Art student Paul Finch, whose contributions to the STEAM Project at UCF have produced several controversial STEM inspired artifacts, points out that historically, many scientists were artists, and the two fields often overlapped. Michelangelo, for example, was a sculptor, painter and poet in addition to being an architect and engineer. American inventors Robert Fulton and Samuel F.B. Morse were portrait painters before they invented the steamship and the telegraph, respectively. “Most of us [artists] know more about science than people expect,” Finch said. Photo by Ivan Riascos.

HUMANITIES, SCIENCES MUST BE UNITED FOR OUR COLLECTIVE SUCCESS

BY CARLA POINDEXTER, UNIVERSITY OF CENTRAL FLORIDA
When Pablo Picasso presented his first cubist paintings to the world, even most educated people thought them hideous and irrational, yet his peers saw them to be ingenious. Likewise, Albert Einstein’s theory of relativity was equally baffling to the uninhibited.

But to those who were knowledgeable about both art and physics, parallels would have been recognized between Einstein’s new visions of reality and Picasso’s paintings that could be viewed from multiple points of view in simultaneous space and time. They might also have speculated that Einstein’s visionary physics may have directly inspired Picasso’s revolutionary paintings—or was it the other way around? How is it that the sciences and the arts have lost their interconnectedness in our contemporary educational cultures?

At the highest levels of innovative thought, art and physics share a common goal: the investigation of reality. Both begin with observation. Art tends to communicate through metaphor and poetics. Science communicates through logic and mathematics. Both disciplines seek to foster and produce creative and innovative problem solvers.

As an upper level fine arts educator, I have come to realize that the most immediate issue facing our future is not the ongoing budget deficiencies in state and national support, but the lack of awareness or interest in our discipline outside the College of Arts and Humanities. The insulated art world is probably equally responsible for this dilemma in our contemporary society. However, at the university level, a way to bridge the gap is through collaborative academic activities.

Two almost overlapping events in Orlando, FL—a NSF sponsored student art exhibition and a national physics conference—provided a chance to explore the connections between art and science.

Art student Alea de Bengson’s painting, “Florida In Bloom” was directly inspired by UCF biologist, Linda Walters, whose research investigates coral reef decay in Florida’s coastal waters. Her futurist image depicts UCF’s football stadium—after people. “I created my paintings based on the assumption that Florida will eventually end up underwater,” she said. “Algae blooms degrade aquatic ecosystems and water resources for human consumption. Eventually, there are no fish, no coral—and no people.” Photo by Ivan Riascos.

Art student Adrienne Romine’s “Untitled” (acrylic painting on canvas) was done while she was considering a long distance move, “I meditated on the effects space and time hold over my personal relationships, here shown from the perspective of my pet,” she said. “In a world where we are aware and can perceive somehow the multitude of the universes, what is the meaning of any action? For example, if my pet can see me sitting in one universe and gone in another universe, what does the act of leaving really mean?” Photo by Ivan Riascos.
Art Student Slawek Kozub’s painting “Coma” (acrylic on canvas) was created in response to a presentation about “Popular Beliefs in Pseudoscience” by Physicist Costas Efthimiou. Says Slawek, “People generally think that the natural world is separate from them and that they don’t belong in it. Some have exaggerated preconceived ideas about it, often fueled by the media’s incorrect portrayal of science. This painting represents some of those fears, those which are based on ignorance and surfaces when a phobia dominates or inhibits our approach to science. I hope this piece will turn fear into curiosity and inspire people to experience nature for themselves.”

Photo by Ivan Riascos.

One event was the STEAM Exhibition: “Searching for Ultimate Truth in Science and Art,” an exhibition of STEM inspired artifacts by University of Central Florida’s (UCF) fine art students. The curriculum acronym STEM stands for Science, Technology, Engineering and Mathematics, but the arts more and more are becoming wedged into the mix to create STEAM (Science, Technology, Engineering, Arts and Mathematics).

The foci of the exhibition were artworks created by fine art painting and sculpture students who challenged STEM and non-STEM viewers to interpret the science inspired artworks through visual metaphor. The work presented offered commentaries on the potentials for both good and harm to humanity and the earth.

The overlapping confer-

CHRIISTOPHER FRYE ON THE STEAM PROJECT

Sigma Pi Sigma member Christopher Frye’s collaborative work with UCF art student Emily Daniels (“Particle Detection in the Search for New Matter,” pictured on page 24) was recognized with the “Peoples Choice – Best of Show” award at PhysCon 2012. Pictured here is the diptych “You Picked Me,” (Hi Frye) which was inspired by his collaboration with UCF art student Mary Joy Torrecampo. This acrylic and charcoal on canvas shows the observer effect in quantum mechanics and the possibility of which path electrons take before they are observed.

Frye first met with a UCF painting class more than two years ago when he gave presentations on relativity and quantum mechanics. He followed that up with discussions about the philosophical implications of the theories of modern physics.

Before joining the STEAM project, Frye said he seldom left the environment of the Math and Physics building at UCF. During discussions with the artists, however, he learned to explain concepts in a way entirely different from the way he talks with fellow science students. “So not only did I teach new physical concepts to the students in the art class, but I also discovered new ways to explain scientific ideas to non-science students,” he said. “This is a skill I can use later in my career when teaching is part of my job.”

In response to his collaborative work, Frye said he has a new appreciation for art. “Since I’ve been involved with this STEAM project, I’ve seen more art than I’ve ever looked at before. I respond to paintings like I never did.” Frye said. “I had only been around math and physics and that style of training. Now I’ve seen what bending the universe looks like.”

Photo by Jay Flynn.
The STEAM Exhibition: Searching for Ultimate Truth in Science in Art took place at UCF’s Center for Emerging Media in Downtown Orlando in the Fall of 2012. Photo by Ivan Riascos.

The UCF STEAM project is the result of work by many STEM and Arts faculty members and students. Theo Lotz, a project Co-PI and Fine Art Instructor of Undergraduate and Graduate Studies at UCF, initiated the STEAM project. Lotz envisioned seminars in which STEM researchers and Fine Art undergraduate faculty and students interacted and collaborated to explore and understand each other’s discipline. “I have always felt that the Sciences and the Arts were not that different in their processes. Both are creative endeavors that benefit from experimentation, exploration, and trusting one’s intuition. I wanted the UCF art students to see that their studio process is very similar to the laboratory process of the science students,” said Lotz.

At the Congress, it was often acknowledged that as scientific research and knowledge become increasingly more specialized and complex, outreach and education becomes more important.

Two popular sessions at the Congress highlighted professionals who cross both disciplines to communicate complex ideas through art and emerging media. The first was Henry Reich, the creator and animator of the popular YouTube video series called “MinutePhysics.” In his series, Reich illustrates, “cool topics in physics” through a series of expressive drawings and conversational dialog. The other session featured David Saltzberg, the science consultant to the popular sitcom, “The Big Bang Theory.” His contribution to the show is to work with artists – the scriptwriters, art directors, prop designers and actors – to make sure the science behind the show is correct.

The 2012 Congress also included its second fine art contest of paintings, drawings, photography, and digital mixed media artworks. Jordan Guzman, Bachelor of Fine Arts painting major at UCF, was awarded first-place in the category of “Connect-

Eventually, competition for the best ideas and most compelling images between art students and collaborative pairs evolved. This led the fine art students to experience a less-understood process of inquiry and discovery that is familiar to mature artists. The process closely relates to what is employed in basic scientific inquiry.

For a student involved in basic artistic research, creative discovery involves the formulation of questions based on intuition and knowledge of the subject, followed by testing and retesting until a suitable, personally relevant, solution – their finished artwork – is found. This mostly private undertaking is followed by public scrutiny in the form of a group critique of the work by instructors and peers, which when effective, leads to essential skills of self-criticality and eventually, a creative visual outcome.

While the scientific method investigates phenomena in an effort to find empirical truth, it could be argued that an artist investigates phenomena in the effort to experience the myriad possibilities between truth and untruth. In art, the answer to the inquiry or hypothesis is never intended to confirm reality, only to lead to more inquiry — so that art is always a series of questions to be contemplated, not solved.
The University of Central Florida welcomes opportunities to share information about its STEAM Initiative and encourages opportunities for collaborative exhibitions and forums with other academic institutions. For more STEAM information and artwork, see: http://icubed.ucf.edu/steam.php.

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