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GENERAL INFORMATION

Exhibit and Book Room

We are pleased to welcome the following exhibitors to our meeting: AAAS DoSER, ASA, BioLogos, Christian Women in Science, Fuller Theological Seminary, InterVarsity Emerging Scholars Network, Nexus Forums, Novare Science and Math, and Solid Rock Lectures. The exhibits and book tables featuring books of interest to attendees are located in the Learning Resources Center (LRC), LRC 204E.

Exhibit and Book Room hours:

Saturday: 9:45 AM – 5:00 PM
Sunday: 10:30 AM – 5:15 PM
Monday: 9:00 AM – 11:00 AM

The Kenneth H. Cooper Aerobics Center

Registrants may purchase a pass (\$10) to use the Cooper Aerobics Center during the conference.

Aerobics Center hours:

Monday–Friday: 6:00 AM – 9:00 PM
Saturday: 10:00 AM – 9:00 PM
Sunday: 2:00 PM – 6:00 PM

Pool hours:

Monday–Friday: 12:00 PM – 8:00 PM
Saturday: 12:00 PM – 6:00 PM
Sunday: Closed

Plenary Sessions

All plenary sessions will be held in LRC 236–237.

Friday: 7:30 PM **Bethany Sollereeder**, “Blood, Fire, and Fang: Listening for God in the Violence of Creation”
Saturday: 8:45 AM **Alister McGrath**, “Natural Theology: Seeing God’s Fingerprints in Creation”
Sunday: 11:00 AM **Esther Meek**, “Covenant Realism: How Love Is at the Core of All Things”
Monday: 11:00 AM **Amos Yong**, “The Breath of God and the Life of Nature: Toward a Pneumatology-Science Dialogue”

Special Events

Friday: 8:30 PM Fellowship Mixer
Saturday: 12:00 PM CWIS (Christian Women in Science) Lunch
5:30 PM BBQ Picnic
6:00 PM Sand Volleyball Tournament
7:00 PM CWIS meeting, open to all
9:00 PM InterVarsity Reception
Sunday: 9:00 AM Worship Service
6:30 PM State of the ASA
7:30 PM Communications Meeting
9:00 PM Student and Early Career Scientists Meet the Plenaries

Campus ATM Machine is located in the LRC 3rd floor, next to the information center. Facilitated by TTCU (Tulsa Teachers Credit Union).

Campus Parking is available in Lot H to access Gabrielle, Lot G to access the Hamill Student Center and Hammer, and Lot A to access the LRC north porch (see campus map, p. 32).

Campus Wi-Fi networks are named “ORU Student” and “ORU Guest” (no password required).

Campus Security: 918.495.7750

Many thanks to ...

Program Chair **Dominic Halsmer** and Local Arrangements Chair **Wes Odom** for their countless hours of preparation. We are especially thankful for the **donors** who contributed to the Students and Early Career Scientists’ Scholarship Fund.

The ASA Spirit

The ASA, CSCA, and CiS encourage thoughtful and provocative scientific presentations and discussions. Presenters and discussants are expected to maintain a humble and loving attitude toward individuals who have a different opinion.

PRE-MEETING ACTIVITIES

THURSDAY, 23 JULY 2015

7:00 AM	Gabrielle Residence Hall check in opens, Gabrielle Residence Hall Lobby
3:00 PM	ASA Meeting Registration opens, Gabrielle Residence Hall Lobby
5:00 PM	Dinner, Hamill Student Center
9:30 PM	ASA Meeting Registration closes, Gabrielle Residence Hall Lobby
11:00 PM	Gabrielle Residence Hall check in closes, Gabrielle Residence Hall Lobby

FRIDAY, 24 JULY 2015

7:00 AM	Breakfast, Hamill Student Center
7:00 AM	Gabrielle Residence Hall check in opens, Gabrielle Residence Hall Lobby
8:00 AM	ASA Meeting Registration opens in the Learning Resources Center (LRC), LRC 204C
8:30 AM	Workshop, LRC 235: Edward B. (Ted) Davis and Robert J. Russell , leaders; Christianity and Science: An Introduction to the Contemporary Conversation
8:30 AM	Field Trip: Geology *
9:40 AM	Field Trip: Technology and Sustainability Field Trip *
9:40 AM	Field Trip: Museums of Art and History *
12:00 PM	Lunch, Hamill Student Center
1:00 PM	Field Trip: Boston Avenue United Methodist Church Tour and Discussion (for all attendees, sponsored by ASA's affiliate, Christian Women in Science) *
<i>* All field trips leave from the Hamill Student Center by Security. Please arrive 15 minutes before departure time.</i>	

PROGRAM SCHEDULE

FRIDAY, 24 JULY 2015

5:30 PM	Dinner, Hamill Student Center
7:00 PM	Welcome , Introductions, Announcements Launch of the Nexus Community Connections Project <ul style="list-style-type: none"> • Randy Isaac, ASA Executive Director • Wes Odom, Local Arrangements Chair • Dominic Halsmer, Program Chair <div style="text-align: right;">Learning Resources Center (LRC), LRC 236–237</div>
7:30 PM	Plenary I , LRC 236–237 Moderator: Hannah Ryan Bethany Sollereeder , “Blood, Fire, and Fang: Listening for God in the Violence of Creation” (7)
8:30 PM	Mixer, Armand Hammer Alumni Student Center
8:30 PM	ASA Meeting Registration closes, LRC 204C
11:00 PM	Gabrielle Residence Hall check in closes, Gabrielle Residence Hall Lobby

Please note: Abstracts are found on the page numbers within the parentheses.

SATURDAY, 25 JULY 2015

7:00 AM	Breakfast, Hamill Student Center		
8:00 AM	Meeting Registration opens, LRC 204C		
8:00 AM	Devotions , LRC 236–237 Worship leader: Jonathan Swindal Devotional: Kenneth Wolgemuth		
8:45 AM	Plenary II , LRC 236–237 Moderator: Ed Decker Alister McGrath , “Natural Theology: Seeing God’s Fingerprints in Creation” (7)		
9:45 AM	Exhibit and Book Room opens, LRC 204E		
9:45 AM	Beverage Break, LRC Lobby		
10:15–11:45 AM	I.A: Revelation –LRC 204B Moderator: Joel Gaikwad	I.B: Philosophy –LRC 236–237 Moderator: Greg Bennett	I.C: Sustainable Development –LRC 235 Moderator: Ken Wolgemuth
10:15 AM	Matthew Fleenor (9) “Nature as Special Revelation: Scientists as 21st Century Monastics and Glory as Voice”	William Collier (9) “The Necessity of a Polanyian Perspective in the Science-Christianity Dialogue”	Jack Swearingen (9) “The Sonoma-Marín Area Rail Transit (SMART) Project: Collision of Technical, Political, and Social Forces”
10:45 AM	Robert Leland (10) “Vibrational Gyroscopes in Instrumentation and in Creation”	Douglas Olena (10) “Information, Method, and Ethos: Production of a Scientific Person”	Keith Miller (10) “The Present Impact of Global Climate Change: Creation’s Call to Action”
11:15 AM	Michael Keas (11) “A New Kind of Value: Life-Functional Complex Specified Information”	Edward Davis (11) “Is Christian Belief Conducive to Doing Good Science?”	David Winyard Sr, Christopher Benek, and Micah Redding (11) “Technological Enhancement: What’s a Christian to Do?”
11:45 AM	Session 1 ends		
12:00 PM	Lunch, Hamill Student Center		
12:00 PM	Christian Women in Science (ASA Affiliate) Lunch—All women are invited to sit in the reserved section of the cafeteria.		
1:00–2:30 PM	II.A: CWIS (Christian Women in Science) –LRC 204B Moderator: Gayle Ermer	II.B: Earth Science –LRC 236–237 Moderator: Enrique Valderrama	II.C: Theology –LRC 235 Moderator: Robert Leland
1:00 PM	Faith, Gender, Career Panel Discussion Part 1: Early Career Issues (12) Panelists: Kathryn Applegate, Lynn Billman, Anne Marie Thro, Faith Tucker, and Leslie Wickman	Gregory Bennett (12) “God’s Activity in the Earth Sciences: Scientific Observations and Pastoral Considerations of Biblical Texts”	Mitchell Mallary (12) “Beyond Natural Theology: Toward a Theology of Nature”
1:30 PM	Faith, Gender, Career Panel Discussion Part 2: Family Management Issues (13) Panelists: Kathryn Applegate, Lynn Billman, Anne Marie Thro, Faith Tucker, and Leslie Wickman	Jeffrey Lamp (13) “From the Panhandle to the Holy Land: Reading the Babylonian Exile through the Dust Bowl”	David Larrabee (13) “Listening for Nature’s Voice in God’s Word: Who Speaks for Creation?”
2:00 PM	Faith, Gender, Career Panel Discussion Part 3: Mid-Career Issues (14) Panelists: Kathryn Applegate, Lynn Billman, Anne Marie Thro, Faith Tucker, and Leslie Wickman	Kenneth Wolgemuth (14) “God’s Voice in Geology: Earth Engineered for Discovery”	Denis Lamoureux (14) “The Cosmic Fall and Natural Evil: Biblical Considerations”
2:30 PM	Refreshment Break, LRC Lobby		

SATURDAY, 25 JULY 2015

3:00–5:00PM	III.A: Mind Sciences –LRC 204B Moderator: Andrea Walker	III.B: Information and Complexity –LRC 236–237 Moderator: James Johansen	III.C: Ethics –LRC 235 Moderator: Leslie Wickman
3:00 PM	John Vernon (15) “Personality Type, Anxiety, and Sleep”	Walter Bradley (15) “ <i>The Mystery of Life’s Origin: Reassessing Current Theories (Again)</i> ”	Ann Marie Thro (15) “Plant Breeding Needs You”
3:30 PM	Janet Warren (16) “Through a Glass Darkly: Human Hindrances to Hearing the Voice of God”	Randy Isaac (16) “The Uniqueness of DNA Information”	Leslie Wickman (16) “Dietary Considerations for Christians”
4:00 PM	Robert Larzelere (17) “Usefulness of a Dialectical Model for Resolving Apparent Contradictions between Common Scientific and Christian Conclusions: Example of Disciplinary Spanking”	James Johansen (17) “The Nature of Genomic Information”	Francis Umesiri (17) “Fasting: At the Intersection of Science and Listening Faith”
4:30 PM	Jennifer Gruenke (18) “Christian Faith, Biological Reductionism, and Consciousness”	Loren Haarsma (18) “ <i>Pykaryotes: Evolving Interlocking Complexity by Darwinian Mechanisms</i> ”	Bill Roundy (18) “Created Male and Female: Or Male, Female, and Intersex”
5:00 PM	Exhibit and Book Room closes, LRC 204E		
5:00 PM	Meeting Registration closes, LRC 204C		
5:30 PM	BBQ Picnic, Hammer Center		
6:00 PM	Sand Volleyball Tournament*		
7:00 PM	Movie <i>Gravity</i> (2013) starring Sandra Bullock and George Clooney, Hammer Center		
7:00 PM	CWIS Meeting (open to all), Fenimore Room in the Hammer Center		
9:00 PM	InterVarsity Reception, LRC 204A		

*The sand volleyball tournament is intended to be a time when the ASA family can get together and have some good clean(?) fun. Everyone is encouraged to participate; from the ultra-competitive to the just-for-fun crowd. There are no separate divisions for beginner or expert; we’ll all be in the same bracket. So get ready to encourage one another, and also cut each other some slack. That’s what families do.

Standard volleyball rules apply, such as no more than 3 hits per side and no touching the net, but we will not be super-picky about how you hit the ball. Just try not to lift it. Teams can have anywhere from 2 to 6 people, with any combination of males and females. You can form your own teams before the conference, or we can put you on a team when you get here.

Matches will be self-refereed and self-scored. Two out of three teams will advance from each of two pools to square off in a four team playoff. Pool play will start at 6 pm Saturday and continue until dark on the two sand courts behind Lake Evelyn.

SUNDAY, 26 JULY 2015

7:30 AM	Breakfast, Hamill Student Center
9:00 AM	Worship , Kennedy Chapel in Christ’s Chapel Building Worship leader: Jonathan Swindal Minister: Larry Hart , Professor of Theology and beloved Chaplain of the Faculty at Oral Roberts University Offering: John3:16Mission: Reclaiming Lives; Restoring Hope , a ministry in Tulsa to the poor and homeless

10:30 AM	Meeting Registration opens, LRC 204C		
10:30 AM	Exhibit and Book Room opens, LRC 204E		
10:30 AM	Beverage Break, LRC Lobby		
11:00 AM	Plenary III, LRC 236–237 Moderator: Michael Keas Esther Meek, “Covenant Realism: How Love Is at the Core of All Things” (8)		
12:00 PM	Lunch, Hamill Student Center		
1:15–3:15 PM	IV.A: Design in Nature –LRC 204B Moderator: Dominic Halsmer	IV.B: Education-1 –LRC 236–237 Moderator: Hal Reed	IV.C: Biology –LRC 235 Moderator: Dave Steensland
1:15 PM	Dominic Halsmer and John Voth (19) “Reframing Fine-Tuning in Terms of Engineered Affordances”	Kathryn Applegate (19) “BioLogos Outreach to Scholars, Pastors, and Teachers”	Perry Marshall (19) “Evolution 2.0: The Miracle of Evolution, and the Story Neither Side Is Telling”
1:45 PM	AJ Boulay (20) “The Singularity, Human-Computer Interaction, and God’s Design in Nature”	Stephen Moshier (20) “A College-Level Textbook: Understanding Scientific Theories of Origins (with Biblical and Theological Perspectives)”	Harry Poe (20) “Intuition and Science: What the Data Does Not Say about Adam and Eve”
2:15 PM	Man Chan (21) “Fine-Tuning and Theodicy”	Hal Reed (21) “How to Encourage Students to Think and Analyze the Creation-Evolution Controversy”	Fredy Saudale (21) “Epigenetic Regulation of Transposable Elements in Genome Evolution: Chance, Teleology, and God’s Providence Revisited”
2:45 PM	Philip Carlson (22) “Biomimicry in Chemistry: Utilizing Created Things for Scientific Inspiration”	Paul Arveson and Jennifer Wiseman (22) “The AAAS DoSER Perceptions Project: Bringing Scientists and Religious Leaders Together”	David Wilcox (22) “Making Adam: Could the Image of God Have Been Produced by Natural Selection?”
3:15 PM	Refreshment Break, LRC Lobby		
3:45–5:15 PM	V.A: Creation Care –LRC 204B Moderator: John Korstad	V.B: Education-2 –LRC 236–237 Moderator: William Collier	V.C: Divine Action –LRC 235 Moderator: Daniel Asher
3:45 PM	Oscar Gonzalez (23) “Reception of the Creation Care Principle by Pentecostal Communities in the Andes”	Gary Fugle (23) “Evolution, Worship, and the Gospel”	George Murphy (23) “Clarity About Divine Action: Prayer, Causal Joins, and Kenosis”
4:15 PM	John Korstad (24) “Uniting Practical Creation Care and Excellent Academics in Science Courses at Christian Universities”	Faith Tucker (24) “Portraits of a Christian Science Teacher”	Steve Huffey (24) “The Foundation for Faith and Science: Why did God Create? Hearing His Plan in the ‘7th Day’”
4:45 PM	Tristan Pacba and Joseph Steidl (25) “Sustainable Water Reclamation for Healthier Living”	Gerhard Mensch (25) “Expecting a Paradigm Shift in Christian Education as a Driver of STEM”	
5:15 PM	Exhibit and Book Room closes, LRC 204E		
5:15 PM	Meeting Registration closes, LRC 204C		
5:30 PM	Dinner, Hamill Student Center		
6:30 PM	State of the ASA, LRC 235		
7:30 PM	Communications Meeting, LRC 235		
9:00 PM	Students and Early Career Scientists Meet the Plenaries, LRC 204A		

MONDAY, 27 JULY 2015

7:00 AM	Breakfast, Hamill Student Center		
8:15 AM	Meeting Registration opens, LRC 204C		
8:15 AM	Devotions , LRC 236–237 Worship leader: Jonathan Swindal Devotional: Leslie Wickman		
9:00 AM	Exhibit and Book Room opens, LRC 204E		
9:00–10:30 AM	VI.A: Biblical Studies –LRC 204B Moderator: Jim Shelton	VI.B: Cosmology –LRC 236–237 Moderator: Andrew Lang	VI.C: Missions –LRC 235 Moderator: P. Wesley Odom
9:00 AM	Alan Dickin (26) “The Need to Re-examine Noah’s Experience of the Flood”	Steven Ball (26) “Cosmology for Everyone”	Benjamin Lee (26) “Cross-Cultural Missions as a Scientist”
9:30 AM	Dick Fischer (27) “Historical Adam: Identifying the Time, Place, and Cultural Setting of the First Man in Biblical History”	Gerald Cleaver (27) “Multiverse: God’s Indeterminacy in Action”	William Jordan (27) “Using Natural Fiber Reinforcement for Adobe Brick Making”
10:00 AM	Nathaniel Kidd (28) “Some Comments on the Would-be Science of Angels”	Andrew Lang and Caleb Lutz (28) “Naïveté in Science: The Ramifications of Psychological Nativism and Cognitive Modules on the Many Worlds Interpretation of Quantum Mechanics”	Joel Gaikwad (28) “Biotechnology, Genetic Engineering or Playing God?”
10:30 AM	Beverage Break, LRC Lobby		
11:00 AM	Exhibit and Book Room closes, LRC 204E		
11:00 AM	Plenary IV , LRC 236–237 Moderator: William Jordan Amos Yong , “The Breath of God and the Life of Nature: Toward a Pneumatology-Science Dialogue” (8)		
12:00 PM	Lunch, Hamill Student Center		
12:00 PM	Meeting Registration closes, LRC 204C		
3:00 PM	Gabrielle Residence Hall check out closes, Gabrielle Residence Hall Lobby		

SUNDAY WORSHIP

Guest Speaker
Larry Hart

Larry Hart (PhD, MDiv, Southern Baptist Theological Seminary in Louisville, Kentucky; BA, Oral Roberts University) is Professor of Theology at the Oral Roberts Graduate School of Theology and Ministry. For many years he served in pastoral ministry in Indiana, Kentucky, Oklahoma, Texas, and Florida. During that time, he planted two churches, one in Kentucky and one in Oklahoma. Dr. Hart came to ORU in 1979 and served as the university’s chaplain from 1981 to 1984. He has taught in the ORU Graduate School of Theology and Missions for more than 20 years.



Worship Offering

will support the **John3:16Mission**

Founded in 1952, John 3:16 has earned the reputation as one of Tulsa’s most trusted and effective ministries to the poor, hungry, and homeless. The Mission has served more than 4 million meals and provided over 1 million nights of shelter. It also assists poor families and children by offering food, clothing, and programs including arts enrichment, literacy, and recreation.



Learn more about John3:16Mission at JOHN3:16MISSION.ORG.

PLENARY SESSIONS

Friday, 24 July 2015

7:30 PM

Blood, Fire, and Fang: Listening for God in the Violence of Creation

Bethany Sollereeder

We are accustomed to listening for God in the harmonies and beauties of creation. The playful kitten, the transcendent landscape, and the unexpected altruism are all consistent with our understanding of God. They speak to us easily of the themes of love and creativity. But it does not take long acquaintance with the natural world before darker and more threatening themes emerge. Parasites, natural disasters, disease and violence all seem to mar nature's symphony of praise to a good, loving, and powerful Creator God. This presentation is an attempt to listen carefully to the less appealing aspects of the created world, and to hear the report they give about the love that formed the cosmos.



Bethany Sollereeder is a Research Coordinator at the University of Oxford. Her first degree was in intercultural studies and theology in Edmonton at Vanguard College, and then she pursued the theological questions regarding evolution and suffering through a Master's degree at Regent College, Vancouver and a PhD at the University of Exeter, under Christopher Southgate's supervision.

Bethany speaks at a wide range of events, from international conferences to local churches. When she is not engaged in academic pursuits, she enjoys hiking, horseback riding, reading novels (particularly those of "the Inklings"), and taking in England's rich history.

Saturday, 25 July 2015

8:45 AM

Natural Theology: Seeing God's Fingerprints in Creation

Alister McGrath

There is a new interest in the field of natural theology, often on the part of natural scientists who can see clear connections between their faith and their professional work. This lecture will explore contemporary debates about natural theology and assess their relevance for the conference theme. Five main models of natural theology will be considered, before focussing on the idea of the Christian faith providing a "lens" through which the natural world can be seen in focus, allowing us to discern it as the handiwork of God. The lecture will draw particularly on insights from the writings of C. S. Lewis, Charles A. Coulson, and John Polkinghorne.



Alister McGrath is the Andreas Idreos Professor of Science and Religion at Oxford University. After an undergraduate degree in chemistry, McGrath pursued research in molecular biophysics, before switching to theology in order to lay the foundations for a program of engagement in science and religion.

As a former atheist, McGrath is especially interested in the use of science in recent "New Atheist" apologetics, especially in the writings of Richard Dawkins. He has published widely, and is author of the award-winning work C. S. Lewis—A Life (2013), as well as numerous works dealing with the interface of science and faith.

Special note: Alister will join us live via virtual connection to address questions regarding his prerecorded lecture.

PLENARY SESSIONS (CONT'D)

Sunday, 27 July 2014

11:00 AM

Covenant Realism: How Love Is at the Core of All Things

Esther Lightcap Meek

Covenant epistemology, my own epistemic proposal, enjoins knowers to go about knowing as cultivating an interpersonal relationship with something that we want to know. This implies that we see reality as person-like. Covenant epistemology has developed from Michael Polanyi's epistemology and from his innovative and profound realist thesis that the real "is that which manifests itself indeterminately in the future." It also takes seriously scripture's teaching that creation is literally the word of the Lord, in every atom and every instant—love is at the core of all things. This lecture will develop these claims and explore their implications for the nature of reality itself, specifically attending to reality's dynamic generativity.



Esther L. Meek (PhD, Temple University; MA, Western Kentucky University; BA, Cedarville College) is Professor of Philosophy at Geneva College in Western Pennsylvania, and Visiting Professor of Apologetics at Redeemer Theological Seminary in Dallas, Texas. Esther is the author of *Longing to Know: The Philosophy of Knowledge for*

Ordinary People (Brazos, 2003), *Loving to Know: Introducing Covenant Epistemology* (Cascade, 2011), and *A Little Manual for Knowing* (Cascade, 2014). Her current book project is an updating and revising of her 1983 doctoral dissertation titled *Contact with Reality: Polanyi's Realism and Its Value for Christian Faith* (Cascade, forthcoming).

She has three daughters, Starr, Anastasia, and Stephanie; three sons-in-law, Alex, Evan and Garrett; and two grandchildren, August and Joanna.

Monday, 28 July 2014

11:00 AM

The Breath of God and the Life of Nature: Toward a Pneumatology-Science Dialogue

Amos Yong

The theology-and-science dialogue is developing in some circles to engage specifically Christian trinitarian considerations. This lecture focuses on the turn to pneumatology in this regard as requisite for, complementary to, and supplementary of this wider trinitarian theological endeavor. Pentecostal perspectives—those related to the Day of Pentecost narrative in Acts 2 and derived also from the modern Pentecostal movement and its spirituality—are particularly engaged in thinking pneumatologically about theology of nature and about methodological implications for trinitarian theology and its interfaces with modern science.

Amos Yong is Professor of Theology and Mission and director of the Center for Missiological Research at Fuller Theological Seminary in Pasadena, California. His graduate education includes degrees in theology, history, and religious studies from Western Evangelical Seminary (now George Fox Seminary) and Portland State University, Portland, Oregon, and Boston University, Boston, Massachusetts, and an undergraduate degree from Bethany University of the Assemblies of God. He has authored or edited over thirty volumes.



He and his wife, Alma, have three children—Aizaiah (married to Neddy), on the pastoral team at New Life Church (Renton Washington) and in a masters in theology program at Northwest University (Kirkland, Washington); Alyssa, a graduate of Vanguard University (Costa Mesa, California); and Annalisa, a student at Point Loma University (San Diego, California). Amos and Alma reside in Pasadena, California.

I.A: REVELATION

Saturday, 25 July 2015

10:15 AM

**Nature as Special Revelation:
Scientists as 21st Century Monastics
and Glory as Voice**

Matthew C. Fleenor

Although traditionally viewed as apparent to all people, understanding God's voice in nature requires special interpretation that is not available to all. The concepts of *adequatio* (Plotinus via Schumacher) and *inscape* (Hopkins via Cotter) are not neutral regarding our sense of revelation but imply a narrowing of both message and audience regarding God's voice. For these reasons, I hold that interpreting the voice of God from studies in the physical sciences could be viewed as special revelation.

Since scientists maintain a proper intellectual fitting (*adequatio*) to understand and interpret God's voice in nature, I argue that the posture for scientists is similar to that of traditional monasticism. For example, scientists sit in silence, ruminate over their findings, and proceed with cautious creativity just as their monastic counterparts. Interpretation by the scientist comes from our experiences with God as a result of doing science, rather than our interpretation resulting from our scientific findings.

Given a scientist's monastic posture, a model is presented that shows how God's voice comes to us through nature (*inscape*). In Psalm 29, the author's primary interpretative tool for God's voice is God's glory. God's glory is the revelation of God's unmistakable identity as Creator. When rightly heard and understood, glory communicates on two distinct levels—both regarding the character of God and telling us about our own character and identity. In two concrete examples of this process, I present my own experiences as an astronomer with multi-wavelength synthesis and cosmological simulations.

I.B: PHILOSOPHY

Saturday, 25 July 2015

10:15 AM

**The Necessity of a
Polanyian Perspective in the
Science-Christianity Dialogue**

William B. Collier

In 2006, in Budapest, the daughter-in-law of the deceased scientist/philosopher Michael Polanyi and wife of the Nobel Laureate John Polanyi told me, "Everybody reads him!" Michael Polanyi's vision of science has immense ramifications for the science-faith dialogue if the concept of tacit knowledge is taken seriously.

The actual practice of science is impossible without huge components of "personal knowledge," and this reality casts a long shadow over the concepts of the grand theory of everything, the epistemology of science, and on what type of footings science and religion should address each other.

This presentation will attempt to bring a Polanyian perspective on some of the issues of the science-faith dialogue, why physical scientists and biologists often differ on historically based sciences, what Spirit-empowered Christianity brings to the table of the science-faith dialogue, and warnings about what the future may hold if Polanyi's ideas on moral inversion are accurate.

**I.C: SUSTAINABLE
DEVELOPMENT**

Saturday, 25 July 2015

10:15 AM

**The Sonoma-Marín Area Rail Transit
(SMART) Project: Collision of Technical,
Political, and Social Forces**

Jack C. Swearingen

In 2008, after ten years of planning and campaigning, Marin and Sonoma Counties (CA) approved a quarter-cent sales tax to finance construction of a 70-mile commuter rail system from the Larkspur ferry to Cloverdale. The purposes are to relieve congestion along parallel highway 101, lessen GHG emissions, and reduce dependence on imported oil. But the project has had to overcome an astonishing array of obstacles.

The first and largest was the 2008 recession. Opponents minimize the benefits and insist the funds would be better spent on widening the freeway—while they claim that the train will stimulate population growth sufficient to destroy their way of life. Environmental permits have been slow and NIMBY lawsuits have cost millions.

As Chair of an advocacy group called *Friends of SMART*, the author has worked in support of the project since 2003. In 2010 opponents sought to repeal the sales tax. *Friends* formed a coalition of business, labor, environmental, and civic organizations to defeat the repeal. *Friends* continue to write letters to editors, make presentations at community meetings, and speak at SMART Board meetings. Some of the criticism is valid—or at least reasonably well posed—and *Friends* also criticizes when we believe it warranted. But we attempt to do it without providing ammunition for those who would terminate the whole project.

The author will describe the litany of obstacles the project has had to overcome, defend the project as an example of biblical stewardship, and explain why his work could be characterized as a calling.

I.A: REVELATION (CONT'D)	I.B: PHILOSOPHY (CONT'D)	I.C: SUSTAINABLE DEVELOPMENT (CONT'D)
<p>Saturday, 25 July 2015 10:45 AM</p>	<p>Saturday, 25 July 2015 10:45 AM</p>	<p>Saturday, 25 July 2015 10:45 AM</p>
<p align="center">Vibrational Gyroscopes in Instrumentation and in Creation Robert Leland</p>	<p align="center">Information, Method, and Ethos: Production of a Scientific Person Douglas F. Olena</p>	<p align="center">The Present Impact of Global Climate Change: Creation's Call to Action Keith B. Miller</p>
<p>Many authors, both Christian and secular, have observed that many biological systems reflect engineering design, and in fact, very good engineering design. We see the wisdom of God in these designs. This presentation considers one such system, the vibrational gyroscope.</p> <p>Vibrational gyroscopes are used to measure rate of rotation. These are inertial measurements, and hence can be made without contact or communication with any external reference point. This makes them very useful for applications on vehicles such as aircraft, spacecraft, and automobiles. Rather than use a rotating element, they contain a vibrating structure. Under rotation, this structure experiences a Coriolis force, and the effects of this force can be measured and used to determine the rotation rate.</p> <p>Much work has been done on designing, fabricating, and marketing MEMS (Micro Electrical Mechanical Systems) vibrational gyroscopes, which are similar in size and fabrication process to integrated circuits. The presenter was involved in the development of a MEMS gyroscope for small aircraft navigation. During this effort, it became apparent from the literature that a number of insect species also contained vibrational gyroscopes used as rotation sensors.</p> <p>This presentation will explore the nature of human designs for vibrational gyroscopes, and compare them with those in insects from a designer's point of view in terms of structure, use, and advantages for survival.</p>	<p>This presentation specifically addresses the question of science education: How do we faithfully and sustainably transmit scientific information to the next generations?</p> <p>Is science a body of knowledge? Only to an outsider. There is no fixed thing called "scientific information." Though scientific information is the result of scientific activity, it is not science's reason for being. But if the requirement for education is not explicitly the transmission of information, is it then the scientific method that should be transmitted? Unfortunately, the method varies as widely as the projects the scientist undertakes. It is rather the ethos under which one practices science that is of the greatest importance.</p> <p>A scientific ethos will be proposed as that which provides the most sustainable product of an education sympathetic to science. Like Aristotle's ethics, the question becomes no longer what I should do, but what I should become. The foundation of an education sympathetic to science becomes not an adherence to a doctrinaire status quo, but a project of the self on the self, making one the most suitable sort of person to practice science as a lifestyle.</p> <p>The product of a scientific education, alongside learning a general discipline of inquiry and lab technique, should be the production of a scientist whose concern for truth and their own integrity trumps adherence to any particular scientific, theological, or other program.</p>	<p>The post-industrial trend of increasing global average temperatures has now produced significant observable changes in the atmosphere, oceans, and biosphere that call out for action by the church. That these global changes are being substantially driven by human activities, including fossil fuel consumption and land use, accentuates the importance of a response by those called by God to be stewards of creation, and neighbors to their fellow human beings.</p> <p>The various trends observable in our atmosphere, oceans, landscapes, and biosphere are sending a clear message that our personal and societal choices are resulting in significant changes to our earth. These climate-driven changes include melting glaciers and thawing permafrost, rising sea levels, ocean acidification, migration of plant and animal species, changing weather patterns, and increases in extreme weather events such as drought, heat waves, and floods. These effects are not future predictions but current realities, and they call for a response from the church.</p> <p>Such changes will have significant negative consequences for our fellow human beings (especially the poorest and most vulnerable) and for many other creatures that share our world. As God's stewards of creation and members of Christ's kingdom, we should seek ways to reduce our impact on the earth's climate, and serve those most severely affected.</p>

I.A: REVELATION (CONT'D)

Saturday, 25 July 2015

11:15 AM

A New Kind of Value: Life-Functional Complex Specified Information

Michael Keas

In this presentation, I shall argue that complex specified information (CSI) is (1) the central unifying feature of life, (2) a kind of value, and (3) objective. In support of my first major thesis, I show that the CSI basis of life resides at three interacting levels: (i) cosmic fine-tuning for a life supportive environment, (ii) genetic and epigenetic information within biological life, and (iii) the creative capacity of intelligent life to generate cultural CSI, for example, literature, technology, and science.

In support of my other major theses (that life-functional CSI is a kind of value and objective), I show that life-functional CSI shares traits (normativity, gradedness, and rarity) in common with the three classical values—epistemic, moral, and aesthetic. Furthermore, I argue that informational value constitutes a more clearly objective kind of value that undergirds the objectivity of the three classical values.

A corollary result of my investigation will be that objective informational value is more fundamental than (and unifies in certain respects) the classical values.

I.B: PHILOSOPHY (CONT'D)

Saturday, 25 July 2015

11:15 AM

Is Christian Belief Conducive to Doing Good Science?

Edward B. Davis

I argue that Christian faith often complements the picture of the world coming from the sciences, helping us to achieve a deeper understanding of *both* the way the world is and *how* we should go about understanding it, while providing a powerful motive for investigating nature.

The Christian doctrine of creation help us to understand *more* of reality than science alone can study—including the very possibility of science itself as a form of knowledge about nature.

I.C: SUSTAINABLE DEVELOPMENT (CONT'D)

Saturday, 25 July 2015

11:15 AM

Technological Enhancement: What's a Christian to Do?

David C. Winyard Sr, Christopher Benek, and Micah Redding

According to some futurists, a technological convergence will soon transform life as we know it, eliminating disease, ignorance, poverty, death, and other limitations associated with the human condition.

Such developments are often associated with the eschaton, but only a few Christians seem pleased with this vision. They practically equate Christianity with transhumanism, noting that God-given creative powers are at work in technology development.

Other Christians are skeptical, believing that technology—useful as it is in mitigating the effects of the Fall—is incapable of effectively dealing with sin and its effects. To them, transhumanism is just another postmillennial attempt to “immanentize the eschaton.”

A new development in this techno-theological standoff is the establishment of a *Christian Transhumanist Association* (CTA). Its stated goal: “To actively pursue the development and utilization of human technology so as to participate in Jesus Christ’s redeeming purposes in the world,” as guided by the Great Commandments: “Love the Lord your God with all your heart, soul, mind, and strength . . . and love your neighbor as yourself.”

Beyond these generalities, what other biblical principles should shape the CTA and its work? What else might illuminate the challenges Christians face in their engagement with the emerging technoculture? What can the CTA reasonably accomplish?

II.A: CHRISTIAN WOMEN IN SCIENCE

Saturday, 25 July 2015 1:00 PM

Faith, Gender, and Career Panel Discussion Part 1: Early Career Issues

Moderator: **Gayle Ermer**

The purpose of this panel session will be to provide a forum for sharing personal experiences related to work and life balance in technical careers. Panel members in various career stages will suggest some best practices and allow for attendees (both female and male) to ask questions that will help address issues that arise in attempting to live out our Christian vocations in our STEM-related occupations as well as our family and church commitments. Emphasis will also be placed on ways to encourage spiritual development, manage stress, and find time for joy in leisure activities.

Part 1 of the panel discussion will focus on early career issues (e.g., establishing connections, making education and job choices, and defining success).

Panel Members:

- **Kathryn Applegate**, program director at the Biologos Foundation with a background in computational cell biology
- **Lynn Billman**, recently retired following a varied 26-year career at the National Renewable Energy Laboratory
- **Anne Marie Thro**, National Program Leader for Plant Breeding at the National Institute for Food and Agriculture, USDA
- **Faith Tucker**, high school astronomy and physics teacher, masters student in science education at Stanford University
- **Leslie Wickman**, professor and director of the Center for Research in Science at Azusa Pacific University and former engineer for Lockheed Martin Missiles and Space

II.B: EARTH SCIENCE

Saturday, 25 July 2015 1:00 PM

God's Activity in the Earth Sciences: Scientific Observations and Pastoral Considerations of Biblical Texts

Gregory Bennett

Observational data and tested theorems from sophisticated scientific discovery prove wholly consistent with the text that the writers of sacred scripture set forth thousands of years ago.

This session will explore some of those sacred texts relating to the earth sciences. We will explore texts that relate to Earth system relationships between geosphere, hydrosphere, biosphere, atmosphere, and the exosphere.

Why is this important? When science discovers and describes observations and theorems that mesh with our understanding about the nature and character of the biblical God, it is both pastorally encouraging and apologetically faith-building. Scientific understanding provides encouragement of God's consistency in operation whether in nature or in human lives, helpful for both pastoral and apologetic use.

Why else is this important? Scripture uses active words in explaining God's involvement with nature. However, current intelligent design vs. evolution vs. creationism arguments about causal agency tend to word arguments from deistic rather than theistic models, all but ignoring an option of God's continued personal and active agency in nature throughout time.

This session will make a case that a literal reading of sacred scripture within a scientific context supports the resurrection of a theistic model of causal agency in nature. Both science and sacred scripture reveal certain attributes of the Causal Agent, attributes uniquely those of the biblical God, by whose power and design the universe came into being and by whose providential hand the universe continues to operate.

II.C: THEOLOGY

Saturday, 25 July 2015 1:00 PM

Beyond Natural Theology: Toward a Theology of Nature

Mitchell D. Mallary

Through an examination of the various relationships between science and theology from the Enlightenment and scientific revolution onward, this presentation will offer a critical appraisal and challenge of "natural theology" as traditionally understood. The basic premise is that a *theology of nature* is more appropriate than *natural theology*. In other words, the task and scope of theology is to enquire into its subject, the Triune God revealed fully and completely in Jesus Christ through the power of the Holy Spirit; whereas the task and scope of the sciences is to enquire into the physical universe as such. It will thus be concluded that attempting to acquire genuine knowledge of God through nature is an unnecessary and potentially problematic endeavor if God has in fact made himself known completely in the Man of Nazareth.

A brief analysis of both the "revived natural theology" of John Polkinghorne and Steven Jay Gould's theory of Non-Overlapping Magisteria (NOMA) will be offered. Thereafter, both will be engaged at length with the theology of Karl Barth—the famous Swiss theologian who rejected natural theology as passionately as anyone ever has. Ironically, however, through an appeal to Jürgen Moltmann's theology of nature, it will be concluded that Barth may actually be the *key* to theologically engaging the sciences.

This insight, it will be argued, comes when we see that the sciences and theology are distinct disciplines that ultimately have no authority over the other. Unlike NOMA, however, a theology of nature will allow the theologian to engage the sciences and understand natural happenings through a "theological lens."

So yes, we can hear God's voice in nature. But if we desire to know the identity of this God, we must set our gaze completely upon Jesus Christ. Then and only then can we begin to explore how the Triune God of the Christian faith relates to, interacts with, and ultimately redeems the physical universe.

II.A: CHRISTIAN WOMEN IN SCIENCE (CONT'D)

Saturday, 25 July 2015 1:30 PM

Faith, Gender, and Career Panel Discussion Part 2: Family Management IssuesModerator: **Gayle Ermer**

The purpose of this panel session will be to provide a forum for sharing personal experiences related to work and life balance in technical careers. Panel members in various career stages will suggest some best practices and allow for attendees (both female and male) to ask questions that will help address issues that arise in attempting to live out our Christian vocations in our STEM-related occupations as well as our family and church commitments. Emphasis will also be placed on ways to encourage spiritual development, manage stress, and find time for joy in leisure activities.

Part 2 of the panel discussion will focus on family management issues (e.g., choices about family timing and size, daycare, and balance of responsibilities between spouses).

Panel Members:

- **Kathryn Applegate**, program director at the Biologos Foundation with a background in computational cell biology
- **Lynn Billman**, recently retired following a varied 26-year career at the National Renewable Energy Laboratory
- **Anne Marie Thro**, National Program Leader for Plant Breeding at the National Institute for Food and Agriculture, USDA
- **Faith Tucker**, high school astronomy and physics teacher, masters student in science education at Stanford University
- **Leslie Wickman**, professor and director of the Center for Research in Science at Azusa Pacific University and former engineer for Lockheed Martin Missiles and Space

II.B: EARTH SCIENCE (CONT'D)

Saturday, 25 July 2015 1:30 PM

From the Panhandle to the Holy Land: Reading the Babylonian Exile through the Dust Bowl

Jeffrey Lamp

Various passages in the Old Testament—particularly from Exodus, Leviticus, and various prophetic books—provide justification for God's judgment of sending Judah into the Babylonian exile. Two major justifications are given. The more commonly known is the unfaithfulness of the people to their covenant with God as evidenced by the sin of the people. Another less commonly known reason is the tendency to abuse the land granted to them by God as a trust.

The purpose of this presentation will be to examine this biblical data through the lens of the more recent example of the Dust Bowl to see how human sin and land abuse converge, resulting in people having to leave their land.

This presentation will demonstrate an approach to ecological hermeneutics—reading the Bible from an ecological perspective—that uses contemporary examples to organize and interpret biblical data in a fresh way in order to shed light on what the biblical record may have meant in its original setting and how that might be interpreted today. This mutually interpreting interplay between biblical texts and contemporary events will yield insights for the sustainable use of land in the present.

II.C: THEOLOGY (CONT'D)

Saturday, 25 July 2015 1:30 PM

Listening for Nature's Voice in God's Word: Who Speaks for Creation?

David A. Larrabee

The theme of this conference, "Hearing God's Voice in Nature," assumes a tripartite structure: humanity listening, God speaking, and a separate subservient nature. Ancient knowledge and modern science confirm our intimate connection and dependence on the biosphere. We are not separate from nature. As science advances, new questions arise, illuminating the scope of our ignorance. How do we obey the biblical command to serve creation in Genesis 2:15 without either the wisdom to know how our actions affect creation or the ability to hear nature's voice?

Several biblical scholars have taken on a project of looking at scripture through agrarian eyes in an attempt to recover the voice of nature within scripture. Today's world is increasingly urban which seems to limit the applicability of such an agrarian reading of scripture.

This presentation explores the possibility of a theology that places humanity within God's creation as a servant of creation in both agrarian and urban settings. As a servant of creation, it is part of our job to listen to the voice of nature, but how? Scripture provides examples of persons who listen to and speak for nature. Science provides another vehicle for listening for the voice of nature in both agrarian and urban settings. We must combine the insights of science and scripture to fulfil humanity's calling to listen to and speak for nature.

II.A: CHRISTIAN WOMEN IN SCIENCE (CONT'D)

Saturday, 25 July 2015 2:00 PM

Faith, Gender, and Career Panel Discussion Part 3: Mid-Career IssuesModerator: **Gayle Ermer**

The purpose of this panel session will be to provide a forum for sharing personal experiences related to work and life balance in technical careers. Panel members in various career stages will suggest some best practices and allow for attendees (both female and male) to ask questions that will help address issues that arise in attempting to live out our Christian vocations in our STEM-related occupations as well as our family and church commitments. Emphasis will also be placed on ways to encourage spiritual development, manage stress, and find time for joy in leisure activities.

Part 3 of the panel discussion will focus on mid-career issues (e.g., approaching tenure, dealing with gender bias, and modeling Christian faith in a secular setting).

Panel Members:

- **Kathryn Applegate**, program director at the Biologos Foundation with a background in computational cell biology
- **Lynn Billman**, recently retired following a varied 26-year career at the National Renewable Energy Laboratory
- **Anne Marie Thro**, National Program Leader for Plant Breeding at the National Institute for Food and Agriculture, USDA
- **Faith Tucker**, high school astronomy and physics teacher, masters student in science education at Stanford University
- **Leslie Wickman**, professor and director of the Center for Research in Science at Azusa Pacific University and former engineer for Lockheed Martin Missiles and Space

II.B: EARTH SCIENCE (CONT'D)

Saturday, 25 July 2015 2:00 PM

God's Voice in Geology: Earth Engineered for Discovery

Kenneth Wolgemuth

The Privileged Planet was published in 2004 and has the subtitle, "How Our Place in the Cosmos Is Designed for Discovery." The lead author is an astronomer so the cosmos is his laboratory. I am trained in geochemistry, so the earth is my laboratory.

In Genesis 1, "And God said" is recorded six times and they all refer to geology. So my life's work has the sense of observing the echoes of God's voice—in the oceans, in the earth, and in the atmosphere.

The composition of the earth is fine-tuned with radioactive atoms so there is a molten core that provides for a magnetic field that protects life from damaging cosmic rays. The geochemistry of the earth caused segregation of the lighter elements to form the crust, a series of a dozen major tectonic plates that move slowly and contribute to making the earth's surface habitable for life.

God engineered processes into the geology of the earth so that there are trillions of barrels of oil, along with other biodeposits and mineral resources, for the benefit of modern technological society. He also engineered processes that left timekeepers in geology such as tree rings, sedimentary varves, ice cores, radiocarbon, and long half-life radioactive decay timers.

II.C: THEOLOGY (CONT'D)

Saturday, 25 July 2015 2:00 PM

The Cosmic Fall and Natural Evil: Biblical Considerations

Denis O. Lamoureux

The traditional doctrine of the cosmic fall asserts that God launched natural evil upon the world because Adam sinned in the Garden of Eden. Rooted deeply in a concordist hermeneutic of Genesis 1–3, this doctrine claims that the Creator originally made a "very good" world (Gen. 1:31), and then, following Adam's sin, he "cursed" the earth (Gen. 3:17). John Calvin provides a classic example of this doctrine with divine judgment causing significant changes to the physical world, which he deemed as "evils"—death, corruption, disease, predation, inclement weather, noxious insects, etc.

This presentation argues that belief in the cosmic fall and natural evil is based ultimately in ancient science, ancient origins motifs, and the juxtaposition of two conflicting ancient phenomenological perspectives of the operation of nature. In particular, the Hebrew terms *tōb* (good) in Genesis 1 and *ʾārar* (curse) in Genesis 3 refer to nature's functionality and malfunctionality, respectfully. The optimistic Priestly writer perceived an idyllically bountiful creation, while the pessimistic Jahwist writer viewed a sinister dark world bound by death, suffering, and limited productivity. Consequently, the cosmic fall from an original idyllic state is an artifact of redaction.

This presentation challenges concordist interpretations of the Bible's grand metanarrative of Creation-Fall-Redemption, suggesting that there never was a cosmic fall with natural evil thrust upon the whole creation, and that there is no need for a cosmic redemption from the bondage of any curse. Instead, this metanarrative is an incident vessel that delivers the inerrant spiritual truths that God created the world, humans have fallen into sin, and Jesus redeems us from all our sinful acts.

This presentation concludes that the concept of natural evil has no place within the Lord's creation and that the fulfillment of theodicy is found only in Christ (Matt. 5:19).

III.A: MIND SCIENCES

Saturday, 25 July 2015

3:00 PM

Personality Type, Anxiety, and SleepJohn Vernon, Abel DeCastro, and
Payson Marsh

Faculty Mentor: Leslie Wickman

The purpose of this study is to investigate correlations between individual personality types, anxiety levels, and quality/quantity of sleep. It will also examine the relationships between these factors and various lifestyle choices or methods for coping with stress.

Our data collection will begin with a pilot study on a sample group of students from Azusa Pacific University who will take a series of tests, including personality tests and a sleep quality index. The personality tests determine the participants' personality types based on a series of multiple-choice questions. The sleep quality index determines the overall quality of their sleep based on a series of short answer questions.

Our hypothesis is that personality type affects sleep quality (e.g., certain personality types experience better quality of sleep). This study will provide important information on the relationship between personality type and sleep quality in an effort to have a better understanding of how factors such as anxiety and stress affect one's health in relation to sleep.

Additionally, by understanding the relationships between personality type, anxiety, coping methods, and sleep quality, it may be possible to develop more effective methods for coping with anxiety-producing circumstances and environments.

III.B: INFORMATION AND COMPLEXITY

Saturday, 25 July 2015

3:00 PM

The Mystery of Life's Origin: Reassessing Current Theories (Again)*

Walter L. Bradley

The question of where we came from begins with the origin of life, its how and its why. Louis Pasteur in 1859 proved with his brilliant, award-winning experiment that "spontaneous generation" does not occur. For the past 150 years, scientists have been searching for a plausible biochemical pathway from simple compounds such as water, hydrogen, methane, and carbon dioxide to complex molecular machines such as DNA, RNA, and protein.

Nobel Laureate (2013) George Whitesides, the world's most cited living chemist, in 2012 commented on the intellectual challenges the origin of life presents. After beginning his own work in this area several years earlier, Whitesides said,

I don't understand how you go from a system that's random chemicals to something that becomes, in a sense, a Darwinian set of [chemical] reactions that are getting more complicated spontaneously. I just don't understand how that works.

This presentation will explore how origin-of-life research findings of the last 75 years have helped to clarify the nature of the mystery of life's origin, while, in some ways, increasing the magnitude of the mystery. It will also explore what would be the theistic (or atheistic) implications if such an unlikely chemical pathway was discovered in the future.

*"Again" is with reference to the book that I previously co-authored, *The Mystery of Life's Origin: Reassessing Current Theories* and three subsequent book chapters, but redoing this assessment for at least the fourth time.

III.C: ETHICS

Saturday, 25 July 2015

3:00 PM

Plant Breeding Needs You

A. M. Thro

Plant breeding—"human-aided development of new plant cultivars or germplasm with needed characteristics"—is a good career choice for young people today, including Christians. It could be called "applied micro-evolution" based on scientific observations here and now.

A career in plant breeding can have an impact through practical solutions to real societal and environmental needs. At some level, plant breeding is an essential capacity for increasing nutritional value of human diets, for food security through maintaining productivity, for adapting plants to more complex climatic situations and production systems agriculture, and for many other goals. At the same time, a plant breeding career allows us to enjoy and marvel at the plant kingdom and the astounding wonders of genetics.

Plant breeding can be a career at various levels. For most jobs, a master's or doctoral degree are required. A general undergraduate biology major can be a starting point. Especially at the graduate level, and increasingly also undergrad, there are opportunities for scholarships, assistantships, and fellowships to study plant breeding.

Employment opportunities are in both public and private sector situations. A doctorate is needed for project-director plant breeding work, especially in the public sector. Post-docs are not typically required.

III.A: MIND SCIENCES (CONT'D)

Saturday, 25 July 2015 3:30 PM

**Through a Glass Darkly:
Human Hindrances to
Hearing the Voice of God**
E. Janet Warren

Biblical and Christian experiential literature is clear about the occurrence of divine-human communication. God speaks, humans listen. This occurs personally, communally, and generally—as in natural revelation. Unfortunately, the process is neither simple nor pure. Divine communication is always mediated through human finiteness: our brains, our language and culture, and our personal experience. Knowledge of human limitations is important when discerning the voice of God.

In this presentation, I will review theological aspects of hearing God's voice, including the nature of mediation, and then consider specific human hindrances to discernment. Limitations are both innate (neurocognitive structures) and acquired (culture, experience), although the two are intertwined. In particular, sin—our own and that of others—can be an obstacle to divine communion.

I suggest that awareness of human barriers to hearing the voice of God may, in fact, improve our ability to hear the voice of God.

**III.B: INFORMATION AND
COMPLEXITY (CONT'D)**

Saturday, 25 July 2015 3:30 PM

The Uniqueness of DNA Information
Randy Isaac

The remarkable similarities between the coded, hierarchical information in DNA and the information structure in human-designed systems has led many people to surmise that, by analogy, one can infer the influence of an intelligent agent in the generation of DNA information. However, a more thorough analysis reveals that DNA information is unique and clearly distinguishable from the information we use in our daily lives.

The meaningful function of DNA information is its biochemical activity within its environment, while the meaning of information in systems designed by intelligent agents is a concept assigned to a particular physical configuration. The genetic code that encrypts and decrypts the genes in our genomes is a particular chemical interaction mediated by ribosomes that are themselves defined by that genome.

In contrast, intelligent systems use codes for abstract concepts assigned by an intelligent agent to a physical configuration. These concepts are independent of the physical and chemical characteristics of that configuration.

The inherent biochemical function of DNA, in the context of a complex environment, is what uniquely distinguishes DNA information from that used in intelligent systems. One cannot infer, therefore, that an intelligent agent was necessarily involved in the generation of DNA information.

III.C: ETHICS (CONT'D)

Saturday, 25 July 2015 3:30 PM

Dietary Considerations for Christians
Kyle Louie, Christy Ailman, and
Calli Fuchigami
Faculty Mentor: Leslie Wickman

How often do we reflect upon what we eat? Many religions adhere to both regular and special occasion dietary regulations. While some Christian denominations practice dietary restrictions, the majority of Christian denominations do not. The authors contend that we have a responsibility to thoughtfully consider the consequences of our dietary choices as God-appointed stewards of the rest of creation. Our dietary decisions should reflect careful consideration of the ethical, theological, environmental, and health implications of the variety of dietary choices available to us.

We hypothesize that the healthiest dietary choices will also be the best for the environment, as well as the wisest from ethical and theological perspectives.

This presentation explores the full range of scriptural, theological, and ethical guidance on this topic, as well as scientific evidence from the environmental and health fields for the multidisciplinary implications of various dietary regimes. Diets considered will be Vegan, Vegetarian (Lacto-Ovo), Pescetarean, Fish & Fowl, White Meat, and Western/Omnivore.

Ethical considerations include the relationships between humans, animals and the environment. Theological implications are investigated through biblical literature and Christian tradition pertaining to how food choices influence one's relationship with God, as well as what it means for humans to have dominion over the rest of creation. Advantages and disadvantages of consuming various food types are discussed with respect to physiology and nutrition. Environmental and economic impacts of various types of food production and consumption are also examined.

III.A: MIND SCIENCES (CONT'D)

Saturday, 25 July 2015

4:00 PM

Usefulness of a Dialectical Model for Resolving Apparent Contradictions between Common Scientific and Christian Conclusions: Example of Disciplinary Spanking
Robert E. Larzelere

A Christian assumption that God's world is ultimately consistent with his Word implies that apparent contradictions between conclusions from scientific and Christian viewpoints are partly due to faulty interpretations in one or both of these perspectives. Accordingly, such contradictions hold unique potential for improving interpretations on both the scientific and biblically hermeneutic side.

This presentation summarizes the application of this dialectic in a 35-year research program on parental discipline on spanking and potential alternatives. The initial hypotheses to resolve the contradiction supported scientific opposition to all disciplinary spanking, but more recent research has identified five fatal flaws that pervade most parental discipline research.

Overcoming those flaws is necessary for a less biased, nuanced understanding of disciplinary spanking as well as alternative disciplinary tactics that parents could use instead. This has led to research making better distinctions than most parenting research makes, although not all the distinctions parents routinely consider.

This research program has paid off methodologically and substantively. It has shown ways to move beyond biased correlational evidence in research design, analyses, and meta-analyses. Substantive distinctions have been made between types of spanking shown to have better child outcomes than most alternative disciplinary tactics and overly severe corporal punishment, which has usually led to worse child outcomes.

Recent innovations show that the effectiveness of a range of disciplinary tactics varies by the predominant type of noncompliance shown by young preschoolers and by whether the research focuses on immediate, short-term, or long-term effects.

III.B: INFORMATION AND COMPLEXITY (CONT'D)

Saturday, 25 July 2015

4:00 PM

The Nature of Genomic Information
James Johansen

This presentation will summarize research done in cross-disciplinary integration. It will look at the nature of genomic information, and how the three perspectives listed below could relate. Do we understand genomic information better by integrating these perspectives?

Scientific perspective—A definition of science is discussed along with the complexity found in the cell and genomes. Three genomic exemplars are explored: (1) overlapping bi-directional protein sequences, (2) DNA poly-functionality with overlapping codes, and (3) standard codon table optimality. A high-level scientific assessment is done for each. Are conclusions made solely from measurable data adequate to provide enough explanatory power for these exemplars?

Theological perspective—God's omnipotence and infinity are considered and what impact utilizing them a priori has. Acknowledging the influences of infinity and unlimited power may impact understanding genomic information understanding. Additionally, sin as possibly seen in epigenetic overriding of gene expression is discussed. If humans can explore the world with only finite resolution and limited capacity, is it possible to detect and characterize signatures that extend beyond our abilities?

Ontological perspective—The impact of the physicalist and dualist ontologies are considered. An analogy is discussed that illustrates the different ontological frame of references. How could an ontological perspective limit or aid in determining explanatory scope?

With collaborative areas identified, perspective integration is explored. Six worldview alternatives with different opinions on science, theology, and ontology integration are assessed via a sensitivity analysis to highlight their explanatory power and the utility of integration.

III.C: ETHICS (CONT'D)

Saturday, 25 July 2015

4:00 PM

Fasting: At the Intersection of Science and Listening Faith
Francis E. Umesiri

Fasting has long been practiced by Christians as a spiritual discipline that provides ample opportunity for separation and consecration to God in prayer. In the past few decades, however, there are a substantial number of scientific studies indicating that fasting may have additional health benefits.

This talk provides a review of peer-reviewed scientific literature on the health benefits of fasting (defined either as 20–40% calorie restriction over a relatively long period of time or as intermittent fasting), specifically as it relates to reducing biological risk factors associated with diabetes, cancer, heart disease, memory loss, among others.

The talk ends by examining Christian perspective of fasting as an opportunity to humble ourselves to God, listen and reflect on the wonders of his love and creation.

III.A: MIND SCIENCES (CONT'D)

Saturday, 25 July 2015 4:30 PM

Christian Faith, Biological Reductionism, and Consciousness

Jennifer Gruenke

Biology is hierarchical, in the sense that organisms are made of organs, which are made of cells, which are made up of molecules, which are made up of atoms. Because of this, biology might be said to reduce to chemistry, and chemistry to physics.

This reductive approach works well for explaining the function of many biological systems, for example a kidney. Once you understand the kidney at the cellular and molecular level, how it produces urine becomes clear.

But one aspect of human biology, the relationship between the brain and consciousness, is difficult to explain from the point of view of biological reductionism. It is clear that certain parts of the brain are necessary for consciousness, but it is less clear that these parts of the brain are sufficient for consciousness, or even what sort of mechanism would allow physical neurons to create consciousness.

This creates what cognitive scientist and philosopher David Chalmers calls the “hard problem” of consciousness. How do qualia, experiences such as seeing the color blue or hearing a melody, come about given that light and sound waves seem like such different things from the experiences themselves?

This session will examine a range of ways that Christian faith can inform one’s interpretation of the biology of the brain and one’s approach to the hard problem of consciousness.

III.B: INFORMATION AND COMPLEXITY (CONT'D)

Saturday, 25 July 2015 4:30 PM

***Pykaryotes*: Evolving Interlocking Complexity by Darwinian Mechanisms**

Loren Haarsma

Mechanical devices such as clocks display interlocking complexity—remove one part and the whole thing might stop functioning. Clocks must be assembled “by hand.”

God’s creation, however, includes some systems in which interlocking complexity can self-organize and evolve. I will present the latest results on a computer model we have developed to study this.

Inspired by biological evolution, artificial organisms called *Pykaryotes* have genomes which direct them to gather chemicals from their environment, move, and build “proteins” and protein complexes from gathered chemicals. Under some conditions but not others, through mutation and natural selection, they evolve increasingly larger protein complexes showing interlocking interdependence.

I will discuss how the genomes of these organisms increase in both complexity and information content, and discuss connections to biological evolution.

III.C: ETHICS (CONT'D)

Saturday, 25 July 2015 4:30 PM

Created Male and Female: Or Male, Female, and Intersex

Bill Roundy

There has been a general consensus among Christians and non-Christians in our culture that everyone is either male or female.

Our culture’s change regarding our perceived sexuality is disturbing to many. The genitals and secondary sexual characteristics are more easily observed and perhaps more meaningful to the general public than the subjective feelings of those who are different. The genitals of normal men are not all the same, and the same is true of women. So it may not be surprising that a small percentage of us are intersex with ambiguous genitals: people with both male and female characteristics.

In this talk I will consider definitions of male and female. I will give evidence that each possible pair of definitions of male and female cannot fit all people. So some people are male by one definition and female by another definition. The definitions I will present are in terms of *gonads*, *chromosomes*, and *genitals*. Of course genes are involved. (I do not understand the characteristics of the mind/brain well enough to discuss them.)

The definition of “male and female” is important to understanding Genesis 1:27. God created humankind “as male and female” and created some of us intersex. One can also think about the diversity among followers of Jesus and how that diversity should not destroy or even affect our unity in following Jesus together. A diversity of views in the church may actually be advantageous.

IV.A: DESIGN IN NATURE

Sunday, 26 July 2015

1:15 PM

Reframing Fine-Tuning in Terms of Engineered Affordances

Dominic M. Halsmer and John Voth

The evidence for fine-tuning of physical constants, initial conditions, natural laws, and other features of the cosmos for life has become a significant part of the cumulative case for a theistic worldview. But it lacks a relational foundation that could provide potential support for Christian theism.

It is proposed that the evidence for fine-tuning be reframed in terms of affordances that evince a “Cosmineer” (Cosmic Engineer) who continually sustains and engages his creation to achieve his purposes. Exploring relational aspects of the “big picture” of process systems engineering and applying techniques from reverse systems engineering lend insight into who God is, and how he interacts with his creatures.

Affordances are simply relationships that provide capabilities to an end-user. Engineers create valuable affordances through the products and systems they devise for their customers. Smart phones, for example, afford communications, photography, data access, and many other capabilities that were thought to be impossible just a few years ago. In more complex systems, part-to-part affordances are recognized when one part of the system supplies something to another part of the system in the process of providing a capability to the user.

Affordances can be nested in both space and time if appropriate sequential dependencies are established, but this requires forethought, precision, and ingenuity. The universe is replete with nested affordances that appear to be directed toward the preparation and sustenance of life. This is powerful evidence, not only for intentionality and intelligence, but also for ingenuity, wisdom, and purposive love.

IV.B: EDUCATION-1

Sunday, 26 July 2015

1:15 PM

BioLogos Outreach to Scholars, Pastors, and Teachers

Kathryn Applegate

How is evolution being received in faith communities around the world? What curricula and videos will help Christian high school students avoid a crisis of faith over evolution? How does the theology of original sin intersect with the genetics of human origins?

To address these and other questions, BioLogos has supported 37 individuals and teams across North America and Europe since 2013 through its Evolution and Christian Faith (ECF) grants program. ECF sponsors projects and network-building among scholars, church leaders, and parachurch organizations to address theological and philosophical questions commonly voiced by Christians about evolutionary creation in a way that is relevant to the church.

Come for an overview of the great resources and new scholarship arising from this program.

IV.C: BIOLOGY

Sunday, 26 July 2015

1:15 PM

Evolution 2.0: The Miracle of Evolution, and the Story Neither Side Is Telling

Perry Marshall

Mired in politics and religion, Darwinists and design advocates alike have missed the most amazing story in the history of science. This talk chronicles my ten-year quest. It began with my professional work in IT, as author of the book *Industrial Ethernet*. DNA research led me to a remarkable discovery: a network of adaptive living systems, a “Swiss Army Knife” with five blades. Organisms use five amazing tools to alter their own genetic destiny. Evidence for a different kind of evolution—“Evolution 2.0”—has quietly accumulated for seven decades, backed by research of eminent scientists such as Barbara McClintock, Lynn Margulis, James Shapiro, Eva Jablonka, and Denis Noble.

Neo-Darwinists insist evolution happens by chance. Intelligent design advocates defy scientific consensus, maintaining that evolution is a fraud. But there is a third way. Evolution 2.0 is based on experiments which prove that, while evolution is not a hoax, neither is it random nor accidental. Changes are targeted, adaptive, and aware.

- Organisms re-engineer their genetic destiny in real time.
- Living things deploy amazing systems to re-design themselves.
- Every cell is armed with machinery for editing its own DNA.
- There have been 70 years of scientific discoveries—of which the public has heard nothing!
- Technical abilities of the genetic code witnessed by a communications engineer.
- An award offer received for answering the greatest question in all biology: Where does genetic information come from?

IV.A: DESIGN IN NATURE (CONT'D)

Sunday, 26 July 2015

1:45 PM

**The Singularity,
Human-Computer Interaction,
and God's Design in Nature**

AJ Boulay

It has been suggested that artificial intelligence (AI) associated with contemporary technology may soon become a threat to our humanity: "The Singularity" is a term applied to this kind of relationship between humans and technology. Some suggest that technological growth and progress should be attenuated and sometimes aborted with respect to the protection of our humanity. However, some important solutions may be found by considering the human part of technological relationships.

The study of human-computer interaction (HCI) is a field of computer science that develops new and better ways for humans to interact with technology: good HCI is associated with good design. Thus, by investigating how we understand creation in relation to our own creative abilities, we may be able to find solutions to the problem of the Singularity.

The way that we think and conceive of ourselves has always been influenced by technology. In the book of Genesis, the ancients saw husbandry as the pervasive technology, and agricultural metaphors that invoked the technology of that time were used to describe both God and humanity.

We witness the influence of technology today with regard to computing technology. By identifying and responding to the beckoning of God's design in nature, and through new application of HCI design, we will be able to develop AI and similar technologies in a way that enhances our humanity and describes God in a manner more fitting.

IV.B: EDUCATION-1 (CONT'D)

Sunday, 26 July 2015

1:45 PM

**A College-Level Textbook:
Understanding Scientific Theories
of Origins (with Biblical and
Theological Perspectives)**

**Stephen O. Moshier, Raymond J. Lewis,
Robert C. Bishop, Larry L. Funck, and
John H. Walton**

Theories of Origins is a general education science course taught at Wheaton College presenting mainstream scientific theories of origin with perspectives on the relationships between scientific and biblical accounts, Christian theology, and the history and philosophy of science.

Enabled by a BioLogos ECF grant, we are preparing a textbook to enhance student learning, facilitate development of similar courses in other Christian colleges and high schools, and provide a resource for personal study.

Providing a context for the rest of the book, *Part One* introduces the scope and methods of science and theology and develops a robust doctrine of creation.

Part Two on cosmic origins begins by exploring Genesis 1, followed by chapters on historical and contemporary cosmology.

Part Three covers the origin and geologic history of the earth, including a chapter on biblical claims concerning the Genesis flood.

The origin of life is examined in *Part Four*, including prebiotic chemistry, the origin of biological information, and alternative scenarios for life's origin.

Part Five covers the origin of species and life's diversity with modern and extended syntheses of evolution and evidence from fossils and genomes.

Part Six on human origins opens by exploring biblical claims concerning human origins and two chapters on evidence from physical anthropology, molecular biology, and human genome studies.

Each of parts two through six incorporate historical context and conclude with chapters relating the subjects to anthropic implications and further theological and biblical perspectives.

Part Seven provides a conclusion to the textbook with further reflections on theology and science, creation care, eschatology and views on teaching evolution.

IV.C: BIOLOGY (CONT'D)

Sunday, 26 July 2015

1:45 PM

**Intuition and Science: What the Data
Does Not Say about Adam and Eve**

Harry Lee Poe

Several years ago a firestorm broke out over what DNA research tells us about Adam and Eve. The actual study involved what Y-chromosome and mitochondrial studies can tell us about most recent common ancestors and the populations in which they lived.

On the internet, however, it was all a matter of charge and counter-charge over whether the Bible was true. The case illustrates how science and its claims can be distorted in the journey from scientific research to popular media.

This presentation will explore the limitations of this kind of study and the fallacies that may be incorrectly drawn from it. For instance, mitochondrial Eve was not the most recent common female ancestor; she was the most recent common female ancestor that can be identified by the methodology of the study.

A more recent common female ancestor would have been the mother of Y-chromosome Adam, but we do not have a scientific research model for identifying her. We know her by intuition—or logic. Intuition and logic are not the data of scientific research, but they are helpful tools in the interpretation of the data.

IV.A: DESIGN IN NATURE (CONT'D)

Sunday, 26 July 2015

2:15 PM

Fine-Tuning and Theodicy
Man Ho Chan

Recent research in science indicates that we are living in a fine-tuned universe. Only a very small parameter space of universal fundamental constants in physics is congenial for the existence of life. Some theistic scientists and philosophers propose that these fine-tuning phenomena support the existence of God. This is commonly known as the teleological argument.

In this presentation, I will show that certain properties of God can be deduced from this teleological argument. These properties are basically consistent with Christian theology. Furthermore, it can be shown that a particular form of theodicy is necessary for the teleological argument.

IV.B: EDUCATION-1 (CONT'D)

Sunday, 26 July 2015

2:15 PM

How to Encourage Students to Think and Analyze the Creation-Evolution Controversy
Hal C. Reed

College students are often challenged in their thinking when encountering evolutionary biology in depth for the first time. Students of faith and nonfaith often have many questions about the facts and theories of evolution, and their potential impact on their faith and worldview.

My approach to this challenge in the past 30 years of teaching biology courses is to equip students to analyze and think for themselves about the evidence, theories, and models of evolutionary thought and to avoid dogmatic assertions so prevalent in this arena.

I initially clarify the definitions of evolutionary terms and then dissect the broad evolutionary model into subcomponents (origins, microevolution, speciation, and macroevolution). We discuss the definition, limits, assumptions and types of science (observational, experimental, historical), types of evidence, extrapolation, and inference.

The various creation models are presented with respect to Christians who may have differing interpretations of Genesis. I attempt to do this in an environment that does not denigrate any particular view and emphasize that there are communities of believers that support each of the various creation models, and that each group wholeheartedly agree on the fundamental tenet of God as Creator and Sustainer of all creation.

The overarching goal is to challenge students to objectively analyze evidence and begin the journey of integrating their faith with the dynamic nature of science.

IV.C: BIOLOGY (CONT'D)

Sunday, 26 July 2015

2:15 PM

Epigenetic Regulation of Transposable Elements in Genome Evolution: Chance, Teleology, and God's Providence Revisited

Fredy Z. Saudale and Robert E. Larzelere

God's providence permeates the way he guides biological evolution to actualize specific genetic mutations that bring potential advantage to organisms. This is implied in the epigenetic regulation of transposable elements (TEs) in driving genome evolution.

TEs are short repeated and nonprotein-coding DNA sequences that have intrinsic capabilities to copy and insert themselves into other genomic regions. They have been regarded as selfish junk DNA due to their parasitic movement, by inserting their genetic elements within the genomes and their apparent nonfunctionality. Far from being junk DNA, TEs have recently been reported to play a key function in driving genomic evolution.

TE insertions generate mutations in the genome which are vital in providing the raw material for evolutionary innovation. TE insertions that have negative effects on the fitness of the hosts will be subject to negatively purifying selection. Most TE insertions that are neutral or only slightly deleterious will be fixed by random drift. The detrimental mutagenic activity of TEs must be tightly regulated while retaining their accumulation in the genome. For that purpose, hosts have employed defense cellular mechanisms as part of epigenetics.

Epigenetic processes through DNA methylation, histone modification, and RNA interference are able to switch TEs on or off. This suggests a finely-tuned balance between protecting the integrity of host genome from the invasion of TEs and regulating the activities of TEs in driving genomic evolution. Thus, epigenetic regulation of TEs and TE insertions-induced random mutation could reflect God's providence in fulfilling his purpose in biological nature.

IV.A: DESIGN IN NATURE (CONT'D)

Sunday, 26 July 2015

2:45 PM

Biomimicry in Chemistry: Utilizing Created Things for Scientific Inspiration

Philip Carlson

The field of biomimicry seeks to observe nature for inspiration to solve complex scientific and engineering/design problems. This field has yielded many exciting results, but is often hindered by a lack of fundamental understanding as to how nature has truly “solved” those problems.

A Christian worldview brings true coherence and purpose to the field of biomimicry. Observation of created things leads to a deeper appreciation and understanding for the problem at hand and allows one to hear God’s voice as communicated in nature. The wisdom of God is seen in his design of the objects utilized for biomimetic inspiration.

A true understanding of biomimetics as a study of God’s design, communicating his wisdom, purposefulness, creativity, resourcefulness and omniscience, should lead to a deeper love for God and bring us to a true worship and a sense of rightful awe.

Many of the developments from the field of biomimicry as they relate to physics and chemistry will be explored. Specific examples will be given wherein the more subtle aspects of the created things have led to the development of new materials and a revised scientific understanding within chemistry. Emphasis will be given on biomimetics and its relationship to chemistry, physical chemistry, and the development of new materials. Areas of biomimicry that have led to an increase in awareness of stewardship and sustainability within the chemical realm will be highlighted.

IV.B: EDUCATION-1 (CONT'D)

Sunday, 26 July 2015

2:45 PM

The AAAS DoSER Perceptions Project: Bringing Scientists and Religious Leaders Together

Paul Arveson and Jennifer Wiseman

The AAAS Dialogue on Science Ethics and Religion Program (DoSER) has, for the past three years, conducted a project sponsored by the Templeton Foundation to gain a deeper understanding of Americans’ perceptions of science.

During the past year, the project team conducted three all-day workshops in three cities around the US (Pasadena, Denver, and Atlanta). The workshops brought together about fifteen local evangelical pastors and fifteen local scientists or science educators. We selected scientists without knowing about their religious views or lack thereof.

The workshops included facilitated discussions led by staff of an outside contractor, Public Agenda. Briefings on a current scientific issue were presented by a local scientist. We also brought participants on field trips to a church or seminary and a science lab. As in the surveys, the majority of participants favored a “collaborative” relationship between science and religion.

There was remarkable civility and friendly dialogue among the participants, which was partly a consequence of the face-to-face experience. Most participants said they appreciated the workshop and learned something new.

Finally, we conducted three smaller workshops that focused on the mainline Protestant, Catholic, and Jewish communities. We conducted brainstorming sessions to identify possible future projects.

We will draw some conclusions about the perceptions of religious leaders toward science and vice versa, and suggest some practical steps that may be taken by ASA members and others to improve understanding and dialogue in the future.

IV.C: BIOLOGY (CONT'D)

Sunday, 26 July 2015

2:45 PM

Making Adam: Could the Image of God Have Been Produced by Natural Selection?

David L. Wilcox

Given evolution, what sorts of pressures might God have used to mold the unique qualities of our species? Though God acts continuously, there are indications of some unique changes in Africa around 250,000 BCE. Significant changes in climate and available resources forced certain populations to increase collective foraging and hunting—integrated social activities. Climate stress could cause the release of neural genetic diversity, for example, by mobilizing ALU transcripts to active genomic sites. Increased complexity at neural control sites would provide raw material for an intensified neuro-genetic selective regime based on the need to process social data.

The need to increase shared planning/coordinated hunting pushed cultural learning from simple imitation to structured instruction. This “Evolved Apprentice” model (Sterelvy) emphasizes the impact of language-based thinking on directed instruction in enhancing the retention and transmission of “expert” knowledge. Deliberately prepared learning environments produce an increasingly high-bandwidth intergenerational flow of information, although critical information will be lost if the knowledge of an expert “instructor” is lost—thus producing the partial reversals and spotty appearance typical of the ethnographic record. Likewise, parallel processing implies threshold effects, which will increase both stability (stasis) and rapid change of state.

Gradual genetic accumulation driven by selection for social complexity could produce sudden functional changes in humanity. Triggered by altered environments, selection shifts from gene→neuro→culture to culture→neuro→gene, producing innovation and societal change, locking in adaptive complexes and absorbing outliers. It could have been how God made us what we are.

V.A: CREATION CARE

Sunday, 26 July 2015

3:45 PM

Reception of the Creation Care Principle by Pentecostal Communities in the Andes

Oscar González

The rural communities in the Andean and Amazon region of South America have been Roman Catholic for almost 400 years. Now they are experiencing a massive conversion to Evangelicalism; Pentecostals are the most predominant denomination among them.

The tropical Andes is recognized as a hotspot for biodiversity, but it is also a region that is losing habitat at a rapid pace due to mismanagement of wild lands. For scientists who want to raise conservation awareness in the rural communities in this region, it is necessary to engage evangelicals or Pentecostal communities that have an important influence in local politics. The level of influence of the evangelical church on the behavior and decision making of communities and community members makes it critical to understand their views on nature and environmental conservation.

I conducted field work for my PhD in Interdisciplinary Ecology in the Andean and Amazon region of Huanuco, Peru, from 2011 to 2014. Here you will find several Pentecostal churches that are redesigning the social landscape. Approaching them with the principle of Creation Care; they showed interest in conservation and even allowed me talk to their congregations about why Christians should conserve the environment.

I will give the insights on how I was able to speak on Creation Care at the annual event of one of the most influential Pentecostal churches in the region and will relate the feedback that I received from those in attendance, providing suggestions on how to get Pentecostals and evangelicals of the Andes involved in conservation and management.

V.B: EDUCATION-2

Sunday, 26 July 2015

3:45 PM

Evolution, Worship, and the Gospel
Gary Fugle

I have been an evolutionary biologist at public colleges for over thirty years. Simultaneously, I've been active in conservative evangelical churches, including leading worship. I embrace evolutionary creation (EC) as a comprehensive explanation for the diversity of life on earth. EC is supported by a biblical and historically orthodox understanding that God works with natural mechanisms in a way that will not be detectable in the methods of science. This talk focuses on positive consequences of the EC position.

God is not the biggest thing within his own creation so that his actions and natural phenomena are pitted against each other as either/or choices; he is the unfathomable God who was before creation and is beyond our space-time perceptions. Evolutionary descriptions are not an alternative to God's action; they marvelously tell us how he created his natural world masterpiece, reveal his glory, and lead us to worship.

Natural science exclusively studies the consistent properties and processes inherent in the natural world. It specifically assumes no miraculous intervention by God or supernatural forces. Christians understand that God created and sustains these parameters while atheists assume that they are all there is to existence.

The EC view eliminates conflict over the practice of science. Especially important, it allows Christians to effectively share the gospel of Jesus by separating out the key question of whether or not God is behind what scientists study. Believers may invite others to perceive God's invisible qualities (Rom. 1:20), his wondrous voice, in his natural creation.

V.C: DIVINE ACTION

Sunday, 26 July 2015

3:45 PM

Clarity about Divine Action: Prayer, Causal Joints, and Kenosis

George L. Murphy

How to speak of God acting in a world whose processes are described by scientific laws is a basic question for theology-science dialogue. Many answers have been suggested but are not entirely satisfactory. Beginning from a theology of the cross with its implication of the hiddenness of God, I make three points here.

1. We do not need God as an element of scientific explanations for what happens in the world. But Christians are told to pray for "daily bread." The old adage that "the law of praying is the law of believing" then implies that theology must speak of God acting in the world to provide food and other needs.
2. Such a theology must, however, not try to specify a precise "causal joint" between God's action and that of creatures. Theology is not physics. We must be content with analogy. The traditional concept of God's cooperation with creatures in their actions, like a human working with some instrument, provides an analogy that can also account for the preservation of creatures.
3. Scientific explanations of natural phenomena in terms of rational laws indicate that God does not work with creatures in arbitrary ways. This is best seen as an aspect of divine kenosis (Philippians 2:7): God limits action in the world as Christ limited himself to the human condition in the incarnation. Kenosis is often misinterpreted. It should not be understood to mean that God is sometimes absent or inactive.

V.A: CREATION CARE (CONT'D)

Sunday, 26 July 2015

4:15 PM

Uniting Practical Creation Care and Excellent Academics in Science Courses at Christian Universities

John Korstad

After teaching the Lake Ecology and Management course at the Au Sable Institute of Environmental Studies (ASI) in Northern Michigan for the past twenty summers, I can attest to the amazing opportunity we have to link practical creation care into our everyday curriculum. I love the ASI mission statement: "Au Sable Institute inspires and educates people to serve, protect, and restore God's earth." I appreciate the collegiality that I've experienced among brothers and sisters in Christ from various Christian backgrounds.

I am committed to integrating practical, hands-on work that provides close interactions between my course and local lake property homeowners to learn about how they can care for, preserve, and protect their lakes. Each summer my students and I sample at least ten of the area lakes. We work closely with many of the lakeside homeowners, and the students work in teams to write detailed reports that summarize the present conditions of some of these lakes and share their report with the lake residents. We also encourage students to return and help conduct practical research projects such as assessing the effect of biological control agents on invasive species.

I will use a case study of my collaborative work with the Manistee Lake Association to discuss practical ways that faculty at faith-based universities can do this in their courses.

V.B: EDUCATION-2 (CONT'D)

Sunday, 26 July 2015

4:15 PM

Portraits of a Christian Science Teacher
Faith Tucker

As more attention is paid to the evangelical community's current attitude toward science, we must also consider what can be done now to support a healthier dialogue in the future. Today's students will be the leaders of tomorrow's church, so how are we preparing them to engage in and lead the intersection between science and faith? In order to answer this question, we must consider who is preparing them. How do teachers present the relationship between science and religion in the classroom and what factors influence this presentation?

In this study, I present in-depth case studies of four secondary science teachers at a Christian high school in California. I explore how these teachers' conceptions of the nature of science and the relationship between science and their faith influence their pedagogical choices. I also consider how Christian science teachers can leverage their influential role with students to promote open dialogue today and into the future.

V.C: DIVINE ACTION (CONT'D)

Sunday, 26 July 2015

4:15 PM

The Foundation for Faith and Science: Why Did God Create? Hearing His Plan in the "7th Day"

Steve Huffey

A concern about the intersection of science and faith arises from the classical question, "Why would a personal loving all-powerful God allow evil and suffering?" It touches us very personally. Its answer is about the godly process of separating goodness from evil, to two places: heaven and hell, forever.

The Genesis creation separated the chaos into more ordered states, day by day. The verb at Genesis 1:1 is *bara*, translated "created." It is found six times in the first creation passage ending at Genesis 2:3. It is also found to have been mistranslated.¹ From comparative usages of its verb forms, *bara* means to "separate a space." It is basic to creation! Its intensive form is used as "cut a space" (e.g., cut a grove of trees). Isaiah 45:7 has been translated that the LORD "creates [*bara*] evil." God "separates."

First Peter 1:19–20 identifies this plan as initiated before creation. Separation of goodness from evil is basic to our human image and work, as seen in the eschatological "wheat and tares" parable (Matt. 13:24–30), and Jesus further "declared" it doctrine (Matt. 13:37–43). Christ identified "separating work" as forgiveness in the Sermon on the Mount (Matt. 6:12–15). Christ offers us forgiveness, and our similar forgiveness determines salvation.

¹Ellen Van Wolde and Robert Rezetko, "Semantics and the Semantics of *bara*—A Rejoinder to the Arguments Advanced by B. Becking and M. Korpel," *The Journal of Hebrew Scriptures* 11, Article 9.

V.A: CREATION CARE (CONT'D)

Sunday, 26 July 2015

4:45 PM

**Sustainable Water Reclamation
for Healthier Living**Tristan Pacba and Joseph Steidl
Faculty Mentor: Leslie Wickman

With the scarcity of potable water around the globe, water reclamation research is a high priority within the environmental science community. Though current technologies successfully filter and purify wastewater using microfiltration and ultraviolet (UV) technologies, the methods used are commonly very costly and require significant upkeep.

The water reclamation process must be achieved with minimal energy and resources in order to be accessible by both developing areas lacking clean water, as well as drought-stricken developed areas. The purpose of our research is to develop an ecological approach toward reclamation that resolves the problems of effectiveness, attainability and sustainability.

Observing the simple yet effective natural processes of earth's water cycle, an ecological reclamation system should emulate the varied consecutive stages of the water cycle according to levels of filtration: primary, secondary, tertiary, and polishing phases.

The *primary phase*, which removes unwanted solids through percolation from surface to underground aquifers, will be imitated by bio-sand filters, commonly used water filtration mechanisms within developing countries.

The *secondary phase*, which performs the primary disinfection, will utilize local resources of UV radiation, oxidation, and halogens or salts.

The *tertiary phase*, which breaks down chemical impurities through organic processes, will be emulated by biologically based treatment stages.

The *polishing phase*, which removes unwanted color, odor and taste through evaporation and condensation, will be accomplished with solar stills.

This proposed system would help to mitigate the lack of potable water in impoverished communities, and also encourage greater water use efficiency in more affluent areas.

V.B: EDUCATION-2 (CONT'D)

Sunday, 26 July 2015

4:45 PM

**Expecting a Paradigm Shift in Christian
Education as a Driver of STEM**

Gerhard Mensch

Recent advances in mathematics, which result from the study of belief systems of investors in finance, and of innovators in engineering and technology, have been fruitfully used in Mind-Science Studies (MSS) of the Christian concept of the divine. These advances—discovering universal math properties—may now trigger spiritual progress.

The key point is that these advances have been improved upon in studying the divine, on the one hand, and that these improvements, on the other hand, suggest that a “paradigm shift” is emerging in STEM; not just a gradual “paradigm change” (Thomas Kuhn, *The Structure of Scientific Revolutions*, 1962). The next battleground of the expected “jolt” in STEM education may turn out to be Christian education, specifically engineering and economics, since this math supports new Digital Imaging Technology (DIT) and Graphic Design Algorithms (GDA) that produce very interesting visuals that are attractive to millennials, teenagers, and kids who admire visual games and practical apps. This scenario supports several feature-guided approaches at creating images which in turn induce development and application of apps in engineering and in economics. This is driving a revolution in the “Imaging Industry” through much more engaging educational products and services. The key point is that this feature-driven approach may turn out to be most attractive and engaging in Christian education, because this field exhibits the greatest market gap in interactive images with Christian content. Because of the underlying mathematics, the synergy of DIT and GDA provides more facts and figures that are “replicable.”

In addition, a favorable side effect of this feature-based DIT/GDA approach is that it creates numerical, quantitative facts and figures that are considered “objective knowledge” (Karl Popper), engaging learners who can test the features in the divine as never before.

V.C: DIVINE ACTION (CONT'D)

Sunday, 26 July 2015

4:45 PM

No Scheduled Talk

VI.A: BIBLICAL STUDIES

Monday, 27 July 2015 9:00 AM

The Need to Re-examine Noah's Experience of the Flood

Alan Dickin

Several widely believed aspects of the biblical flood story are not required by the text, and make the story appear unhistorical. A re-examination of these issues suggests that the flood story is indeed credible as an eye-witness account, thus building a firmer foundation for the overall historicity of Genesis.

An obvious issue is the extent of the Flood, which could not have been global, since ancient peoples had no knowledge of the earth as a globe.

A second issue is the date of the Flood, widely placed around 2900 BC based on Sumerian accounts written over 500 years later. However, archaeological records show this flood to have been relatively minor, and not consistent with the death and devastation described in both biblical and Mesopotamian accounts. In contrast, geological and archaeological evidence points to a much earlier date around 5500 BC, shortly after Lower Mesopotamia was first settled.

A third issue concerns the design of the Ark, widely characterized as a wooden cargo ship. This would imply that the Ark was the largest wooden vessel ever to float, considerably larger than the biggest wooden ships even of modern times. In contrast, biblical and Mesopotamian accounts portray the Ark as the size of a one-acre field, which best describes a large raft carrying a reed-built house. Such an Ark could have been built in the Neolithic period, thus supporting the biblical story as an eye-witness account of a real event seen through the eyes of Neolithic man.

VI.B: COSMOLOGY

Monday, 27 July 2015 9:00 AM

Cosmology for Everyone Steven Ball

Cosmology is a relatively modern field of science, since it was deemed an entirely speculative discipline prior to theoretical and observational advances in the 20th century. Philosophical bias would factor strongly into any early forays into the field of cosmology.

Einstein's general relativity permitted modelling of the large-scale cosmos, yet his bias for a static universe led him to postulate a cosmological constant. Fortunately, other scientists found the basis for an expanding universe, and Edwin Hubble's observations led to a confirmation of this and to Einstein's famous admission of his greatest blunder.

Telescopes began to reveal an extensive cosmos, vastly larger than our own solar system. These pioneering efforts led to the Big Bang and Steady State models of cosmology, which competed for prominence until the discovery of the Cosmic Microwave Background Radiation settled the matter. Subsequently, space-based telescopes have led to the radical transformation of cosmology from a rather speculative discipline with sparse data to a high-precision science, in which competing models are stringently tested by observations.

Recent advances include the discovery of dark matter and dark energy, the latter associated with an observed accelerating expansion of the universe. Our ability to actually "see" the early universe has had a dramatic effect on public interest and consideration of our place in the cosmos. Cosmology naturally leads to questions that go beyond what science can answer, and thus to the realm of faith.

VI.C: MISSIONS

Monday, 27 July 2015 9:00 AM

Cross-Cultural Missions as a Scientist Benjamin G. Lee

I will discuss the opportunity for cross-cultural missions while working in physics/natural sciences, as an example of practical theology and missiology.

The international character of scientific research within the US, and the ease with which scientists can travel and work overseas, presents a unique route for reaching people of other nationalities with the message of Jesus. Moreover, finding a scientific job abroad can be understood in the light of the Apostle Paul's tentmaking—as a door to acceptance in other countries and as a practical way of financially supporting missions work.

I will illustrate my talk with personal examples: working in a lab in the US with many international colleagues, teaching at a university in India, and doing physics research in Germany. I will explore how God used each situation, in terms of serving the local church and supporting local ministries, forming community with people from other cultures, and witnessing with the gospel.

VI.A: BIBLICAL STUDIES (CONT'D)

Monday, 27 July 2015

9:30 AM

Historical Adam: Identifying the Time, Place, and Cultural Setting of the First Man in Biblical History

Dick Fischer

Human beings are related by common ancestry that extends back in time well beyond 100,000 years and points to Africa according to paleoanthropologists. If Genesis presents the surrounding cultural environment in the beginning chapters accurately, and weight is given to archaeological findings uncovered during the last 160 years in the Near East, Adam's niche in time and space is no earlier than 7,000 years ago in Southern Mesopotamia, present-day Iraq. Thus the conundrum, how could Adam, if there was such a person, be the progenitor of all humankind?

The purpose of this talk is to demonstrate with biblical, archaeological, and historical data and evidence that Adam's historical niche places him in the flow of humanity rather than at the apex. Adam appears to have been a real life, flesh-and-blood personality living in the Neolithic Period whose intended mission was to usher in an era of accountability, the Old Covenant. From this couple, Adam and Eve, sprang the Semitic race, not the human race. Historical corroboration that such a person existed can be found among archaeological discoveries in Egypt and Mesopotamia some of which is contained in my book, *Historical Genesis from Adam to Abraham*. See YouTube channel, "Historical Genesis."

VI.B: COSMOLOGY (CONT'D)

Monday, 27 July 2015

9:30 AM

Multiverse: God's Indeterminacy in Action

Gerald B. Cleaver

The current views of Americans regarding God's engagement with creation are discussed. Then the role that the theology of nature can play in understanding God's engagement is reviewed.

The past and present paradigms of creation are summarized, and it is shown that each past paradigm shift has led to a more complete, more vast, and more beautiful—while simultaneously more unified—understanding of creation and its physical laws.

Aspects of the current univentric paradigm are presented that suggest a transformation now to a multivercentric paradigm. A general definition of a multiverse is considered, using a popular multiverse taxonomy scheme.

The focus is then on what a multiverse in general, and specific types of multiverses in particular, may imply regarding God's interactions with creation.

VI.C: MISSIONS (CONT'D)

Monday, 27 July 2015

9:30 AM

Using Natural Fiber Reinforcement for Adobe Brick Making

William Jordan, Eric Ortega, Carlton Metcalf-Doetsch, Robbie Hoglund, and Joseph Holden

As Christian engineers we are called to use our skills to help others, but this is not a simple thing to do. Many developing countries have economies dependent on agricultural systems with a small income price and a significant waste product.

Turning the bio-waste of these economies into an additional source of revenue can increase the standard of living. To this end, the bio-waste of some of these economies was used to strengthen an economical construction material, adobe, to compose a natural composite product.

One potential application for the use of natural fibers in the construction of composite adobe bricks has been established. Several combinations of sand and clay were tested to determine the best adobe mixture for testing. The best sand and clay combination was then mixed with various natural fibers to make adobe-fiber composite bricks.

Compared to the adobe bricks without fibers, the bricks with fibers had a compressive strength that was significantly higher in addition to having a slow instead of a rapid failure. There appears to be an ideal concentration of fibers. For example, the 2% by weight banana fiber bricks were much stronger than the 4% by weight banana fiber bricks. This may be due to the decrease in bonding between the banana fibers and small clay particles and to the clumping of excessive amounts of banana fibers.

VI.A: BIBLICAL STUDIES (CONT'D)

Monday, 27 July 2015 10:00 AM

**Some Comments on the
Would-be Science of Angels**

Nathaniel Ogden Kidd

In an essay on angels in his *Theological Investigations*, Karl Rahner makes a provocative proposal: given that the scientific worldview substantially undermines belief in spiritual creatures, we should either (1) consider angels to be assumed, not taught in the scriptures (and therefore best interpreted by dissolving them into underlying psychological, sociological, and literary phenomenon) or (2) rearticulate angelology with reference to a “natural knowledge” of the angels that can be built reliably upon the presuppositions offered by modern science.

Rahner urges caution on either alternative, suggesting that neither science nor theology is currently in a place to make a definitive statement on the question. He does, however, offer some fascinating initial suggestions as to what a reconstructed “natural knowledge” of angels might look like: if either proven or assumed as a governing hypothesis, it would not only serve as the starting point for a “science of angels,” but have important ramifications for our “theology of the cosmos.”

In keeping with the theme of “Hearing God’s voice in Nature,” I propose to extend Rahner’s proposition under the parallel headings of imagination and delight: imagination delineates the cognitive processes by which we can interact with the created world in its either seen or unseen aspect; delight our capacity for joy in the contemplation of the world God has made. Angelology necessarily brings these themes into focus, and as such—I will argue—it represents a valuable and as yet underexplored point of contact between speculative exercises in theology and science.

VI.B: COSMOLOGY (CONT'D)

Monday, 27 July 2015 10:00 AM

**Naïveté in Science: The Ramifications
of Psychological Nativism and
Cognitive Modules on the Many
Worlds Interpretation of
Quantum Mechanics**

Andrew Lang and Caleb J. Lutz

In this presentation, we apply the theory of psychological nativism to beliefs in science and theology. We illustrate how native beliefs bias our thinking by examining the role cognitive modules play in both interpreting quantum mechanics and young earth creationism.

Quantum mechanics is more than just difficult to understand, it is something mysterious, something difficult to believe in. This unbelief is more than just because quantum mechanics doesn’t match everyday experience; it ruffles the feathers of our naïve physics cognitive module.

In Everett’s many worlds interpretation of quantum mechanics, we preserve a form of deterministic thinking that can alleviate some of the perceived weirdness inherent in other interpretations of quantum mechanics, at the cost of having the universe split into parallel worlds at every quantum measurement.

We propose that there is an underlying bias toward the many worlds interpretation, precisely because of the determinism required by our naïve physics cognitive module. In a similar manner, we extend the ideas of psychological nativism and naïve biology to young earth creationism.

We propose that young earth creationism is a form of naïve theology, something that is easier to believe in, something that we’re born with.

VI.C: MISSIONS (CONT'D)

Monday, 27 July 2015 10:00 AM

**Biotechnology, Genetic Engineering
or Playing God?**

Joel Gaikwad

Science has grown in leaps and bounds over the past decade. The field of biotechnology, genetic engineering has made astronomical strides. A combination of tools generated have been utilized successfully to give hope to barren women to have their own children, have discovered means to cure incurable diseases, and have drastically improved the quality and quantity of produce and life stock that have been modified to be healthy and to yield more meat, milk, or other consumable products.

Until recently, the genetic changes made either in animals or humans were not inheritable—the changes made to the DNA died with the being. A new tool has been designed that has the potential to change that. The genetic changes introduced can be now passed on from generation to generation, permanently altering their original DNA makeup. This tool gives humans more control over which gene could be passed on to the next generations.

With this newly discovered human genome editing tool, one could hypothetically not only cure diseases but could also alter qualities such as beauty, intelligence, and so forth. How far will we go? Where will we draw the line?

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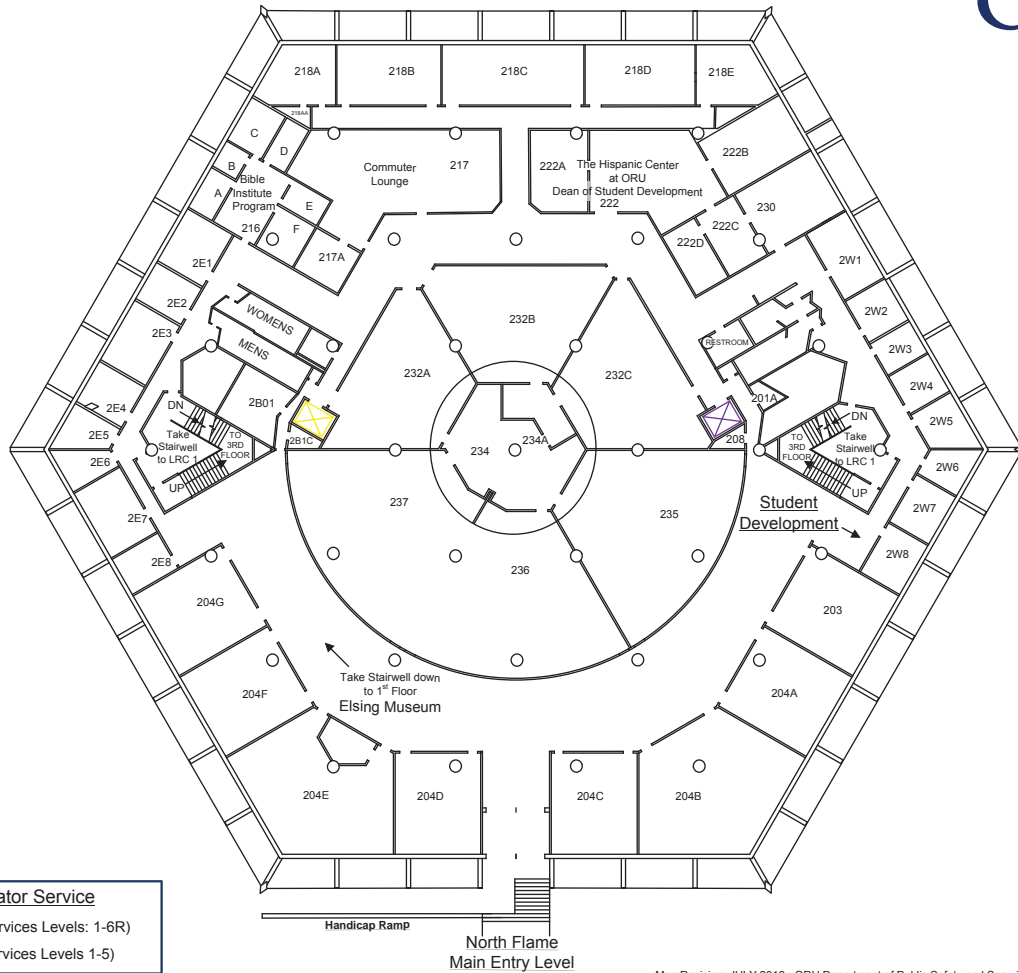
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WHERE WILL WE BE?

Learning Resources Center 2nd Floor



Map Revision: JULY 2012 - ORU Department of Public Safety and Security - Derek E. Fritz (dfritz@oru.edu)

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- Book Tables Room 204E
- Communications Meeting Room 236–237
- Devotions Room 236–237
- Exhibits Room 204E
- Fellowship Room Room 204D
- InterVarsity Reception Room 204A
- Parallel Session A Room 204B

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- Parallel Session C Room 235
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