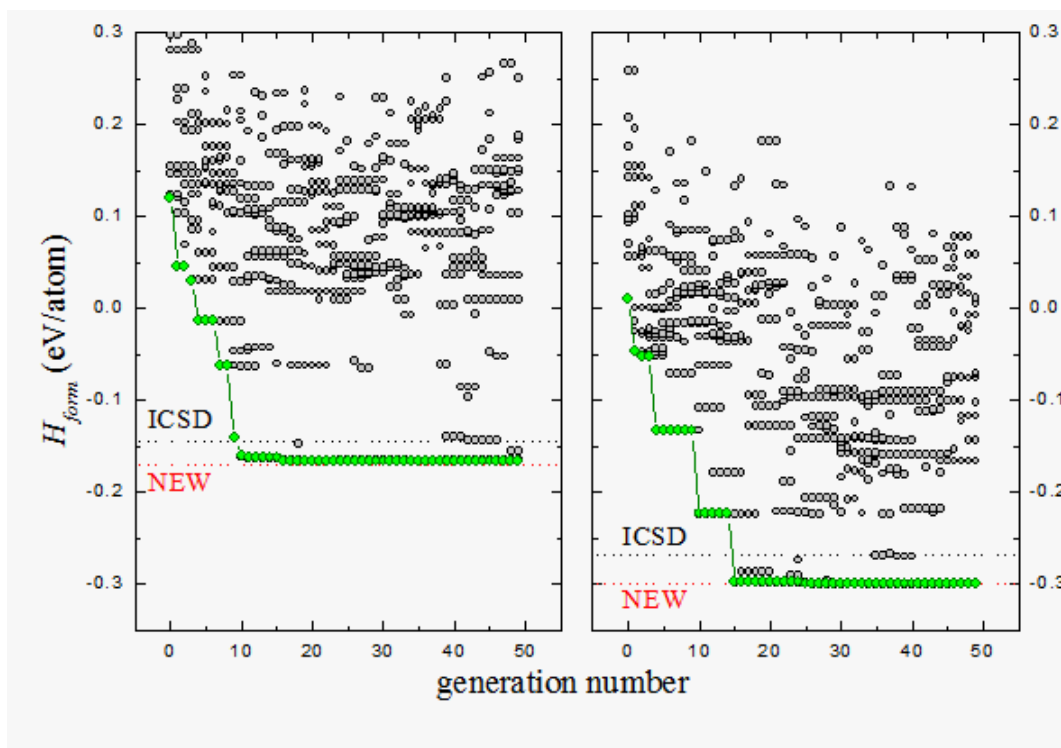
Lieberman, D., Tooby, J., & Cosmides, L. (2007). The architecture of human kin detection. *Nature*, 445 (7129), 727-731.

Faculty Spotlight: Professor Alexey Kolmogorov

by Rafael Schulman, Binghamton University. Integrative Neuroscience & Evolutionary Studies '16

Professor Alexey Kolmogorov of the Binghamton Physics Department has been carrying out cutting-edge research into the atomic structure of novel superconductors. The lab combines tools traditional to the field of computational physics, such as the density functional theory, with novel, creative computational solutions. One of these is the Evolutionary Algorithm, which is a central component of Professor Kolmogorov's software package (MAISE).

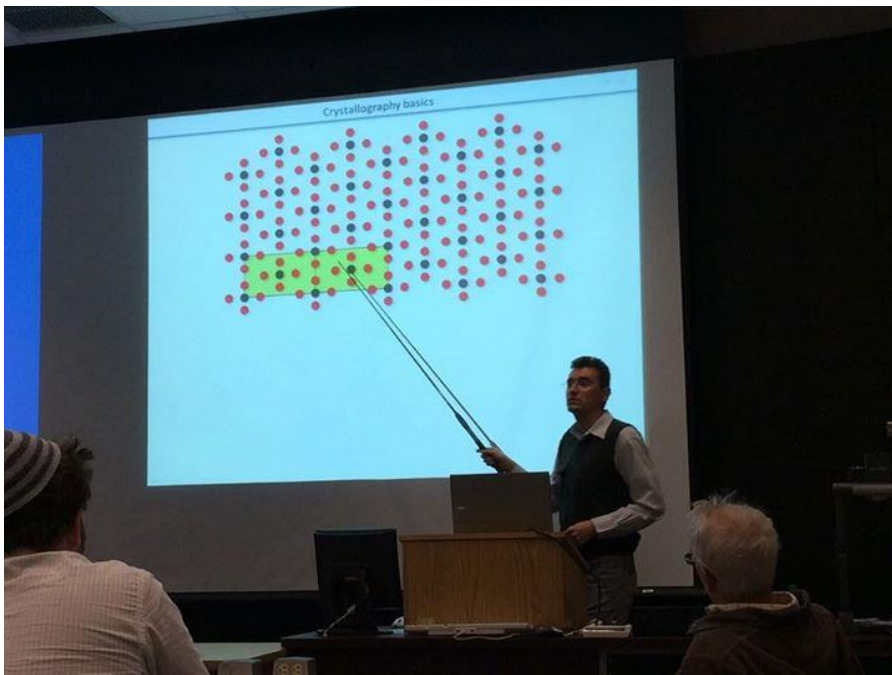
Evolutionary Algorithms are a way to optimize a given characteristic. Nature's own Evolutionary Algorithm optimizes what we call "fitness". In computational research, Evolutionary Algorithms can optimize whatever the designer of the code decides. In Professor Kolmogorov's work, the subject of the optimization is the formation energy of the crystal structures [you may want to add: which determines whether the compound can be synthesized]. A population of crystal structures undergoes a process of selection in which those with lower energies are more likely to survive. Surviving structures undergo processes of recombination and mutation, generating a new, evolved population. As the generations pass, the energy becomes lower and lower until a structure with the lowest possible formation energy is identified at the specified composition. If further computational analysis reveals the structure's potential for superconducting behavior the candidate material is suggested for synthesis.



This graph demonstrates formation energies in the population of structures per generation. As the population evolves, both the average energy of the population as well as the energy of the most stable individual both drop.

Professor Kolmogorov's work is exemplary of two of the most powerful elements of Evolutionary Studies: First, it demonstrates the interdisciplinary nature of evolutionary studies. Utilizing evolutionary principles in the design of an algorithm used in computational physics is far from the field of biology and ecology with which evolution is most often associated. Professor Kolmogorov's use of evolutionary studies is an important indication that all areas of science can benefit from the integration of an evolutionary understanding of nature. Secondly it demonstrates evolution's potential to provide tangible solutions. Professor Kolmogorov's use of the Evolutionary Algorithm to discover the FeB4 superconductor demonstrates that evolution is not only a theory through which to understand our environment, but a method to interact with and manipulate the world around us. To date, the lab's successes include the discovery of the superconductor FeB4. Throughout his time at Binghamton working towards this breakthrough, Professor Kolmogorov has been involved with the EvoS program. In fact, EvoS played an integral part in the outreach section of Professor Kolmogorov's most recent successful NSF grant proposal. His talk at the Monday night seminar series was one of the most well received of the year. It can be found here:

<http://evolution.binghamton.edu/evos/seminars/spring-2014/aleksey-kolmogorov/>



Professor Kolmogorov speaking at the Monday night EvoS seminar series

For more information on Professor Kolmogorov's work and to learn about his software package that includes the evolutionary algorithm, visit maise-guide.org



SUNY New Paltz Institute in Evolutionary Studies for Science Educators and Others

For the first time, SUNY New Paltz EvoS Program will be hosting a 45-hour long summer institute! The Institute is designed as an effort to help current and future teachers master the breadth of content needed to effectively teach about evolution in a secondary-education curriculum. Evolution and its many elements are essential components of a science curriculum, and we want to help our teachers be best prepared to effectively teach this material to the next generation of students.

The Institute is a 45-hour program that leads to 3 15-hour-based CEUs, or a 34-hour version leading to 2 15-hour-based CEU credits. This will provide many with an opportunity for salary advancement in their district. The Institute will take place on campus at SUNY New Paltz from July 20-24, 2015. Successful graduates of the program will receive a certificate of completion demarcating “Successful Completion of SUNY New Paltz’s Evolutionary Studies Summer Institute.”

Given that evolutionary theory is interdisciplinary, we will have several PhD-level faculty working as instructors in several different fields including biology, anthropology, history, genetics, applied art, applied health, and more. The Institute will also have classes on topics like issues in teaching evolution and controversies in evolution education. Perhaps the most exciting, the Institute will also be offering faculty-led field trips to local ecosystems and finish off with a hike along the Milbrook Ridge!

This program will provide students with a deep biological understanding of evolution along with an understanding of evolution applied across various disciplines beyond traditional biological areas. It will include important content specific to the teaching of evolution, and graduates of this institute will be well-prepared to teach about evolution content in a way that integrates many issues that surround evolution education.

We see this Institute as an important step toward bringing the spirit of EvoS to science educators outside of higher education.

The New Paltz--Binghamton Pipeline

Laura L. Johnsen, Ashley Peterson, and Mandy Guitar

Binghamton University, SUNY



(from l to r): Glenn Geher (Director of EvoS at New Paltz), Laura Johnsen, Ashley Peterson, and Mandy Guitar (EvoS alum of New Paltz and PhD student in anthropology at Binghamton)

Soon after the EvoS programs of New Paltz and Binghamton joined forces about 10 years ago, there has been something of an EvoS pipeline connecting students between the two universities - to the benefit of many.

Laura Johnsen, Mandy Guitar, and Ashley Peterson are former graduates of SUNY New Paltz and members of Dr. Glenn Geher's Evolutionary Psychology Lab. Mandy and Ashley both received Master's degrees in Psychology and Laura received her Bachelor's degree in Psychology and Theatre Arts from SUNY New Paltz. We were accepted into Binghamton University's Anthropology PhD program (Laura and Ashley in Fall 2012, and Mandy in Fall 2013) to work with the esteemed Dr. Chris Reiber. Ashley and Laura earned their Anthropology, M.A. in the Spring of 2014 and Mandy is currently finishing her master's degree.

Our transition from psychology to anthropology came with several challenges, but we quickly adapted to the new learning environment and our research has benefited from our newfound anthropological perspective. Overall, we have gained a much better insight into methods of obtaining cross-cultural information as well as an increased awareness of debates surrounding the concept of "culture" and how to address some of these issues. Additionally, anthropology focuses

more on ecological context, and benefits evolutionary psychology because it can potentially explain findings that don't fit a "universal" pattern.

Our research interests are diverse. Ashley is interested in the relationship between women's health and sexuality, Mandy is researching the ovulatory cycle, and Laura is reviewing evolutionary models of sexual coercion, rape, and sexual harassment.

Coming to Binghamton has also provided us with the added benefit of continuing to work with each other. While we have made friends with many students in the Anthropology Department, having a support network of familiar faces made the transition to Binghamton University much smoother. Because we all came here, we've been able to more easily continue research projects that started in New Paltz, such as Laura and Mandy's recent publication on male-to-female mortality ratios in the *Evos Journal* which was co-authored with Dr. Glenn Geher. Ashley has also continued her work on ovulatory shifts in mating intelligence with Rachael Carmen, a fellow master's student while at SUNY New Paltz, and Dr. Geher, which was published in the *Journal of Social, Evolutionary, and Cultural Psychology* in January of 2013.

We are currently working on several different projects. Both Laura and Mandy have chapters in the upcoming *Oxford Handbook on Women and Competition*. Laura's chapters are on how women use fashion as part of their intrasexual competitive tactics and the intrasexual competition found in beauty pageants, such as Miss America and Miss USA. Mandy's chapter looks at behaviors on Facebook from an evolutionary perspective and was recently the topic of a talk she gave at SUNY New Paltz as part of the EvoS seminar series. Ashley is currently planning her dissertation research that will explore how premenstrual syndrome impacts sexual behavior across the menstrual cycle.

We are incredibly grateful to our mentor Dr. Geher for all of the support he has provided us with as both students and as alumni. From publication opportunities to continuous encouragement and enthusiasm for our research ideas, Dr. Geher has played a fundamental role in our academic achievements. We also thank Dr. Reiber for helping us make progress towards our PhDs, easing the transition from the field of psychology to anthropology, and supporting us with our interdisciplinary research projects.



(from l to r) Glenn Geher, Director of EvoS at New Paltz, Laura Johnsen (EvoS alum of New Paltz and PhD student in anthropology at Binghamton), Rebecca Newmark (alum of both Binghamton and New Paltz; PhD student in psychology at Loyola University of Chicago), and Melvin Philip (EvoS alum of New Paltz and PhD student in Biology at Binghamton)

Addendum (by Glenn Geher): In addition to the great success stories of Ashley, Laura, and Mandy, we've also got Rebecca Newmark (pictured above) who completed an undergraduate degree in psychology at Binghamton and a master's focusing on evolutionary psychology at New Paltz - she is now set to start in a PhD program in applied social psychology at Loyola University in Chicago! Melvin Philip (also pictured above, with his beverage of choice) was an MA student in the New Paltz Evolutionary Psychology Lab - and he is now working under David Sloan Wilson in Binghamton's biology PhD program.



Jeysa Williams (psychology alum of Binghamton and past member of the New Paltz Evolutionary Psychology Lab) was a star at both Binghamton and New Paltz - co-authoring a (soon to be published) book chapter with Glenn Geher on the importance of teaching evolution in the curriculum. She now is living in Poughkeepsie and is an avid CrossFitter!

Art and Evolution: A Darwin Day Celebration

by Paul Kassel
Department of Theatre Arts
SUNY New Paltz

Do birds do it? Bees? Educated fleas? Probably not. But humans do it—they make art. This past Darwin Day, Evos celebrated Charles' birth by taking on that knottiest of problems—the evolutionary underpinnings of art and art-making.

Our special guest was Dr. Gabrielle Starr, Dean of the College of Arts and Sciences at New York University, and author of the book, Feeling Beauty: the Neuroscience of Aesthetic Experience. Dr. Starr spoke about her collaborations with neuroscientists to investigate the aesthetic response—how and why we feel and experience “beauty.” It turns out that beauty is not just in the eye of the beholder (or, more accurately, the brain). For example, there are some interesting data that suggests a high degree of agreement on what constitutes a beautiful face around the world. Dr. Starr's research also suggests that our aesthetic feelings are related to the reward system in our brains. She discussed the Default Mode Network (DMN)—the parts of our brains that are “on” all the time and appears to be unique to humans. There are some tantalizing clues that link the DMN to our ability to imagine. It is my belief that the human capacity to imagine is the factor in our success (thus far) as a species, and that the imagination is the foundation for art, language and culture.

[Dr. Starr's talk was followed by faculty members of the College whose research also focuses on the connection between art and evolution. For a video recording of the complete evening, please go to <http://www.newpaltz.edu/evos/seminar.html>.]

This past spring also marked the first semester the Evos program was able to offer the new course, FPA 300—Evolution of Art: Biology and Philosophy. This was a course I developed in part through the NSF grant awarded to the program a few years ago. In it, we explored the evolutionary underpinnings of the art-making impulse as well as the evolution of philosophical thought regarding art. Our central text was Stephen Davies' comprehensive book, The Artful Species. In it, he surveys the current state of the research, and after some preliminary chapters defining art, aesthetics, animal and human beauty, he looks at the three main possibilities: art as a spandrel (like feathers), or as a technology (like fire), or as an evolutionary adaptation. His conclusion is inconclusive—there is still so much we don't know, and much we may never know.

Evos as applied to arts has tended to focus on using Evos to explain or derive the meaning of a work (and it may be used that way, to a degree). But in the course, instead, we focused on using Evos as a way to investigate the *impulse* to make. In other words, rather than thinking about the *perception* of art, we focused on the *making* of art. Not from the audience's point of view, but the artist's. We did the same for philosophy, which has tended to look at art as the END product, rather than the making process. This freed us from having to argue about what art MEANS and instead look at what it DOES--what do we get out of it both as audience (percipient) and artist (maker)?

Most of us can agree that *Hamlet*, Picasso's *Guernica*, The Tale of Genji, or Beyonce's “Single Ladies” **means** something (although we will certainly differ on that meaning). But we don't make art to make meaning, nor do we experience art as meaning. We FIND meaning upon reflection, sometimes quite quickly, but more often later, at the bar after the show, or in the living room arguing with our friends, or walking down a street years later, and we discover meaning (via intuitive processes we also do not understand--yet). But we experience art and art-making in an

immediate embodied way that **precedes** meaning. That experience begins in an impulse--and that is what the course investigated--the **impulse** to make, and to make sense of. Make SENSE of, not make meaning of. We FEEL art, as we feel everything first and then later dress it up in discursive thought and logic to discover meaning. Art-experiencing or art-making is an action.

Many artists, myself included, hope to establish art-making as an adaptation. Using Evos to *justify* art and to make a claim for its value and special status is understandable, but it is a doomed mission. It is a fear-based approach. We love a thing. Naturally, we want everyone to love what we love, but they almost never do. So, we try to cow people into loving what we love by demonstrating its value. You MUST love X because it is NECESSARY! USEFUL! The idea is that if we connect art and art-making to evolution it becomes necessary, valuable, and therefore must be supported (financially) and taught (as a requirement). But from an historical point of view, justifying art is a relatively new idea. Art-making has been woven into the social fabric of human beings since before language (see an explanation below). The idea that art somehow lacks utility is a phenomenon of 18th century Enlightenment that reached its apotheosis in 19th century Empiricism (see Davies, Chapter one).

No one would argue that eating isn't necessary, or the ability to fight, or flee or procreate. We need to do these things to live. My argument, which (spoiler alert) we are unable to prove at this moment, is that art-experiencing & art-making is equally as necessary. We need to do them to live. We can't NOT be artful. We are so steeped in art that it is inseparable from our experience. In fact, it IS our experience.

What we **call** art is a special kind of experience that separates itself from the everyday experience that makes up both our waking and sleeping lives. We quibble over the definition of art, again, because we are so focused on the END, not the means. It is the DOING that makes it art--either by the artist or the audience.

Try a thought experiment. Imagine a world without art. What would it look like? You can't do it. Every thing you look at becomes a scene, every behavior you perceive becomes a show, every sound becomes music, every taste becomes a meal, every touch becomes an outfit, every smell becomes perfume, every move becomes a dance. We are metaphorical creatures, we are symbol finders and makers. We just can't help it. And that begs the question--WHY?! Why are we like this? What's the point? The short answer is we're not sure. But I think art enlarges our capacity to feel and to more effectively communicate those feelings. It is a vocabulary of feeling, a way to describe the world and our experience in it that is more immediate and more impactful than discursive words and numbers can ever be.

If art impulses ARE based on biological processes shared by all, then ALL are capable of doing any art form (Davies goes into this in his book). But determining whether or not art-making is a spandrel, technology or adaptation is not possible. Why?

- Our ignorance and physical reality (fossil record) may prevent us ever knowing.
- Art as Technology—this makes sense if culture is **independent** of biology—but that doesn't seem to be the case.
- Art as a Spandrel—possibly, but what adaptation did it grow out of (like feathers)?
- Art as an Adaptation. Here's what Davies has to say:

"When I review the theories and the evidence, I am doubtful that the arts, either together or singly, are selected to serve an adaptive function. If I had to bet, I would say that the adaptations that give rise to art behaviors are intelligence, imagination, humor, sociality, emotionality, inventiveness, curiosity. Though art is mediated by culture, it gives direct and immediate expression to these traits and dispositions, so I would identify it as a by-product rather than as a technology. Art gives vivid and powerful expression to these qualities, which are central to our human nature and indicate our humanity."

Here's what we do know--art is universal, ancient, rewarding, puzzling and magnificent —and somehow connected to evolution!

Susanne Langer (191 – 1985) was a philosopher whose monumental work, Mind: An Essay on Human Feeling, posits that our felt experience has resulted in consciousness. Our feelings prompt expression, that expression finds form, that form is symbolic. Art, she says, is the creation of forms symbolic of human feeling and PRECEDES language. Language, Langer argues, is an elaboration and utilization of symbol-making capacities.

Here's my theory about the evolutionary underpinnings of art-making behavior

- Art behaviors—marking, sounding, moving, enacting— preceded discursive language as a means of communicating feelings, primarily concerning threat and opportunity
- Competence in understanding and communicating feelings enhances threat/opportunity evaluation, thus individuals and groups that had greater competence earned a competitive advantage

Scientists ask, “why?” But artist's say, “why not!” Here's another thought. And I say this with great trepidation. Perhaps the problem is not how to fit art into evolutionary theory. Perhaps the problem is how to alter evolutionary theory to accommodate art. Maybe what's needed is a broader definition of evolution that includes art-making capacities. Why not?

For further reading:

Boyd, Brian. On the Origin of Stories: Evolution, Cognition, and Fiction. Belknap Press. 2010.

Collins, Christopher. Paleopoetics. Columbia University Press. New York, NY. 2013

Davies, Stephen. The Artful Species. Oxford University Press. Oxford, England. 2012.

Dissanayake, Ellen. Art and Intimacy: How the Arts Began. University of Washington Press. Seattle, WA. 2000.

Langer, Susanne K. Feeling and Form. Scribners. New York. 1948.

...Mind: An Essay on Human Feeling. Volumes I – III. Johns Hopkins University Press. Baltimore, MD. 1970-1982.

Starr, Gabrielle. Feeling Beauty—the Neuroscience of Aesthetic Experience. MIT Press. Cambridge, MA. 2015.

Evolution-Themed Crossword Answers

Here we go! If you've been following along, below are the answers to the Crossword puzzle from Volume 4, Issue 1 of the Illuminate:

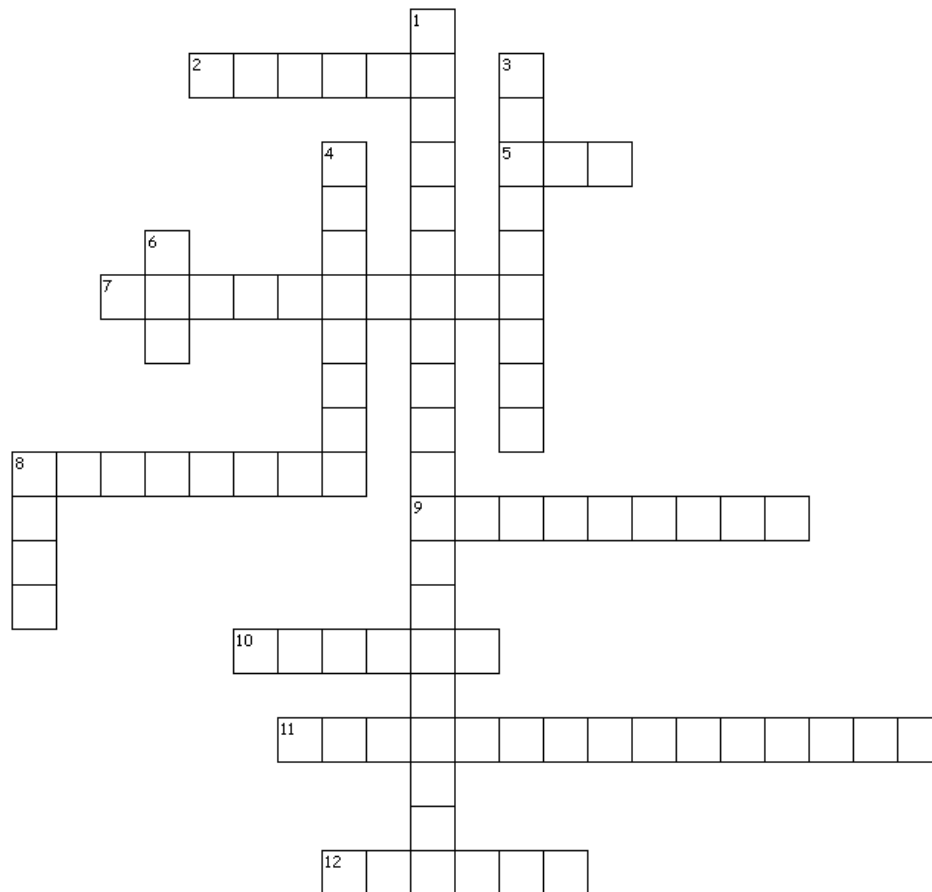
Across

- 2. Darwin
- 6. Tale
- 7. Adaptation
- 9. Kin-selected
- 10. Finch
- 11. Signaling
- 12. Mutation
- 14. Neandertal

Down

- 1. Brachiate
- 3. Meme
- 4. Drift
- 5. Baba Brinkman
- 8. Origin
- 13. Pleistocene
- 15. Eldredge
- 16. Trivers

Evolution Crossword



Across

2. An Austrian monk whose plant breeding experiments, begun in 1856, led to insights into the mechanisms of heredity that are the foundation of genetics today. His work was ignored in his lifetime and only rediscovered in 1900. Give peas a chance!
5. A description of how a natural phenomenon will occur under certain circumstances
7. The birthplace of EvoS
8. He coined the term "inclusive fitness"
9. This type of cause is an event which is closest to, or immediately responsible for causing some observed result
10. Common physical evidence of evolution
11. Traits that are a hindrance to survival that have strong signaling potential reflect (two words)
12. He was a keynote speaker at NEEPS in 2015

Down

1. Speciation that occurs when two or more populations of a species are geographically isolated from one another sufficiently that they do not interbreed (two words)
3. A reproductive system in which one female mates with many males
4. An error in the DNA replication process
6. One of Richard Dawkins' prefixes
8. Author of "Mothers and Others"

***** The first person to email the correct answers to evostudies@gmail.org will be recognized in the next issue of the Illuminate!**

This newsletter was edited by Nicole Wedberg & Glenn Geher.

Special thanks to all those who contributed to this issue.

Don't forget to visit the EvoS Consortium website at

<http://evostudies.org/>!