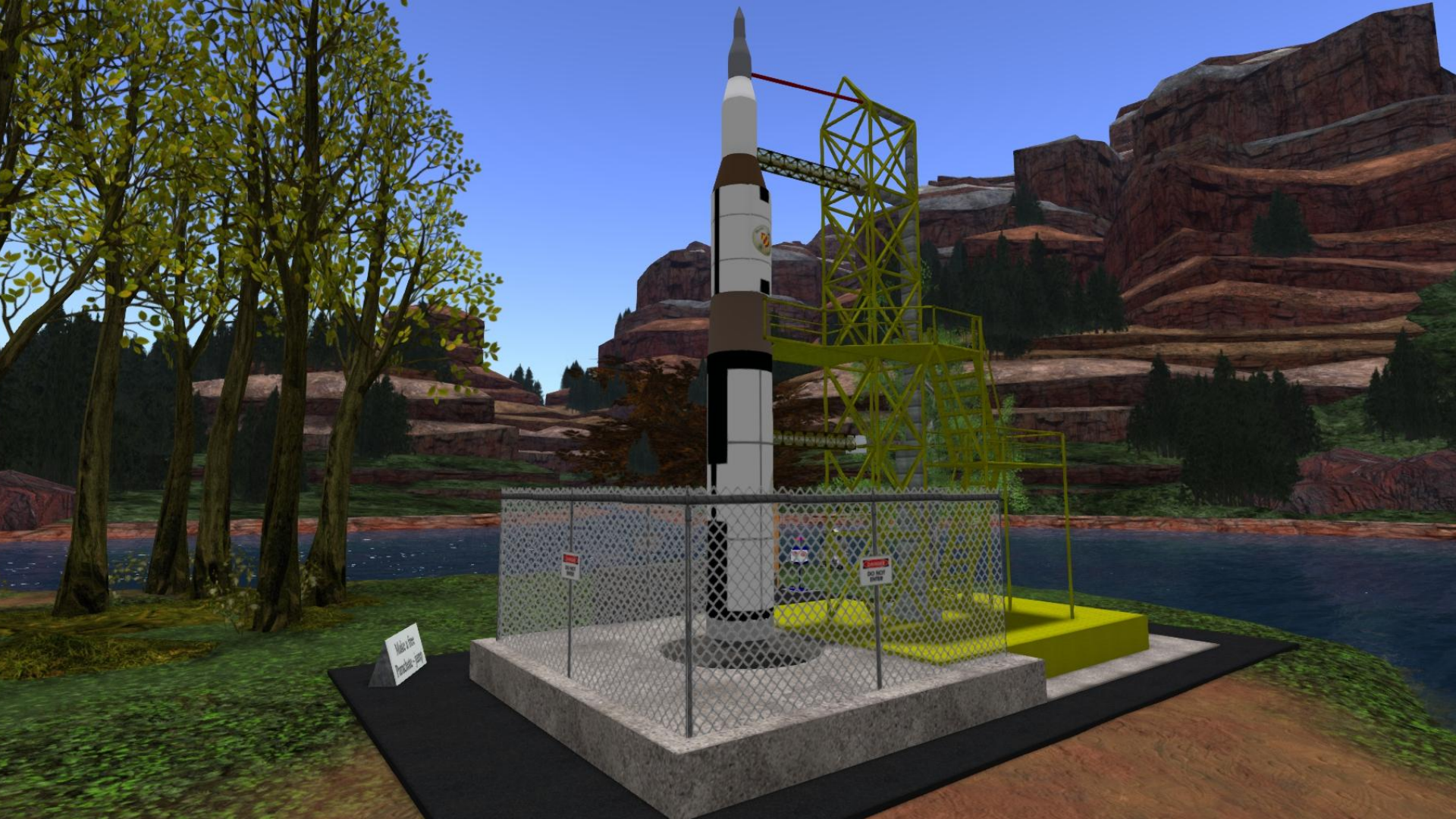


THE SCIENCE CIRCLE



The Science Circle

2015



Model of the
Saturn V rocket

NO
SMOKING

NO
SMOKING

History

Nymf Hathaway originated The Science Circle in February 2008 with;
Darkeagle Darkstone USA,
Deepthinker Oh USA,
Itsme Frederix Netherlands,
JeanPierre Euler Russia,
Quaezar Agnomen Netherlands,
Tau Insippo Japan
and Vic Michalak USA.

In 2010 we decided to work with a board but our main need, as our activities increased, was a dedicated “Equal Partner” for Nymf. Jes Cobalt from Australia was installed as our Co-Director. Initially for the Asia/Oceania section of SC but soon enough Jes was needed during European and American time zones as well. Today Jes takes on 50% of all SC’s organisation.

SC has been hosted on the sims of “Nature Publishing Group”, “STEM Island” and in the library of JeanPierre Euler.

Since January 2014 Hakim George offers The Science Circle its home base, called “Shamash”

Until now we presented 80+ lectures and several classes

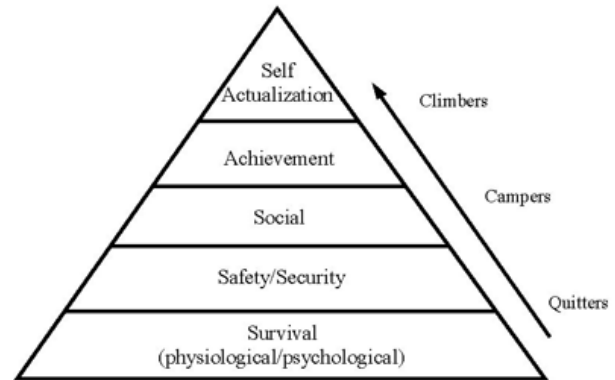
Philosophy

According to Maslow, “Education” is the last in the hierarchy of needs
As much as this may be true...

Knowledge ensures the first four to develop the most optimal
Therefore Education should be a human right.

The Science Circle shares knowledge in the truest sense of the word.
Free, globally and through various media the Internet has to offer.

Maslow's Hierarchy of Needs





Board

THE ADVISORY BOARD OF THE SCIENCE CIRCLE:

Curious George / George Djorgovski, USA

Dawn Rhiannyr / Doris Hauser, Austria,

Deepthinker Oh, USA,

Jes Cobalt / Jes Stannard, Australia

Kip Roffo / Steve Van Hook, USA

Nymf Hathaway / Chantal Snoek, Netherlands

Vic Michalak / Phil Youngblood, USA

Zazen Manbi / Jeffrey Corbin, USA (Emeritus)

Staff

ORGANIZATION:

Jes Cobalt / Jes Stannard, Australia

Nymf Hathaway / Chantal Snoek, Netherlands

SC TRAVEL AGENT:

Dawn Rhiannyr / Doris Hauser, Austria

TECHNICAL SUPPORT:

Quaezar Agnomen / Agustin Martin, Netherlands

MACHINIMA:

Charlie Navarathna / Richard Eaks, USA



Fields of Expertise

1. Archaeology
2. Artificial Intelligence
3. Astronomy
4. Astrophysics
5. Biology
6. Botany
7. Brain Health
8. Computer Science
9. Cosmology
10. Dyslexia and dyscalculia
11. Economics
12. Education
13. Electronics

14. Energy conservation
15. Engineering
16. Entrepreneurship
17. Environment
18. Genetics
19. Geology
20. History
21. Journalism
22. Languages
23. Learning Technologies
24. Machinima
25. Marine and Earth Science
26. Marketing

27. Mathematics
28. Neuroscience
29. Paleontology
30. Pathology
31. Philosophy
32. Physics
33. Psychology
34. Quantum Physics
35. Radio Producing
36. Satellite Communications
37. Transculturalism
38. Video Producing



Recent Subjects

- “Graphics Applications of Quaternions and Hamiltonians” by Tooyaa (Thuja Hynes)
- “Fieldtrip Open Sim; Genome” by Stephen Xootfly & Max Chatnoir
- “Transcending Culture in International Settings” by Steven van Hook/Kip Roffo
- "Caesium: A brief history of timekeeping" by Phil Youngblood/Vic Michalak
- “Educating Using OpenSim as a Platform” by Enrique Cachafeiro/8-Bit Biologist
- “When a Philosopher looks in his purse” by Herman Vos/Herman Bergson
- "The Art of Enhanced Reality" by John Lester/Pathfinder Lester
- “Powerful VLEs from the past and the future” by Gord Holden /Golden Greymoon
- "Science in the era of big data" by S.G. Djorgovski /Curious George
- “Whole-Brain Health Discovery tour” by Lynne Berrett /Wisdomseeker
- “30 Thousand Year Time Travel of Arts” by Hajime Nishimura /Yan Lauria
- “The Star Trek Museum” by Steve Van Hook /Kip Roffo



New Ventures

Science Radio

Since August 2014 The Science Circle hosts, by the request of Zazen Manbi, two Science Radio shows in SL.

On its own piece of land and with a special group called “Science Radio by SC” to facilitate the audience.

Fridays : “Science Friday” 11 AM – 1 PM SLT

Sundays : “The Naked Scientists” 10 – 11 AM SLT

Science TV

Every Monday a new Science TV edition from “Tomorrow Today”, available the entire week next to the radio parcel.

The Science Circle Travels

Starting in January 2015; a new series of explorations. Field Trips and tours on the Educational sims of our members.

Each month we will take you to an extraordinary example of Educational sims in Second Life.

ScienceCircle Publisher

This year we will publish the work of our presenters by PDF, YouTube’s and inworld Magazines, like the one you are reading now.

These Magazines are free to copy and can be found in the Lecture Hall at Shamash.

Facilitation of Educational Opportunities

After several requests we decided to start facilitating the land, tools and abilities to SC Educators who like to utilize virtual reality to educate their RL Students.



Serious Request

In 2015 The Science Circle starts an international fundraising in favour of an annual Dutch charity called "Serious Request" for the Red Cross.

This initiative now runs in several countries and we as an educational institute feel the desire to bring awareness of this new tradition globally.

Every year the Red Cross chooses a different charity, and together with millions of people we help raise money for this specific subject.

Between Dec 18th and the 24th

Three radio DJ's are locked inside a glass house. Broadcasting your requests twenty-four hours daily through the week, they are not allowed to eat anything other than nutritious shakes until they are released.



The Science Circle created an avatar for this purpose,

SCSeriousRequest.

She will be the guardian of our donations through 2015 and the years to come.

Through the year we will organize events related to the Serious Request subject of the current year.

Presentations, poster campaigns, music/dance/poetry/art events and activities which inspire you to start fundraising.

Around March we will be able to provide you with educational materials to use in your rl/sl classes concerning the running subject.

Between Dec 18 and 24th we celebrate the result of a year of fundraising with 24/7 music, social media, LIVE footage of the RL event and more.

All your ideas and initiatives are welcome!

Calendar 2015



Detail of Nikolai Mnev's Planetarium, situated above Stonehenge at STEM Island

JANUARY

Saturday January 3rd

Title: "The Science of *Interstellar*"

Facilitator: Prospero Frobozz / Rob Knop, USA

Sunday January 11th *FIELDTRIP*

Title: The Philosophy Class

Facilitator: Herman Bergson / Herman M. Vos, Netherlands

Monday January 19th

Title: "Transmathematics - a survey of recent results on division by zero"

Facilitator: Nullity / James Anderson, UK

Tuesday January 27th

Title: "How We Got to What We Are: Growth of Human Biological Being Thought"

Facilitator: Stephen Xootfly / Stephen L. Gasior, USA



In the living room of a lovely Friesian canalside house is the world's oldest functioning planetarium. This accurately moving model of the solar system was built between 1774 and 1781 by Eise Eisinga, a wool carder.

FEBRUARY

Tuesday February 3rd

Title: "Immersive visualisation and learning solutions" *WORKSHOP*

Facilitated by David Burden, James Rock and Emma Jefferies, UK.

Wednesday February 4th

Title: "An hour of Code - Intro to Programming"

Facilitator: Vic Michalak / Phil Youngblood, USA

Wednesday February 11th

Title: "An hour of Code - Intro to Programming"

Facilitator: Vic Michalak / Phil Youngblood, USA

Thursday February 19th

Title: "The Magic in the Drums: Using Imagination and Think Aloud Processes to Develop Humanitarian Identities".

Facilitator: Letty Luckstone / Dr. Leticia De Leon, USA

Friday February 27th *FIELDTRIP*

Title: "Using interactive activities to help students learn biology: The approach of the Northern Virginia Community College."

Facilitator: Greg Prumier / Gregory Perrier, USA



MARCH



Tuesday March 3rd

Title: "It from bit or bit from it : Quantum Nature and Information Theory"

Facilitator: Tau Insippo SL, Japan

Wednesday March 11th *FIELDTRIP*

Title: Natmoud Island

Facilitator: Twilight Rhode / Benny Rigaux-Bricmont, Canada

Sunday March 15th

Title: "Contributions to Cryobiology: Stanley Leibo Memorium Lecture"

Facilitator: Stephen Xootfly / Stephen L. Gasior, USA

Friday March 20th

Title: "What Money cannot buy..."

Facilitator: Herman Bergson / Herman M. Vos, Netherlands

APRIL

Saturday April 4th

Title: "Using Gamification in Science Education"

Facilitator: 8-Bit Biologist / Enrique Cachafeiro, USA

Saturday April 11th

Title: Astrophysics

Facilitator: Prospero Frobozz / Rob Knop, USA

Sunday April 19th *FIELDTRIP*

Title: "The Abyss Observatory"

Facilitator: Yan Lauria / Hajime Nishimura, Japan

Open Date between April 20th and 27th

Title:

Facilitator:



The Science Circle

Participants 2015

Uluru/Ayers Rock is a large sandstone rock formation, located in the southern part of the Northern Territory in central Australia.

The Name

The local Pitjantjatjara people call the landmark Uluru. This word has no further particular meaning in the Pitjantjatjara language, although it is used as a local family name by the senior Traditional Owners of Uluru. On the 19th of July 1873, the surveyor William Gosse sighted the landmark and named it “Ayers Rock” in honour of the then Chief Secretary of South Australia, Sir Henry Ayers.

Formation

Alluvial fans were created from the erosion of the surrounding mountain ranges, then compacted by rising seawaters over 500 million years ago to form a layer of hard rock. After the sea disappeared approximately 400 million years ago, the land was slowly folded by geomorphic forces, tilting the layer of rock on its end exposing the rock to the elements. Uluru, as it is seen today has been continually shaped and eroded by intense weathering, with the oxidisation of surface minerals causing its distinctive red and rusty colour.

Story

The Aboriginal inhabitants of Australia, the Anangu, believe the Central Australian landscape was created at the beginning of time by ancestral beings. According to Aboriginal myth, the world was unformed and featureless until ancestral beings emerged from the void and journeyed across the land, creating all living species and the features of the desert landscape. Uluru is regarded as spectacular physical evidence of the ancestors' activities during the creation period.





I'm a teacher and technology innovator. I have been teaching science in public high schools since 2008. Prior to that I worked at an environmental engineering firm and before that, an oncology research lab.

I received a Bachelors of Science degree in Environmental Studies with a minor in Biology from the University of North Carolina at Asheville. A few years later I completed the Master of Soil Science degree from North Carolina State University and became a State Licensed Soil Scientist. After leaving the engineering firm I attended Greensboro College where I completed the requirements for my Teaching License.

In my pursuit of education innovation I came across the idea of using games and virtual worlds through the Duke University Alice program. Later on I was introduced to Second Life and completed the Virtual Worlds Certificate from the University of Washington. The use of Virtual Worlds for classroom instruction is now the driving force behind my work both outside and inside the classroom.

I have presented at regional and national conferences, and before members of the North Carolina State Congress, on the use of technology in the classroom, the use of innovative teaching techniques such as blended and gamified classroom environments, and the use of virtual worlds for instruction.

8-Bit Biologist - Enrique Cachafeiro, USA

Fingal's Cave is a sea cave on the uninhabited island of Staffa, in the Inner Hebrides of Scotland, part of a National Nature Reserve owned by the National Trust for Scotland. It became known as Fingal's Cave after the eponymous hero of an epic poem by 18th-century Scots poet-historian James Macpherson.

Formation

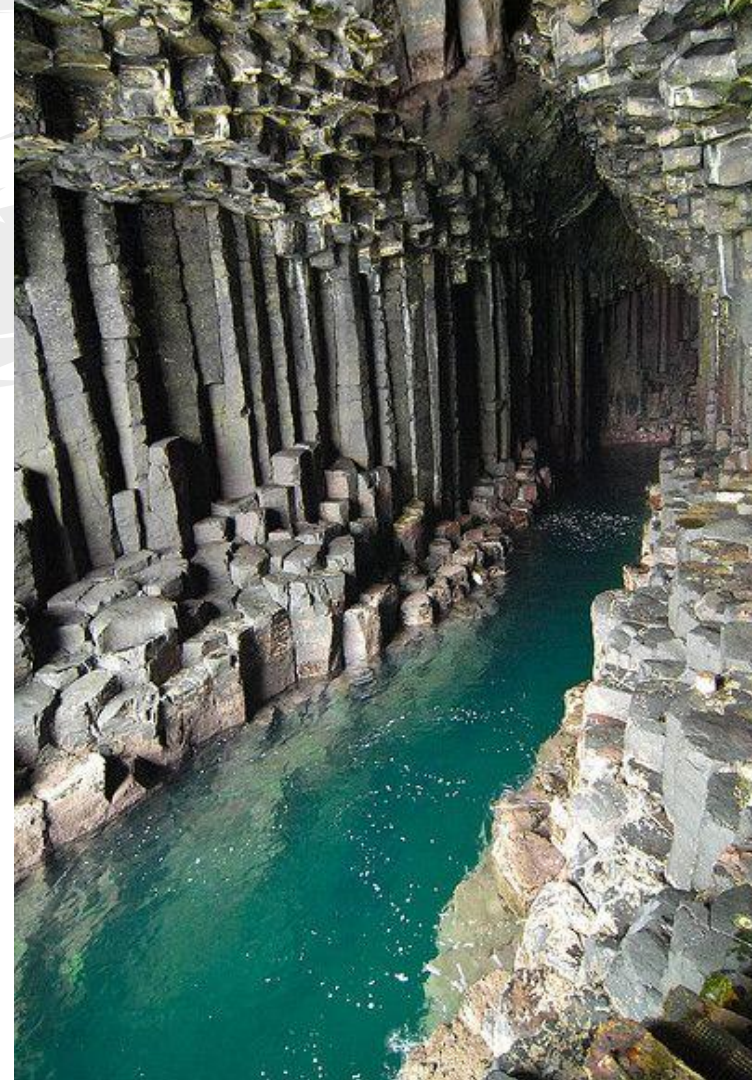
It is formed entirely from hexagonally jointed basalt columns within a Paleocene lava flow, similar in structure to the Giant's Causeway in Northern Ireland and those of nearby Ulva.

In all these cases, cooling on the upper and lower surfaces of the solidified lava resulted in contraction and fracturing, starting in a blocky tetragonal pattern and transitioning to a regular hexagonal fracture pattern with fractures perpendicular to the cooling surfaces. As cooling continued these cracks gradually extended toward the centre of the flow, forming the long hexagonal columns we see in the wave-eroded cross-section today. Similar hexagonal fracture patterns are found in desiccation cracks in mud where contraction is due to loss of water instead of cooling.

Acoustics

Its size and naturally arched roof, and the eerie sounds produced by the echoes of waves, give it the atmosphere of a natural cathedral.

The cave's Gaelic name, *An Uaimh Bhinn*, means "the melodious cave."





Deep fulfilment comes from my first and second life projects to my dedication of time in philanthropy.

From the creation of my video company to helping build one of the top recording studios in the world that now has six platinum, ten gold records and two Grammys, I create art for the eyes to the ears. I also enjoy working with MIT Enterprise Forum of the Northwest, an all-volunteer, non-profit organization whose mission is to inspire, connect, and educate.

So many projects have my heart in second life but one of the most memorable is working with NASA CoLab in second life. helping to create a library archive..

Philanthropy is important to me. One special moment was recording the training, lessons and performances of the children from Providence Children's Hospital - Kids with needs and disabilities. I worked closely with a neurosurgeon and World Champion Dancer on these recordings that celebrated the children's progress. This encourages fundraising and donations for the Dance therapy lessons . Now being taught in a studio I helped design, the Dorothy Jayne Studio. \$100,000 has been raised.

I am currently working with The Science Circle group in second life as a videographer recording machinima of meetings and events.

Charlie Navarathna - Richard Eaks, USA

The Lament for Icarus is a painting by Herbert James Draper, showing dead Icarus, surrounded by lamenting nymphs.

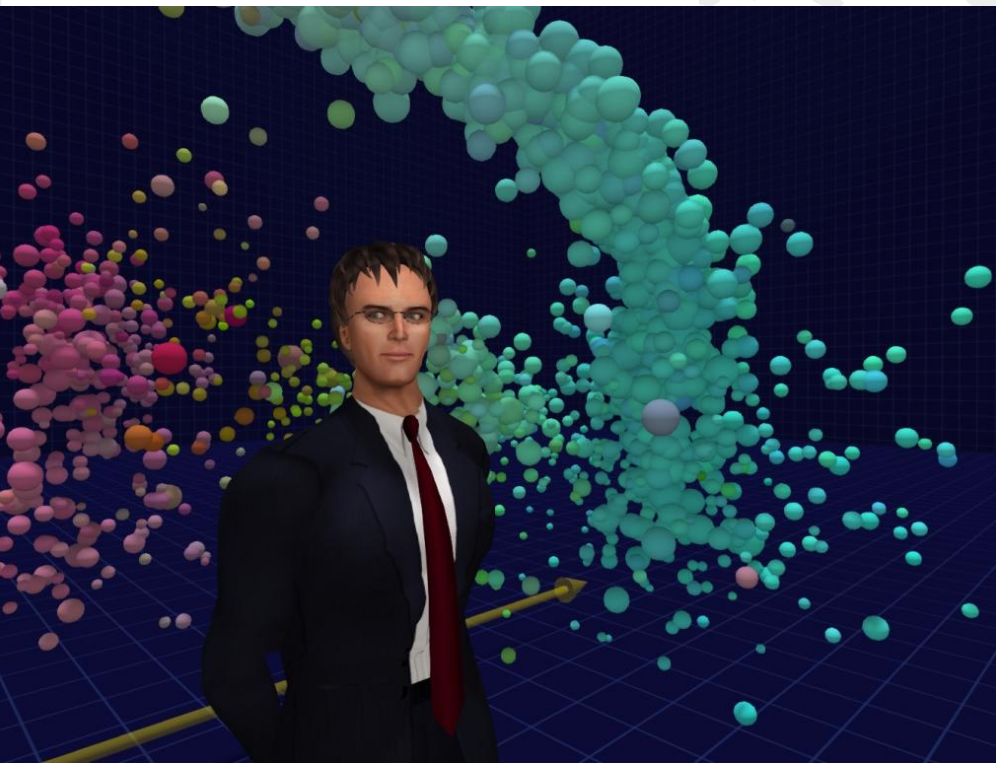
The wings of Icarus are based on the bird-of-paradise pattern. In 1898 the painting was bought from the Royal Academy exhibition through The Chantrey Bequest, a public fund for purchasing modern art bequeathed by Sir Francis Leggatt Chantrey, R.A..

The Lament for Icarus was subsequently awarded the gold medal at the Exposition Universelle of 1900 in Paris.

According to Dr. Justine Hopkins, Draper identifies Icarus "with the other heroes of the Pre-Raphaelites and symbolists, who, like James Dean half a century later, manage to live fast, die young and leave a beautiful corpse".

Artist	Herbert James Draper
Year	1898
Type	Oil on canvas
Dimensions	180 cm × 150 cm (72 in × 61 in)
Location	Tate Britain, London





I am a Professor of Astronomy and a founding Director of the Center for Data-Driven Discovery at Caltech. I was also the Director of the Meta-Institute for Computational Astrophysics (MICA; 2008-2012; <http://www.mica-vw.org>), founded by Prof. Piet Hut (SL Pema Pera), the first professional scientific organization based in virtual worlds. This was an experiment on how we can use this emerging technology for scientific and scholarly purposes.

We used SL (and subsequently OpenSim) for scientific collaboration meetings and experiments in multidimensional data visualization, classroom instruction, but possibly our most successful activities were in the arena of science popularization and public outreach. We held a series of highly popular public lectures (originally started by Prof. Rob Knop = SL Prospero Frobozz).

While MICA has ended its activities in 2012, my research group, in collaboration with Prof. Giuseppe Longo (SL Giulon Ragu), continues development of tools for a scientific data visualization in OpenSim and using Unity 3D as VR platforms.

You can read more about our work at <http://arxiv.org/abs/0907.3520>, <http://arxiv.org/abs/1301.6808>, and <http://arxiv.org/abs/1410.7670>.

Curious George - George Djorgovski, USA

Persepolis (Old Persian: *Pārsá*, New Persian: *Takht-e Jamshid* or *Pārsēh*), literally meaning "city of Persians", was the ceremonial capital of the Achaemenid Empire (ca. 550–330 BC).

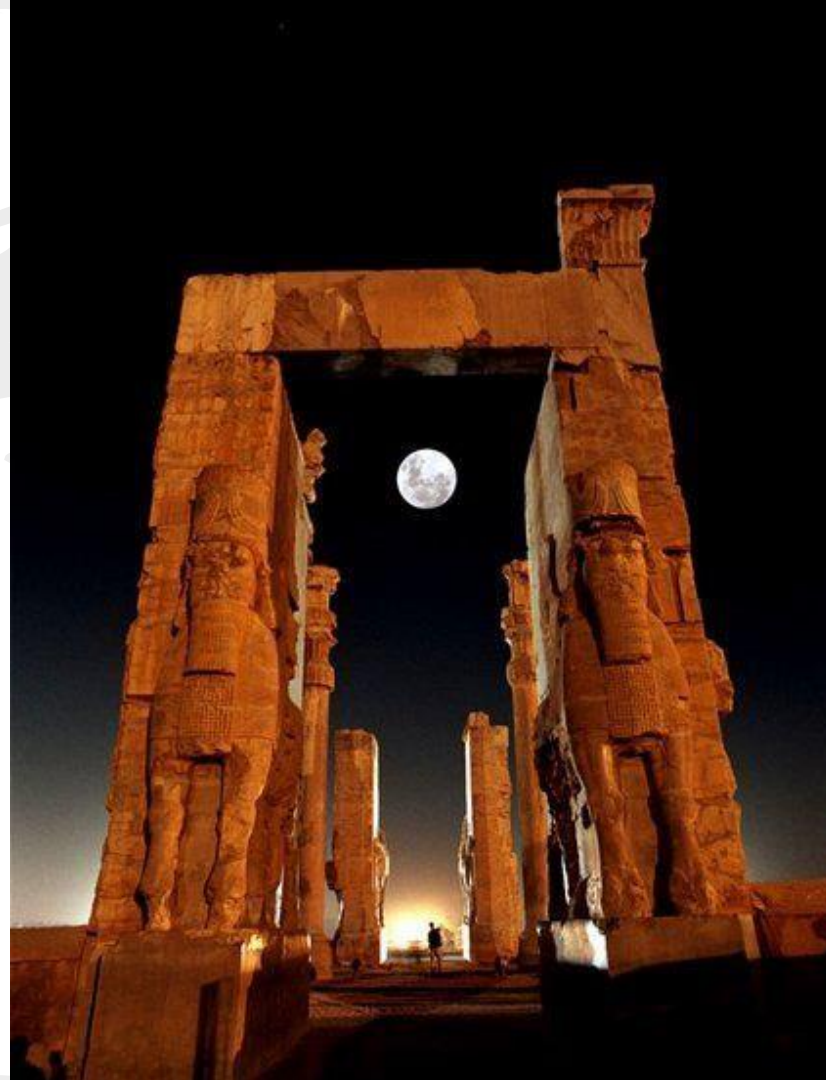
Persepolis is situated 70 km northeast of city of Shiraz in the Fars Province in Iran. The earliest remains of Persepolis date from around 515 BC. It exemplifies the Achaemenid style of architecture.

UNESCO declared the citadel of Persepolis a World Heritage Site in 1979.

The Gate of all Nations, referring to subjects of the empire, consisted of a grand hall that was a square of approximately 25 metres (82 ft) in length, with four columns and its entrance on the Western Wall. There were two more doors, one to the south which opened to the Apadana yard and the other opened onto a long road to the east. Pivoting devices found on the inner corners of all the doors indicate that they were two-leafed doors, probably made of wood and covered with sheets of ornate metal.

A pair of Lamassus, bulls with the heads of bearded men, stand by the western threshold. Another pair, with wings and a Persian head (*Gopāt-Shäh*), stands by the eastern entrance, to reflect the Empire's power.

Xerxes's name was written in three languages and carved on the entrances, informing everyone that he ordered it to be built.





I have a B.S. from Cornell University and an M.S. and Ph.D. from the University of Chicago.

My main research interests are fossils, plate tectonics, and technology.

I have taught for 26 years as a high school Earth Science teacher at Franklin County High School in Southwest Virginia.

I also teach geology and paleontology at Ferrum College.

I have conducted research in geology and technology, and you can download my latest papers at: sites.google.com/a/frco.k12.va.us/william-schmachtenberg/resources.

In 2010 and 2011, I was project manager for Mars Colony Online. Mars Colony Online was a simulation of a Mars colony that was done for NASA's Langley Research Center.

I am a licensed apple developer and I developed 7 apps for IOS and android using Unity 3D through my company Educational Virtual Worlds.

The website for EVW is : www.evwillc.co

Dae Miami - Bill Schmachtenberg, USA

The Rosetta Stone is a granodiorite stele inscribed with a decree issued at Memphis in 196 BC on behalf of King Ptolemy V.

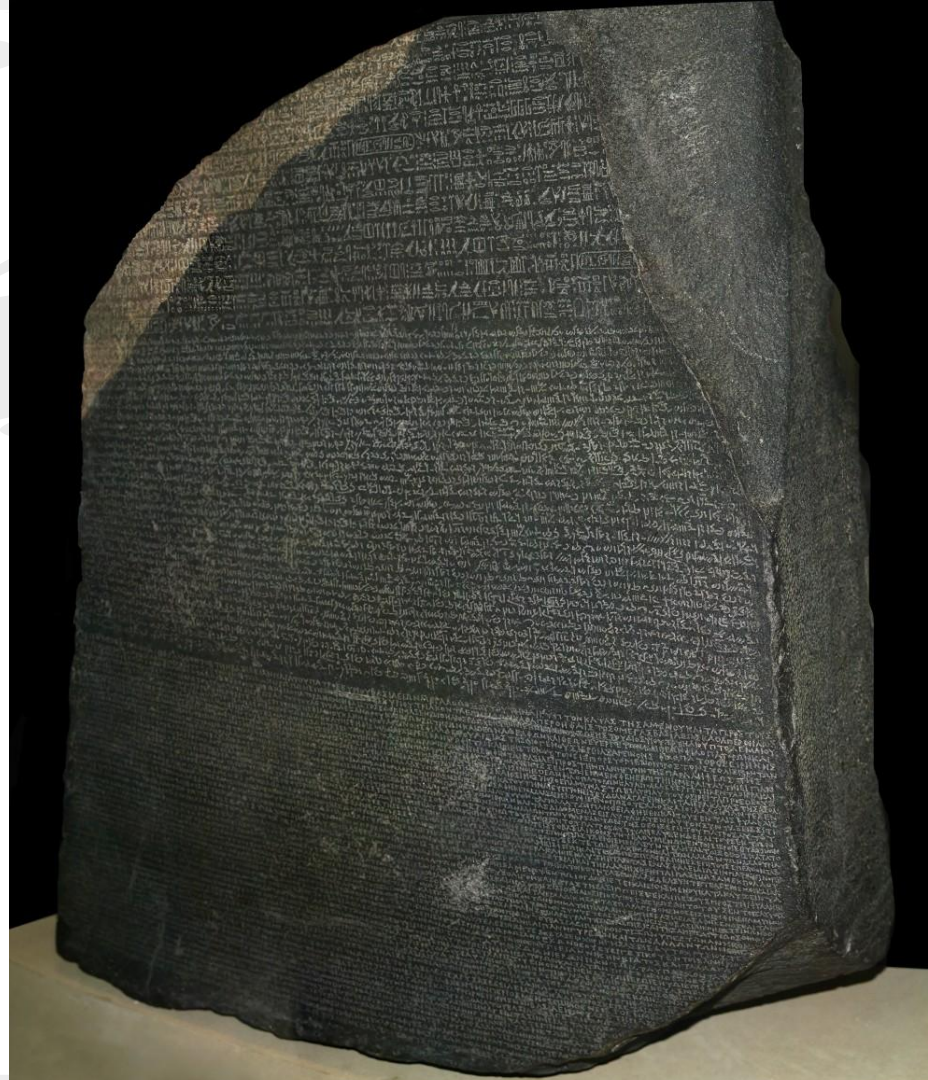
It bears three inscriptions: the top register in Ancient Egyptian hieroglyphs, the second in the Egyptian demotic script, and the third in Ancient Greek.

Before the discovery of the Rosetta Stone and its eventual decipherment, there had been no understanding of the Ancient Egyptian language and script since shortly before the fall of the Roman Empire.

The front surface is polished and the inscriptions lightly incised on it; the sides of the stone are smoothed, but the back is only roughly worked, presumably because this would have not been visible when it was erected.

Two other fragmentary copies of the same decree were discovered later, and several similar Egyptian bilingual or trilingual inscriptions are now known, including two slightly earlier Ptolemaic decrees (the Decree of Canopus in 238 BC, and the Memphis decree of Ptolemy IV, ca. 218 BC).

The Rosetta Stone is, therefore, no longer unique, but it was the essential key to modern understanding of Ancient Egyptian literature and civilization.





"Education is the movement from darkness into the light," Allan Bloom

In RL I work as a trainer for dyslexic and dyscalculic children and adults. As well as with children who have learning disabilities, in their private sphere or at school. I am confronted daily with kids whose natural joy and enthusiasm gets killed bit by bit.

We live in a time that still does not allow people, that do not "fit the system" to be successful. Even more, such people often get "lost" in our system already at a young age. Therefore we lose valuable intellectual resources for the future.

These children often have incredible abilities in various fields. We should do our best to support these children and help them develop into fulfilled adults.

These are my thoughts and I see them mirrored in The Science Circle. This is why I am dedicated to SC and all the people who help to keep it active. Education for everyone free of charge and easily accessible is a goal that is worth working for.

My contribution to SC is the planning and organization of "The Science Circle Travels", monthly field trips to the educational sims of our participants.

The Science Circle and its members give me hope to a better future for Education.

Dawn Rhiannyr - Doris Hauser, Austria

Maurits Cornelis Escher

Born	17 June 1898 Leeuwarden, Netherlands
Died	27 March 1972 Laren, Netherlands
Known for	Drawing, printmaking
Notable work(s)	Relativity, Waterfall, Hand with Reflecting Sphere
Awards	Knighthood of the Order of Orange-Nassau

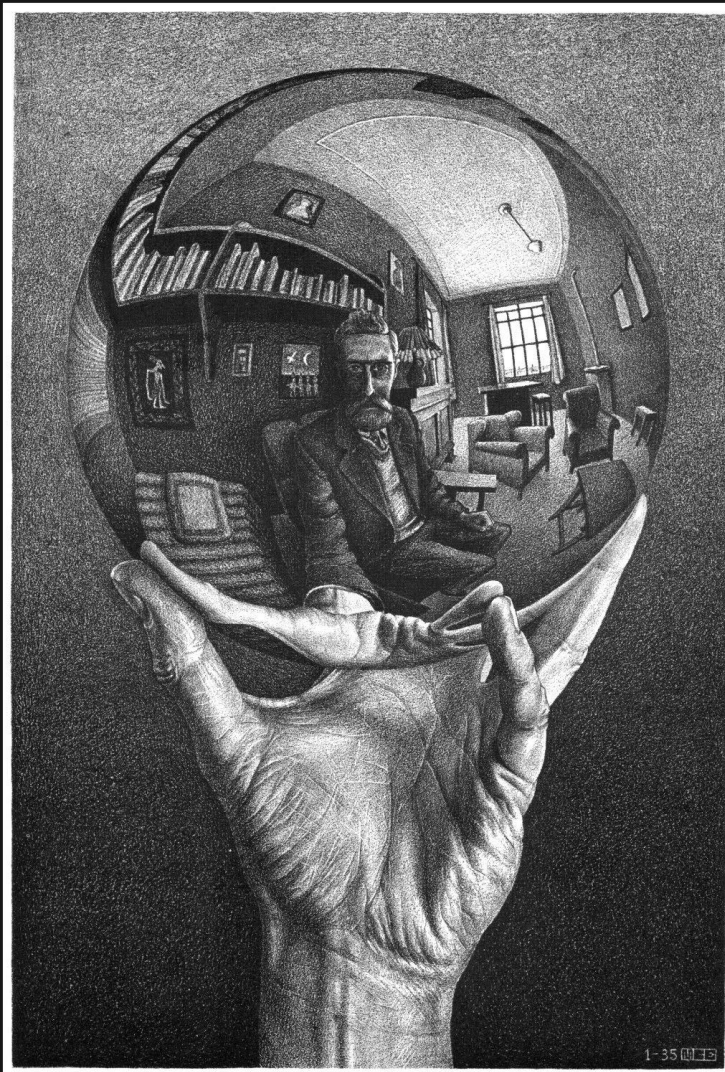
Usually referred to as M. C. Escher, was a Dutch graphic artist. He is known for his often mathematically inspired woodcuts, lithographs, and mezzotints. These feature impossible constructions, explorations of infinity, architecture, and tessellations.

Between 1922 and 1940 Escher travelled through and lived in several European countries. World War II forced him to move back to the Netherlands in January 1941, where Escher lived until 1970. Most of Escher's better-known works date from this period. The sometimes cloudy, cold and wet weather of the Netherlands allowed him to focus intently on his work.

Escher moved to the Rosa Spier Huis in Laren in 1970, an artists' retirement home in which he had his own studio. He died at the home on 27 March 1972, aged 73.

Hand with Reflecting Sphere also known as Self-Portrait in Spherical Mirror is a lithograph print by M. C. Escher, first printed in January 1935. The piece depicts a hand holding a reflective sphere. In the reflection, most of the room around Escher can be seen, and the hand holding the sphere is revealed to be Escher's.

Year	1935
Type	Lithograph
Dimensions	31.8 cm × 21.3 cm (12.5 in × 8.4 in)





Deepty has been a long time in Second Life (May 2007) and became active in the Science Circle in 2008.

She is interested in perception and why we do what we do.

She has a preference for discussion over lecture and so her presentations for the Science Circle have followed the pattern of distributing a short essay on the topic prior to the session and then leading the participants through a series of questions that allow the group to explore the topic from many perspectives.

The titles of presentations she has led are:

Neutrinos and Why the Earth Was Flat;

Why is Learning Math So Hard?;

The Black Swan - Probability and Human Decision Making;

The Science of Natural Farming;

Save the World, We Want to Stay On;

Autism and Perception;

The Monty Hall Problem -Probability and Belief;

and - the first one in December 2008 - Illusions, Dreams and the Limits of Reality.

In her spare Second Life time she is an editor for MANIERA LLC and oversees the MANIERA SL supplement to MANIERA DISTRICT magazine (mymaniera.com).

Deepthinker Oh, USA

The Antikythera Mechanism is an ancient analog computer designed to predict astronomical positions and eclipses.

It was recovered in 1900 from the Antikythera wreck, a shipwreck off the Greek island of Antikythera. The instrument was designed and constructed by Greek scientists and has been dated at 205 BC. After the knowledge of this technology was lost at some point in antiquity, technological artifacts approaching its complexity and workmanship did not appear again until the 14th century, when mechanical astronomical clocks began to be built in Western Europe.

The mechanism was housed in a wooden box about $340 \times 180 \times 90$ mm in size and comprised 30 bronze gears (although more could have been lost). The mechanism's remains were found as 82 separate fragments of which only seven contain any gears or significant inscriptions.

Since their discovery the fragments of the Antikythera mechanism are kept at the National Archaeological Museum of Athens.





I am a Professor of Astrophysics at the University Federico II of Napoli in Italy.

In my second life I am Giulon Ragu and I was a member of the scientific board of the Meta-Institute for Computational Astrophysics (MICA; 2008-2012; <http://www.mica-vw.org>), founded by Prof. Piet Hut (SL Pema Pera), the first professional scientific organization based in virtual worlds.

In collaboration with George Djorgovski (SL Curious George) I used SL (and subsequently OpenSim) for scientific collaboration meetings and experiments in multidimensional data visualization, classroom instruction etc.

My most interesting activity, however, was public outreach with more than 20 public talks on different astronomical topics.

After the demise of MICA my collaboration with Prof. George Djorgovski, continues in the development of tools for a scientific data visualization in OpenSim and using Unity 3D as VR platforms.

You can read more about our work at <http://arxiv.org/abs/0907.3520>, <http://arxiv.org/abs/1301.6808>, and <http://arxiv.org/abs/1410.7670>.

Giulon Ragu - Giuseppe Longo, Italy

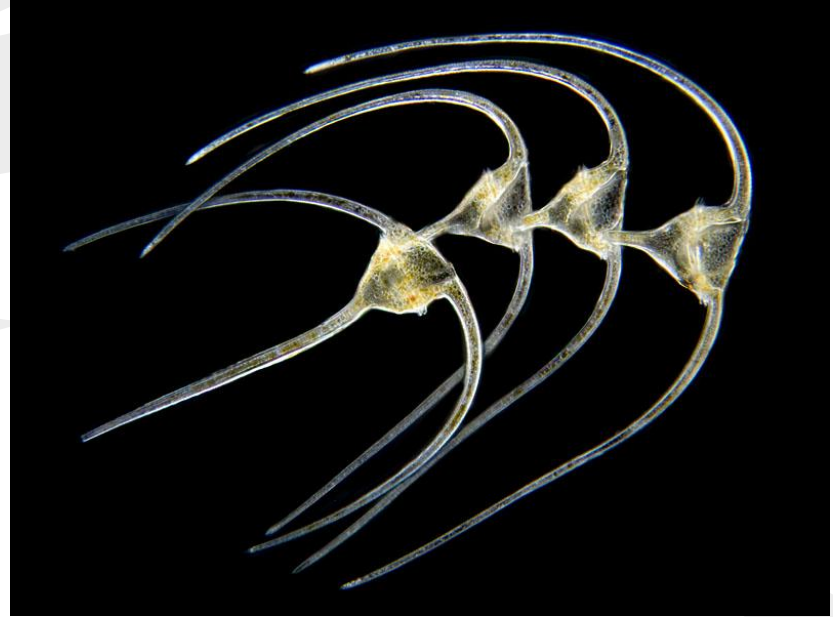
Plankton (singular plankter) are a diverse group of organisms that live in the water column and cannot swim against a current. They provide a crucial source of food to many large aquatic organisms, such as fish and whales. Though many planktonic species are microscopic in size, plankton includes organisms covering a wide range of sizes, including large organisms such as jellyfish.

Plankton inhabit oceans, seas, lakes, ponds. Local abundance varies horizontally, vertically and seasonally. The primary cause of this variability is the availability of light. All plankton ecosystems are driven by the input of solar energy confining primary production to surface waters, and to geographical regions and seasons having abundant light.

Biogeochemical significance

Aside from representing the bottom few levels of a food chain that supports commercially important fisheries, plankton ecosystems play a role in the biogeochemical cycles of many important chemical elements, including the ocean's carbon cycle.

Primarily by grazing on phytoplankton, zooplankton provide carbon to the planktic foodweb, either respiring it to provide metabolic energy, or upon death as biomass or detritus. Organic material tends to be denser than seawater, and as a result it sinks into open ocean ecosystems away from the coastlines, transporting carbon along with it. This process is known as the biological pump, and it is one reason that oceans constitute the largest carbon sink on Earth.





My real-life name is Gord Holden, but in Second Life I'm known as Golden Greymoon. The name's an oxymoron of sorts, appropriate perhaps for one seeking to build positive learning relationship with and between students in 3D interactive worlds.

While this may seem counter-intuitive to some, I've found virtual environments are profoundly useful in achieving this goal. We use them to engage the students in learning how they can help others through academics. The students become involved in questing that can be both personalized and project-based. They are required to interact with experts in various fields, and to get their hands dirty with experimentation.

One of the challenges we've overcome is that many families come to us from a public school they didn't find to be safe or respectful. These attributes needed to be the standard for the virtual environments we employ at Heritage Christian Online School.

Expectations we succeeded in meeting with the suite of resources that we've chosen to use. To check this out you may want to visit <http://immersivetechology4learning.ning.com/> and/or <http://immersivetechology.edublogs.org/2013/07/12/hcos-immersive-tech/>. I'd also highly recommend visiting my YouTube page at <https://www.youtube.com/user/gordondholden/videos> to see both the approach we take, and what our students are able to accomplish.

Golden Greymoon - Gord Holden, Canada

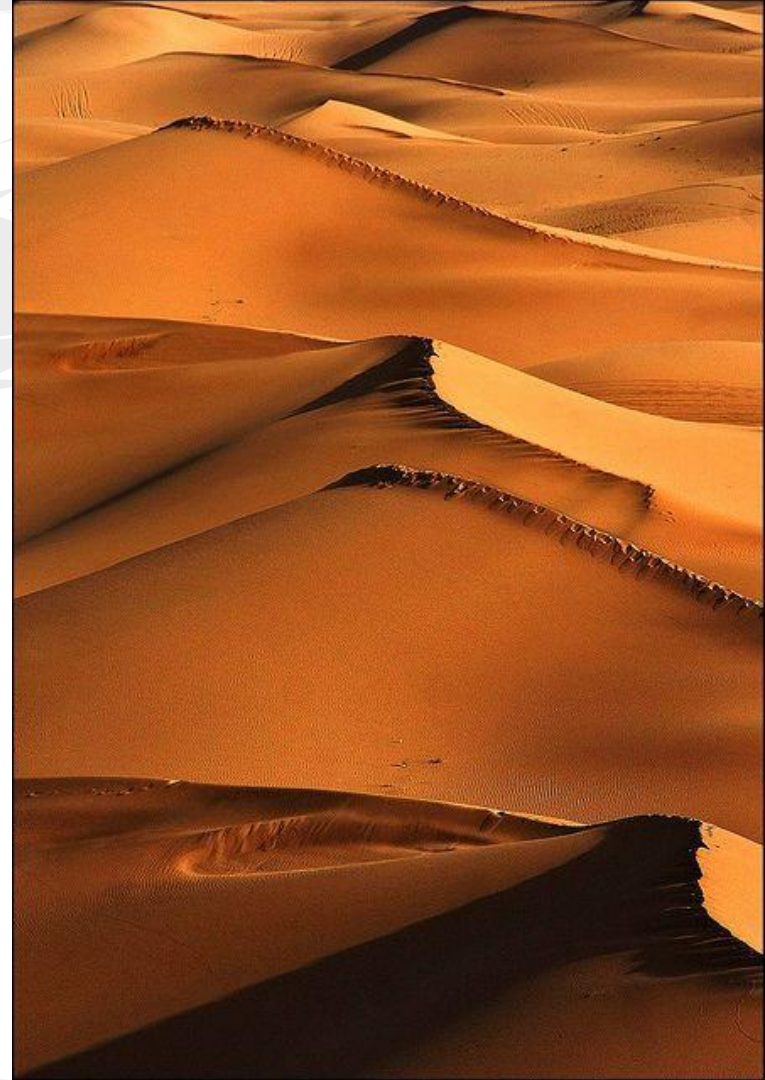
The Sahara (Arabic: الصحراء الكبرى, aṣ-Ṣaḥrā' al-Kubrā, 'the Great Desert') is the largest subtropical hot desert and third largest desert after Antarctica and the Arctic. At over 9,400,000 square kilometers (3,600,000 sq mi), it covers most of North Africa, making it almost as large as China or the United States. The Sahara stretches from the Red Sea to the east, including parts of the Mediterranean coasts to the Atlantic Ocean to the west. To the south, it is delimited by the Sahel, a belt of semi-arid tropical savanna that composes the northern region of central and western Sub-Saharan Africa.

The climate of the Sahara has undergone enormous variations between wet and dry over the last few hundred thousand years. This is due to a 41,000 year cycle in which the axial tilt of the earth changes between 22° and 24.5. At present (2000 CE), the Sahara is in a dry period, but it is expected that the Sahara will become green again in 15,000 years (17,000 CE).

During the last glacial period, the Sahara was even bigger than it is today, extending south beyond its current boundaries. The end of the glacial period brought more rain to the Sahara, from about 8000 BCE to 6000 BCE, perhaps because of low pressure areas over the collapsing ice sheets to the north.

Once the Ice Age ended, the northern Sahara dried out. In the southern Sahara though, the drying trend was soon counteracted by the monsoon, which brought rain further north than it does today. In this period, there was still a monsoon climate in the Sahara. Monsoons form by heating of air over the land during summer. The hot air rises and pulls in cool, wet air from the ocean, which causes rain. Thus, though it seems counterintuitive, the Sahara was wetter when it received more insolation in the summer. This was caused by a stronger tilt in Earth's axis of orbit than today (24.5 degree tilt vs the 23.4° tilt today) and perihelion occurred at the end of July around 7000 BCE.

Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia, Western Sahara





Greg Perrier/Greg Prumier received his Ph.D. in Rangleland Science in 1991 and has worked extensively in conservation and natural resource management in Africa and the USA. Since 2003 he has been a professor of Biology and Environmental Science at the Northern Virginia Community College (NOVA).

In January of 2010, he became active in Second Life (SL) and looked at the many different ways SL was being used to enhance learning at universities and colleges. Initially he had hoped to lecture in SL. He soon realized, however, that because many community college students lack computers with good graphics cards or lack good broadband connections holding formal lectures for students in SL was not feasible.

He had seen that certain educational sims had develop separate activities that students could complete provided they had sufficient guidance on how to function in SL and how to conduct these activities. Using this model, he began to develop specific biology activities in SL and created handouts that guided the students through these activities. In 2012 he was asked to assume the leadership of NOVA's campus in Second Life.

Today NOVA's campus has 15 biology activities used by about 10 faculty and over 300 students each semester.

Greg Prumier - Greg Perrier, USA

The adult human brain weighs on average about 1.5 kg (3.3 lb) with a volume of around 1130 cubic centimeters (cm³) in women and 1260 cm³ in men, although there is substantial individual variation. Neurological differences between the sexes have not been shown to correlate in any simple way with IQ or other measures of cognitive performance.

The human brain is composed of neurons, glial cells, and blood vessels.

The number of neurons, according to array tomography, has been shown to be about 86 billion neurons in the human brain with a roughly equal number of non-neuronal cells called glia.

The living brain is very soft, having a consistency similar to soft gelatin or soft tofu. Although referred to as grey matter, the live cortex is pinkish-beige in color and slightly off-white in the interior.

Scientifically, the techniques that are used to study the human brain differ in important ways from those that are used to study the brains of other mammals. On the one hand, invasive techniques such as inserting electrodes into the brain, or disabling parts of the brain in order to examine the effect on behavior, are used with non-human species, but for ethical reasons, are generally not performed with humans. On the other hand, humans are the only subjects who can respond to complex verbal instructions. Thus, it is often possible to use non-invasive techniques such as functional neuroimaging or EEG recording more productively with humans than with non-humans.

Furthermore, some of the most important topics, such as language, can hardly be studied at all except in humans. In many cases, human and non-human studies form essential complements to each other. Individual brain cells (except where tissue samples are taken for biopsy for suspected brain tumors) can only be studied in non-humans; complex cognitive tasks can only be studied in humans.

Combining the two sources of information to yield a complete functional understanding of the human brain is an ongoing challenge for neuroscience.





Nothing much to tell about my RL, for I am a retired professor.

Ok.. I taught philosophy, educational theory and later classes on computer applications at an Academy of Fine Art.

I used SL to get back to my roots as a graduate in philosophy and started The Philosophy Class. I found a dedicated audience.

Twelve projects so far and about 557 lectures... So rewarding...

1 - 100 Philosophers

2 - 25+ Women Philosophers

3 - 25 Adventures in Thinking

4 - Modern Theories of Ethics

5 - The Ideal State

6 - The Mystery of the Brain

7 - The Utopia of the Free Market

8 - The Aftermath of Neo-liberalism

9 - The Art Not to Be an Egoist

10 - Non-Western Philosophy

11 - Why Science is Right

12 - A Philosopher looks at Atheism

For The Science Circle:

1. After 500 Philosophy lectures in SL

3. An analysis of nudity in SecondLife

2. After 500 women in SL

4. When a Philosopher looks in his purse...

Forgot how I got in contact with The Science Circle, but they stole my heart.

I have just one belief... the only thing that can save our planet is EDUCATION and The Science Circle people share my belief.

<http://thephilosophyclass.blogspot.nl>

Herman Bergson

Herman Bergson - Herman Vos, Netherlands

Iceland is a Nordic country between the North Atlantic and the Arctic Ocean. It has a population of 325,671 and an area of 103,000 km² (40,000 sq mi), making it the most sparsely populated country in Europe.

Iceland is volcanically and geologically active. The interior consists mainly of a plateau characterised by sand and lava fields, mountains and glaciers, while many glacial rivers flow to the sea through the lowlands.

Iceland is warmed by the Gulf Stream and has a temperate climate despite a high latitude just outside the Arctic Circle.

According to Landnámabók, the settlement of Iceland began in AD 874 when the Norwegian chieftain Ingólfr Arnarson became the first permanent settler on the island.

In the following centuries, Scandinavians settled Iceland, bringing with them thralls of Gaelic origin.

From 1262 to 1918, Iceland was ruled by Norway and later Denmark.

The country became independent in 1918 and a republic in 1944.





I got first involved with Second Life through my work at Nokia Research Center, in a project dealing with mixed reality spaces. Concurrently,

Nokia had a prominent presence in Second Life, and I had a high-rise office at the Nokia SL Headquarters. I helped speed-train colleague avatars for strategy events that we held, and got quite interested in the social aspect of the interaction in virtual worlds.

While Nokia withdrew from SL, I have continued to get online, off-and-on, with my eye out on interesting events, avatars, and opportunities to contribute. In 2012, I gave a presentation in the “MetaMeets” conference, held both online and in real life, on eyewear technology for avatar interaction.

Since 1996, I have been working on new technology for mobile and wearable displays. I am active in the Society for Information Display, where I am involved as an Associate Editor of the Journal for the Society for Information Display, and for the Program Committee that handles the annual Display Week Symposium. I have a D. Sc. (Tech.) degree in Electronics from Tampere University of Technology (in Finland), where I also teach a semiannual lecture series on display technology.

Jay Mattercaster - Jyrki Kimmel, Finland

The Earth's inner core is the Earth's innermost part and is a primarily solid ball with a radius of about 1,220 km (760 mi), according to seismological studies. (This is about 70% of the Moon's radius.) It is believed to consist primarily of an iron–nickel alloy and to be approximately the same temperature as the surface of the Sun: approximately 5700 K (5400 °C).

The Earth was discovered to have a solid inner core distinct from its liquid outer core in 1936, by the seismologist Inge Lehmann, who deduced its presence from observations of earthquake-generated seismic waves that reflect off the boundary of the inner core and can be detected by sensitive seismographs on the Earth's surface. This boundary is known as the Bullen discontinuity, or sometimes as the Lehmann discontinuity. A few years later, in 1940, it was hypothesized that this inner core was made of solid iron; its rigidity was confirmed in 1971.

It is estimated that the current solid inner core formed approximately 2 to 4 billion years ago from what was originally an entirely molten core. If true, this would mean that the Earth's solid inner core is not a primordial feature that was present during the planet's formation, but a feature younger than the age of the Earth (about 4.5 billion years).





At the moment I am not active in SC and SL.

In the past I did some scripting. Some discussions on Philosophy of Mathematics and Science.

You can find my Free Mathematical Swings in the forum at Shamash.

The Planetarium above Stonehenge, is my contribution to the first cross disciplinary project within The Science Circle.

Stonehenge is created by Maggie Rae (UK) and is located, for a visit, on STEM Island.

Atlas, Science Circle's entrance and the Library up in the sky are donations by me.

In RL I work as a head of education department of Steklov Mathematical Institute at Saint Petersburg, Russia.

I am an expert in geometry, topology, algebra, having big interests in modern mathematical physics, philosophy, history of religion and history of art.

My blog (in Russian) <http://udod.livejournal.com>

JeanPierre Euler - Nikolai Mnev, Russia

The Chauvet-Pont-d'Arc Cave in the Ardèche department of southern France is a cave that contains the earliest known and best preserved figurative cave paintings in the world, as well as other evidence of Upper Paleolithic life.

Hundreds of animal paintings have been catalogued, depicting at least 13 different species, including some rarely or never found in other ice age paintings.

Rather than depicting only the familiar herbivores that predominate in Paleolithic cave art, i.e. horses, cattle, mammoths, etc., the walls of the Chauvet Cave feature many predatory animals, e.g., cave lions, panthers, bears, and cave hyenas.



Typical of most cave art, there are no paintings of complete human figures, although there is one partial "Venus" figure composed of a vulva attached to an incomplete pair of legs. Above the Venus, and in contact with it, is a bison head, which has led some to describe the composite drawing as a Minotaur.

There are a few panels of red ochre hand prints and hand stencils made by blowing pigment over hands pressed against the cave surface

By 2011, more than 80 radiocarbon dates had been taken, with samples from torch marks and from the paintings themselves, as well as from animal bones and charcoal found on the cave floor.

The radiocarbon dates from these samples suggest that there were two periods of creation in Chauvet: 35,000 years ago and 30,000 years ago.



I came to Second Life on the 18th of October 2010, with very little background in anything at all. Recently completed Education for Hospitality services, clueless as to what to expect out of Second Life and oblivious to the fact I had an interest in Science at all. I started out as a student of The Science Circle, attending all events/classes I could manage (within my time zone).

With time, I began to find that my time in Second Life was becoming a waste. I could not in good conscience continue to be inworld without using it constructively.

Shortly after this became apparent I was approached by Chantal/Nymf with an offer, to become the director of Asia/Oceania time zones for the group. This was the solution I was looking for, and after some time to think on it I accepted.

Since that day I haven't looked back, I have remained steadfast in my dedication to grow The Science Circle and to make it flourish. I realized these philosophies, motivations, and reasons resonate with and within me as a person. It has been a journey of self-discovery for me.

As the now Co-Director I am determined to reach new heights and to help The Science Circle develop further, as it has helped develop me in the past years.

Jes Cobalt - Jes Stannard, Australia

The history of wine spans thousands of years and is closely intertwined with the history of agriculture and Western civilization. As of today, the earliest evidence of a fermented drink based on grapes is in China circa 7000-6600 BCE, then more widespread evidence is found soon thereafter in the Near East, the grapevine and the alcoholic beverage produced from fermenting its juice were important to Mesopotamia, Israel, and Egypt and essential aspects of Phoenician, Greek, and Roman civilization.

Many of the major wine-producing regions of Western Europe and the Mediterranean were first established during antiquity as great plantations.

Winemaking technology improved considerably during the time of the Roman Empire: many grape varieties and cultivation techniques were known; the design of the wine press advanced; and barrels were developed for storing and shipping wine.

The oldest-known winery was discovered in the "Areni-1" cave in Vayots Dzor, Armenia. Dated to c. 4100 BC, the site contained a wine press, fermentation vats, jars, and cups. Archaeologists also found *V. vinifera* seeds and vines. Commenting on the importance of the find, McGovern said, "The fact that winemaking was already so well developed in 4000 BC suggests that the technology probably goes back much earlier."





Kip Roffo (RL: Steven R. Van Hook) has been designing learning resources in Second Life for nearly a decade, including the Educare Learning Centers on Imzadi Island.

He has worked in international education, news media, economic development, and social services for more than twenty years, with positions in Oregon, California, Washington D.C., Moscow, and Kiev. He has served with social and economic development programs including VISTA, Head Start, and the United States Agency for International Development.

He has a doctorate specializing in transcultural learning, and has developed courses and seminars in cross-cultural communications and global relations for universities in the United States and Eastern Europe.

He has been a television news anchor, newspaper columnist, radio talk-show host, and managed a television bureau in Russia during the final months of the USSR.

Kip's Science Circle Presentations include:

- <> Themes and Images Transcending Cultural Differences
- <> Virtual World's Best Practices in Education Panelist
- <> Field Trip to Star Trek Science Museum
- <> Cultural Common Denominators: Our Sociobiological Sexiness and Such

Kip Roffo - Steven Van Hook, USA

Lake Hillier is a lake on Middle Island, the largest of the islands and islets that make up the Recherche Archipelago, Western Australia.

Discovery

Lake Hillier dates back to the journals of explorer Matthew Flinders in 1802. Flinders had climbed Middle Island's highest peak to survey the surrounding waters when he came across the remarkable lake.

Characteristics

The most notable feature of the lake is its pink colour. The colour is permanent, and does not alter when the water is taken in a container.

Although the source of the pink colour has not been definitively proven in the case of Lake Hillier, the pink colour of other salt lakes in the region arises from a dye created by the organisms *Dunaliella salina* and *Halobacteria*. Another hypothesis is that the pink colour is due to red halophilic bacteria in the salt crusts.

Despite the unusual hue, the lake exhibits no known adverse effects upon humans. From above, the lake appears a solid bubblegum pink, but from the shoreline it appears more of a clear pink hue.

The lake is about 600 meters long, and is surrounded by a rim of sand and dense woodland of paperbark and eucalyptus trees. A narrow strip of sand dunes covered by vegetation separates it from the blue Southern Ocean.





I am a retired aerospace engineer, now a video producer. I earned my Master's degree in astronautics from Stanford University, and my Master's in control systems and robotics from the University of Southern California.

I worked for about 20 years in space shuttle flight simulation, space station design, and a variety of satellite projects. My career ended in the post-Cold War shrinking of the space industry. After trying a variety of other fields, I ended up as a TV engineer and video producer.

I have been involved in online communities since I was a guide for America Online in the early '90s. When I discovered Second life in 2006, it seemed like the logical next step for my virtual world exploration.

I am looking to renew my acquaintance with my love of science and engineering, this time as a media producer. SL and SC offer the opportunity to learn and create.

Leo Mandelbrot - Dox Doxiadis, USA

Tsingy de Bemaraha National Park is a national park located in Melaky Region, Madagascar. The national park centers on two geological formations: the Great Tsingy and the Little Tsingy. Together with the adjacent Tsingy de Bemaraha Strict Nature Reserve, the National Park is a UNESCO World Heritage Site.

The Tsingys are karstic plateaus in which groundwater has undercut the elevated uplands, and has gouged caverns and fissures into the limestone. Because of local conditions, the erosion is patterned vertically as well as horizontally. In several regions on western Madagascar, centering on this National Park and adjacent Nature Reserve, the superposition of vertical and horizontal erosion patterns has created dramatic "forests" of limestone needles.

The word tsingy is indigenous to the Malagasy language as a description of the karst badlands of Madagascar. The word can be translated into English as where one cannot walk barefoot.



Biology

The unusual geomorphology of the Tsingy de Bemaraha World Heritage Site, which encompasses both the National Park and the adjacent Strict Nature Reserve, means that the Site is home to an exceptionally large number of endemic species of plants and animals that are found only within extremely small niches within the tsingys. For example, the summit, slope, and base of a tsingy's limestone needle form different ecosystems with different species clinging to their exceptionally steep slopes.



My chosen profession is that of a teacher, and although that has evolved over the years to my current role as associate professor at the University of Texas - Pan American (UTPA), my first vocation is teaching. I am a researcher, a professor, a presenter, a writer, curriculum designer, and an advocate and finding a balance of all of them can be daunting, especially in belonging to groups that expect you to pick one.

I have learned that the Science Circle can embrace my "more art than science" work, which includes specializations in literacy and motivation, technology leveraging, the role of identity and epistemology on adult learning, and self-determined and transformational learning. My degrees are in English (B.A.), Reading (M.Ed), and Curriculum and Instruction (Ed.D), and I draw from all of them when I teach, write, and research. Though my specializations and research interests appear to be rather eclectic, the philosophy that joins them together is this: a need for education practices that connects to the learner intrinsically. This is both art and science.

Second Life has afforded me the opportunity to extend my professional interests into this virtual environment. This is also why my given name is deliberately connected to my Second Life name. I teach, research, present, write, design, and advocate in Second Life, as well, both through my university's auspices (UTPA has 4 sims in SL), and through collaborations with other non-profit groups and individuals.

I am a passionate advocate of free and open education, which is why I am on my third year of being the programs chair for the Virtual Worlds Best Practices in Education conference for three years, as well as more recently, one of the managing editors of the Journal of Virtual Studies.

This is also why I joined Science Circle, and why I hope to extend my participation by providing presentations. Knowledge is a gift, and the pool of knowledge in this group is both large and astonishingly diverse. I hope to add my voice to such distinguished company.

Letty Luckstone - Leticia De Leon, USA

Qiandao Lake (Chinese: 千岛湖, lit. Thousand Island Lake), a man-made lake located in Chun'an County, Zhejiang, China, formed after the completion of the Xin'an River hydroelectric station in 1959. 1,078 large islands dot the lake and a few thousand smaller ones are scattered across it. The lake covers an area of 573 km² and has a storage capacity of 17.8 km³. The islands in the lake cover about 86 km².

Qiandao Lake, known for its clear, and sometimes drinkable water, is used to produce the renowned Nongfu Spring brand of mineral water. It is also home to lush forests (over 90%), and exotic islands. Its more popular attractions include Bird Island, Snake Island, Monkey Island, Lock Island (featuring supposedly the world's biggest lock), and the Island to Remind You of Your Childhood.

The valley was flooded in 1959 to create the lake for the Xin'an River Dam project.

At the foot of Wu Shi Mountain (or "Five Lion" Mountain) lies an ancient city known as Shi Cheng ("Lion City"). It was built during the Eastern Han Dynasty (AD 25 - 200) and was first set up as a county in AD 208. This city acquired the name "Shi Cheng" from nearby Wu Shi Mountain, which is located just behind the city. At present Shi Cheng remains undisturbed at a depth of 26-40m.

Big Blue, a dive operator based in Shanghai, runs year-round weekend trips twice a month to Qiandao Lake and has begun exploration of this submerged city.

In 2007, a Chinese-Italian consortium began planning the construction of a prototype of an Archimedes bridge across the lake.

The bridge is expected to span 100m, as a proof-of-concept for larger bridges.





Max Chatnoir is the alter ego of Mary Anne Clark, PhD, Professor of Biology at Texas Wesleyan University.

Max is the creator and manager of Genome Island, a virtual laboratory for teaching basic concepts of genetics. Genome is the instructional site for “Cats, Codons and Chromosomes,” a nonmajors class in genetics taught at Texas Wesleyan since 2006, but is also open for use by other classes studying genetics.

A link to sample assignments for the class can be seen in the Guide to Genome: <https://www.dropbox.com/home/Public/Genome/Guide>.

Max Chatnoir - Mary Anne Clark, USA

Massive Blue Stars Beginning To Merge

In the Giraffe constellation 13,000 light-years away, MY Camelopardalis is a massive binary system made up of two blue (that is, very hot and very bright) stars. They're so close, they're about to merge into a supermassive star—a process no one has ever seen before. Even though MY Cam is the first known example of a supermassive merger progenitor, astronomers studying the system say that most massive stars are created through mergers with smaller ones.

Stars that move alone like our sun are the minority. Most stars in our galaxy were formed in binary or multiple systems, where they're tied by gravity to a companion star. In some of these systems, the stars might appear to eclipse one another if their orbital planes face Earth. For that reason, MY Cam was thought to be a single star up until a decade ago.



Using observations from the Calar Alto Observatory in Spain, a team led by Javier Lorenzo from the University of Alicante found that the eclipsing binary MY Cam is made up of one star that's 38 times the mass of our sun, and another that's 32 solar masses.

The two jumbo stars are very close together: Their orbital period is just under 1.2 days, making it the shortest orbital period known for these types of stars. In order to complete a full turn so quickly, the stars must be in extremely close contact (picture)—so close that they're actually touching and their outer layer material are mixing together in what's known as a common envelope.



In real life I am a Senior Lecturer in Psychology at University of Derby, UK. I graduated in Psychology from the former School of Cognitive and Computing Sciences (COGS) at University of Sussex in the UK where I studied Psychology, Linguistics, Philosophy and Artificial Intelligence. This was a very exciting time in Cognitive Science and the interdisciplinary atmosphere was exhilarating. After Sussex, I moved to the Department of Psychology at University of Essex to do a Ph.D. in 'Attention-Deficit/Hyperactivity Disorder (ADHD) and Children's Language'.

My primary research interests are grounded in Developmental Psychology and Cyberpsychology. In one collaborative JISC-funded project, 'PREVIEW-Psych', I led a team in developing interactive problem-based learning scenarios in Second Life. A reproduction of a typical family residence featured 'intelligent avatars' that replicated the social interactions and symptoms of people with clinical conditions such as Depression, Schizophrenia and Anorexia Nervosa. Students found out about the virtual family as they interacted with the evolving scenarios from the perspective of a visiting social worker. The sense of enhanced interactivity led to deeper understanding of the psychological content.

I am committed to pushing the boundaries of innovation in Higher Education and I support the work of The Science Circle wholeheartedly.

Milton Broome - Simon Bignell, UK

The "calculating machine"

In today's world, calculators are pretty boring. They're black, battery-powered and, if you're lucky, can chart a graph for you.

But before mid-20th century, calculators were so much more - starting with the invention of the abacus around 2000 BC, humanity has come up with a range of ingenious and fascinating machines to help us calculate over the centuries.

Sure, we now have the ability to store formulae and do algebra all with the one sleek machine, but have we lost some of the wonder of mathematics along the way?

This beautiful machine was built by German engineer Johann Helfrich Müller around 1784.

The "calculating machine" could perform the four basic arithmetic operations.



A replica of the calculating machine of Müller from 1784

While still working on his machine, on 22nd of May 1783, Müller wrote a letter to his friend Georg Christoph Lichtenberg, in which he described his invention and set forth his plans. He intended to make a profit from the machine and informed Lichtenberg about his intention to make another copy of it, as soon as the first one was ready. He also wanted to build a couple of simpler calculating machines for addition and subtraction only and hope to sell his machines in England. Later on however the Grand Duke of Hesse-Darmstadt Ludwig I, bought the first machine for 4000 Gulden, and incorporated it in his collection of scientific instruments.



I am retired from the world of Assessment Center Technology (a subset of Industrial Technology). My Bachelor's degree is from the University of Central Florida. Currently I am the Assistant Executive Producer of a show with episodes broadcast via cablevision, TelVue, Roku and YouTube.

For over 10 years I was a project management consultant. I worked in an organization with clients in the US Fortune 500, Japan, Austria, Canadian provincial government, US state and local governments, public and private educational organizations. Successfully developing, managing and delivering behaviorally based assessment centers was my forte. The assessments were either for job candidate selection, training for future positions or both. They included using, statistically relevant, job-specific role-playing exercises.

As a spinoff of an intense interest in all technologies, I became a computer forum guide on America Online in the early '90s. This led to my becoming the system administrator of a small BBS in an online startup in the early 90's.

As an alternative learner, I was thrilled to learn about and to join the Science Circle. I am considering several ways to contribute to SC in the coming years, with a bent toward exploring topics related to learning styles, tips and tricks.

Moonsnail Mandelbrot - Sarah Doxiadis, USA

Lenticular clouds (*Alto cumulus lenticularis*) are stationary lens-shaped clouds that form in the troposphere, normally in perpendicular alignment to the wind direction. Lenticular clouds can be separated into altocumulus standing lenticularis (ACSL), stratocumulus standing lenticular (SCSL), and cirrocumulus standing lenticular (CCSL).

Because of their shape, they have been offered as an explanation for some Unidentified Flying Object (UFO) sightings.

As air flows along the surface of the Earth, it encounters obstructions. These are man-made objects, such as buildings and bridges, and natural features, like hills, valleys, and mountains. All of them disrupt the flow of air into eddies. The strength of the eddies depends on the size of the object and the speed of the wind. It results in turbulence classified as 'mechanical' because it is formed through the "mechanical disruption of the ambient wind flow". Where stable moist air flows over a mountain or a range of mountains, a series of large-scale standing waves may form on the downwind side. If the temperature at the crest of the wave drops to the dew point, moisture in the air may condense to form lenticular clouds. As the moist air moves back down into the trough of the wave, the cloud may evaporate back into vapor. Under certain conditions, long strings of lenticular clouds can form near the crest of each successive wave, creating a formation known as a "wave cloud."

The wave systems cause large vertical air movement, enough that water vapor may condense to produce precipitation. The clouds have been mistaken for UFOs (or "visual cover" for UFOs), particularly the round "flying saucer"-type, because these clouds have a characteristic lens appearance and smooth saucer-like shape; also, because lenticular clouds generally do not form over low-lying or flat terrain, many people have never seen one and are not aware clouds with that shape can exist. Bright colors (called irisation) are sometimes seen along the edge of lenticular clouds. These clouds have also been known to form in cases where a mountain does not exist, but rather as the result of shear winds created by a front.





Nat Ure (aka Dave Rayers RL)

I have worked in Research and Development for broadcasting throughout my career in various capacities and am now retired.

I trained at the University of Kent at Canterbury for both BSc and PhD in Physics with Computing and then joined the BBC where I worked on many things, but of note is work on Telesoftware with the BBC Computer Literacy Project (aka the BBC Micro) and in Teletext.

I left the BBC to found a company with a couple of colleagues, trading in Data Broadcasting technologies which we did for many years, travelling all round the world designing and selling data transmission codecs.

I rejoined the BBC in Research and Development and soon found myself in charge of the Digital Production research team for some years before getting involved in business management.

I got into Second Life because of a production research interest in Pre-Visualisation. Simply put that is making a virtual production to plan a movie segment in such a way that the directors, actors and technicians can see what it might look like and use it as a planning tool. It is then possible to rehearse camera angles, some lighting etc.

Nat Ure - David Rayers, UK

Catherine the Great

Yekaterina Alexeevna or Catherine II, also known as Catherine the Great (Russian: Екатерина II Великая, Yekaterina II Velikaya; 2 May 1729 – 17 November 1796), was the most renowned and the longest-ruling female leader of Russia, reigning from 9 July 1762 until her death in 1796 at the age of 67. Her reign was called Russia's golden age. She was born in Stettin, Pomerania, Prussia as Sophie Friederike Auguste von Anhalt-Zerbst-Dornburg, and came to power following a coup d'état and the assassination of her husband, Peter III, at the end of the Seven Years' War. Russia was revitalized under her reign, growing larger and stronger than ever and becoming recognized as one of the great powers of Europe.

Catherine held western European philosophies and culture close to her heart, and she wanted to surround herself with like-minded people within Russia. She believed a 'new kind of person' could be created by inoculating Russian children with European education. Catherine believed education could change the hearts and minds of the Russian people and turn them away from backwardness. This meant developing individuals both intellectually and morally, providing them knowledge and skills, and fostering a sense of civic responsibility.

Catherine had a reputation as a patron of the arts, literature, and education. The Hermitage Museum, which now occupies the whole Winter Palace, began as Catherine's personal collection. At the instigation of her factotum, Ivan Betskoy, she wrote a manual for the education of young children, drawing from the ideas of John Locke, and founded (1764) the famous Smolny Institute, which admitted young girls of the nobility.

She wrote comedies, fiction, and memoirs, while cultivating Voltaire, Diderot, and d'Alembert—all French encyclopedists, who later cemented her reputation in their writings. The leading economists of her day, such as Arthur Young and Jacques Necker, became foreign members of the Free Economic Society, established on her suggestion in Saint Petersburg in 1765. She recruited the scientists Leonhard Euler and Peter Simon Pallas from Berlin and Anders Johan Lexell from Sweden to the Russian capital.





With a background in “Education and International Activism for Greenpeace” next to “Advising my political party Nationally on Education” , I entered Second Life in January 2007.

The number of professionals in Second Life was quickly clear and networking shown to be easier than ever.

Educators and Scientists were creating incredible Educational materials, experimented with lecturing and seemed to have a high interest in connecting internationally with one another.

Second Life’s potential for Interactive Global Education was proven and The Science Circle was founded.

I am one of a few proud “World Citizens”.

This planet and its place in the universe is ours... we need to pick up the glove.

WE are responsible for the “state” we find this planet in today and we are the only ones able to change its direction.

Geo- and national politics are still a snake pit, the environmental community is in a state of alarm, children still die by poverty and war, a tremendous amount of our species is being suppressed, raped or exploited... but we continue to reduce the finances for Education ...

Rather than turning my head the other way, I contribute to the solution: Facilitating Free and easy accessible Education.

Only by an Educated World... these problems can be Solved.

Nymf Hathaway - Chantal CJ Snoek, Netherlands

Yabusame is a type of mounted archery in traditional Japanese archery. An archer on a running horse shoots three special "turnip-headed" arrows successively at three wooden targets.

This style of archery has its origins at the beginning of the Kamakura period. Minamoto no Yoritomo became alarmed at the lack of archery skills his samurai had. He organized yabusame as a form of practice.

Japanese bows date back to prehistoric times — the Jōmon Period. The long, unique asymmetrical bow style with the grip below the center emerged under the Yayoi culture (300 BC – 300 AD). Bows became the symbol of authority and power. The legendary first emperor of Japan, Emperor Jimmu, is always depicted carrying a bow.

The use of the bow had been on foot until around the 4th century when elite soldiers took to fighting on horseback with bows and swords. In the 10th century, samurai would have archery duels on horseback. They would ride at each other and try to shoot at least three arrows. These duels did not necessarily have to end in death, as long as honor was satisfied. One of the most famous and celebrated incidents of Japanese mounted archery occurred during the Genpei War (1180–1185), an epic struggle for power between the Minamoto and Taira clans that was to have a major impact on Japanese culture, society, and politics.

Nowadays, the best places to see yabusame performed are at the Tsurugaoka Hachiman-gū in Kamakura and Shimogamo Shrine in Kyoto (during Aoi Matsuri in early May). It is also performed in Samukawa and on the beach at Zushi, as well as other locations.





I entered Second Life at the end of December 2006 and met Nymf and Q shortly thereafter. It has been my distinct privilege and pleasure to know them as friends ever since.

By the fall of 2009 the U.S. economy was in the grips of recession so with time on my hands and with the Copenhagen Conference on Climate Change (COP15) due to open I decided to organize the Copenhagen Expo in SL.

We brought together and scheduled speakers from several different disciplines and countries which covered many important aspects of the human experience. Yes, it was focused on climate but also included divergent subjects such as agriculture, aquaculture, water resources, NOAA, Native American traditions, the African environment, urban planning, international politics and cultural exchanges. We enjoyed the enthusiastic support of several different sims which facilitated stimulating conversations in varied settings. (Live streams from the conference were attempted but did not succeed.)

This is just one example of how virtual worlds can contribute meaningfully in important conversations across time zones and cultures.

Many deserve great thanks for making all the events possible, but most of all my deepest thanks and appreciation go to Suzi Holler (aka Marian Sapphire).

<http://www.heatsavershades.com>

<https://www.facebook.com/heatsaverthermalshades>

Paolo Rousselot - Peter Lundquist, USA

Jason deCaires Taylor (born 12 August 1974) is an English sculptor specialising in the creation of contemporary underwater sculptures which over time develop into artificial coral reefs. Taylor integrates his skills as a conservationist, underwater photographer and scuba diving instructor to produce unique installations that encourage the habitation and growth of corals and marine life.

In 2006 he produced *Vicissitudes*, a ring of 26 children holding hands located 5 metres down in Moilinere Bay, Grenada.

He uses a mixture that encourages coral inhabitation so that the sculptures slowly evolve.

His early work includes *Vicissitudes*, *Grace Reef*, *The Lost Correspondent* and *The Unstill Life*. All are located in the world's first public underwater sculpture park in Molinere Bay, Grenada, West Indies, commissioned in 2006.

More recently his most ambitious project to date is the creation of the world's largest underwater sculpture museum, *MUSA*, situated off the coast of Cancun and the western coast of Isla Mujeres





I'm currently the Chief Learning Officer at ReactionGrid, a software company developing 3D simulations and multiuser virtual world platforms. My primary focus at ReactionGrid is on collaborative learning, instructional design and developing immersive education environments. I'm also the Community Developer and Creative Advisor at Wiggle Planet, helping create free range, self-animated artificial life at the intersection of augmented reality and the physical world.

From 2005-2010, I worked at Linden Lab and was known as "Pathfinder Linden" in Second Life. At Linden Lab I led the development of the education and healthcare markets while evangelizing the innovative use of virtual worlds in research, art and immersive learning. Previously, I worked at Massachusetts General Hospital and Harvard Medical School, creating online medical education and patient support communities while exploring the underlying neuroscience behind how people communicate and collaborate effectively.

My background is in neuroscience research and medical education, and I have a deep ongoing interest in how to best design and use virtual world technology to enhance education, build collaborative communities and augment the human mind.

The Science Circle is a fantastic resource for academics in Second Life, providing an invaluable network of friends and colleagues that greatly facilitates interdisciplinary collaboration.

Pathfinder Lester - John Lester, Canada

An aurora is a natural light display in the sky (from the Latin word aurora, "sunrise" or the Roman goddess of dawn), predominantly seen in the high latitude (Arctic and Antarctic) regions. The name "auroras" is now more commonly used for the linguistic plural "aurorae" of "aurora".

Ogilvie Mountains, Yukon Territory, Canada.



In northern latitudes, the effect is known as the aurora borealis (or the northern lights), named after the Roman goddess of dawn, Aurora, and the Greek name for the north wind, Boreas, by Galileo in 1619.



Aurora viewed from the ISS

Auroras are caused by charged particles, mainly electrons and protons, entering the atmosphere from above causing ionisation and excitation of atmospheric constituents, and consequent optical emissions. Incident protons can also produce emissions as hydrogen atoms after gaining an electron from the atmosphere.

Auroras seen within the auroral oval may be directly overhead, but from farther away they illuminate the poleward horizon as a greenish glow, or sometimes a faint red, as if the Sun were rising from an unusual direction. Its southern counterpart, the aurora australis (or the southern lights), has features that are almost identical to the aurora borealis and changes simultaneously with changes in the northern auroral zone.

It is visible from high southern latitudes in Antarctica, South America, New Zealand, and Australia.

Auroras also occur on other planets. Similar to the Earth's aurora, they are also visible close to the planets' magnetic poles. Auroras also occur poleward of the auroral zone as either diffuse patches or arcs, which can be sub-visual.



I am the founding director of the Center for Teaching and Learning and also a Senior Staff Scientist at the Exploratorium in San Francisco. In 2006 I founded the Splo museum in SL, and in 2008 opened the Exploratorium sim.

I have given lectures at MICA and Science Circle as well as at the Exploratorium Sim. In particular I have hosted live webcasts of three solar eclipses in SL.

I am also the Senior Scientist at Klutz Press where I have helped create dozens of science books for people of all ages, for example the Explorabook.

I am a PhD physicist from MIT and was a tenured professor of physics. I have Isaac Asimov's old job at the magazine of Fantasy and Science Fiction, writing science fact columns. As an expert on atmospheric optics I discovered the shape of the Martian carbon dioxide snowflake, cuboctahedrons. I am also the first to calculate and display the appearance of stars when viewed from a relativistic spacecraft.

I won the competition as best science museum demonstrator at the World Congress of Museums in Helsinki, and have received the Faraday Award for Excellence in Science Teaching from the National Science Teachers Association.

<http://www.exo.net/~pauld/>

<http://www.splo.org>

Patio Plasma - Paul Doherty, USA

The Three Sisters is a rock formation in the Blue Mountains of New South Wales, Australia, on the north escarpment of the Jamison Valley. They are close to the town of Katoomba and are one of the Blue Mountains' best known sites, towering above the Jamison Valley. Their names are Meehni(922 meters), Wimlah (918 meters), and Gunnedoo (906 meters).

Formation

The Sisters were formed by land erosion. The soft sandstone of the Blue Mountains is easily eroded over time by wind, rain and rivers.

Story

Many years ago when Australia was known as Gondwana, there lived a wise witch doctor with three beautiful daughters. Leaving his daughters at the top of the cliff one morning, the witch doctor reminded them not to make too much noise lest they awaken the Bunyip, a fierce, man-eating creature that lurked in a cave on the valley floor. The sisters nodded absent-mindedly to their father, but as soon as he was out of sight a centipede appeared on the ground before them. Screaming in fright, Meehni picked up a stone and threw it at the centipede. The noise of the falling rocks disturbed the sleeping Bunyip in his lair. He immediately jumped up and ran out, determined to find the source of the disturbance. Fortunately the father heard the commotion and ran back to his daughters, turning them to stone to save them from the Bunyip. The Bunyip turned his eyes on the witch doctor, who quickly turned himself into a lyrebird, to escape the Bunyip. Sadly the witch doctor realised too late that he had dropped his magic bone in his transformation and could no longer find it. To this day it is said that lyrebird scours the floor, searching for the magic bone so that he and his daughters can return to their true forms.





Hello I am Q

In RL my name is Agustin Martin. I work as an Unix/Linux (other flavours too ;) System Operator in Enschede, the Netherlands.

I started SL in January 2007. Virtual reality always intrigued me and I see SL as a sort of prehistoric version of the VR we're going to have in the future.

Chantal and I worked on several projects in SL.

From the start the technical support for The Science Circle was my contribution.

Over the years I created some of the buildings we needed, Delphi for the radio parcel is one of them.

Next to this I maintain the website and run the The Science Circle OpenSim grid for several years now.

The Science Circle OpenSim grid is there for our members to discover the incredible OpenSim community and possibilities.

It is great to see how people can combine forces and make The Science Circle to what it is today.

Quaezar Agnomen - Agustin Martin, Netherlands

Ötzi the Iceman

A report that Ötzi the Iceman has 19 genetic relatives living in Austria is the latest in a string of surprising discoveries surrounding the famed ice mummy. Ötzi's 5,300-year-old corpse turned up on the mountain border between Austria and Italy in 1991. Here is a rundown of the latest on the world's oldest Alpine celebrity, and some of the other remarkable things we've learned about Ötzi.

The Iceman has living relatives.

Living links to the Iceman have now been revealed by a new DNA study. Gene researchers looking at unusual markers on the Iceman's male sex chromosome report that they have uncovered at least 19 genetic relatives of Ötzi in Austria's Tyrol region.

The match was made from samples of 3,700 anonymous blood donors in a study led by Walther Parson at Innsbruck Medical University. Sharing a rare mutation known as G-L91, "the Iceman and those 19 share a common ancestor, who may have lived 10,000 to 12,000 years ago," Parson said. The finding supports previous research suggesting that Ötzi and his ancestors were of farming stock. The study used Y-chromosome markers that are passed from father to son to trace the Neolithic migrations that brought farming to Europe via the Alps. Ötzi belonged to a Y-chromosome group called haplogroup G, which is rooted, like farming, in the Middle East.

The study's overall results fit the idea that the changes of the Neolithic Revolution spurred people westward into the Tyrol region, Parson said.

The Iceman was inked.

Ötzi's frozen mummy preserves a fine collection of Copper Age tattoos. Numbering over 50 in total, they cover him from head to foot. These weren't produced using a needle, but by making fine cuts in the skin and then rubbing in charcoal. The result was a series of lines and crosses mostly located on parts of the body that are prone to injury or pain, such as the joints and along the back. This has led some researchers to believe that the tattoos marked acupuncture points. If so, Ötzi must have needed a lot of treatment, which, given his age and ailments, isn't so surprising. The oldest evidence for acupuncture, Ötzi's tattoos suggest that the practice was around at least 2,000 years earlier than previously thought.





Scire Gaea was born into Second Life on September 11th of 2006.

Scire's Real Life substrate is Robert Lawson Brown, who possesses a Ph.D. in physics. Scire is an augment-ist (in SL, the horses are virtual, but the unicorns are real) and a VR literalist (the spoon is not a spoon, but you should use it like one).

Scire/Robert's interests include physics and math, RL photography and videography, and programming.

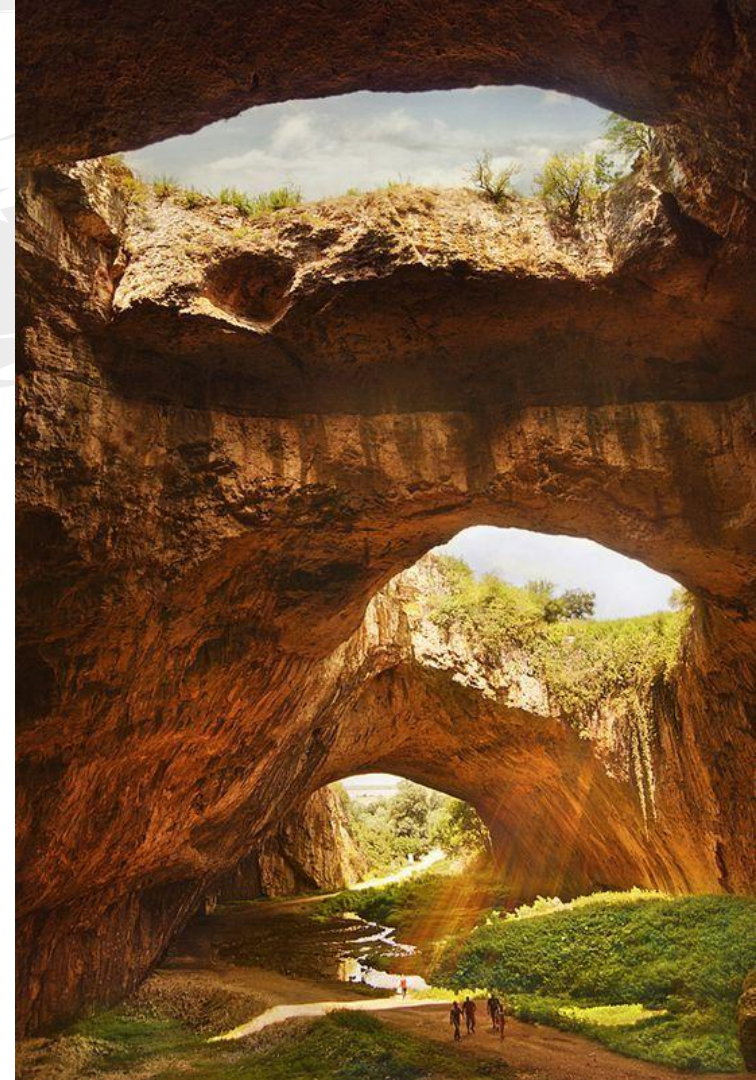
The first third of Dr. Brown's career was devoted to studies of condensed matter, the second third to making chips, and the current third to programming, especially web applications.

Visit his home in SL at Seogwipo and at Rason.

Scire Gaea - Robert Lawson Brown, USA

Devetashka cave (the name in Bulgarian: Devetashka peshtera) is huge karst cave in Bulgaria, known for its long term occupancy for human and other type biological populations during extensive historical periods. It is also home to nearly 30,000 bats.

Devetashka cave is located 15 km (9.3 mi) northeast of Lovech and approximately 2 km (1.2 mi) from the village of Devetaki. To reach the cave one can walk along a narrow path by the river, starting from the village of Devetaki, or access it directly from Road 301 via a 400 m (1,300 ft)-long dirt road and concrete bridge, constructed in 2011.





My SL name is Science24, which means live in science 24/7. I am an assistant professor of chemistry at the University of Setif (Algeria). I have a BSc degree in Physical Chemistry, a MSc in Materials Chemistry, and I am preparing a PhD degree in materials electrochemistry.

My research interests are in Materials science including Solid-state Electrochemistry (Nanostructured Electrodes, Fuel Cell, Electrodeposition, Electrocatalysis and Electrochemical Energy Conversion) and in fundamental Electrochemistry mainly: Mass Transfer in Electro-membrane Process, Electrochemical Corrosion, Electroplating/Coating and Electro-synthesis.

Thanks to my RL English teacher, I joined SL on Nov 2013 to get the benefits of the interactive learning experience in virtual world and I realised the importance of this new educative way in learning a new language instead of chalk and blackboard.

I got in contact with SC and met great people who share my passion for science and technology in service to society and not only for scientific career building and I am proud of being a member of this group.

With SC, second life for educators and learners will mean much more than I thought it was.

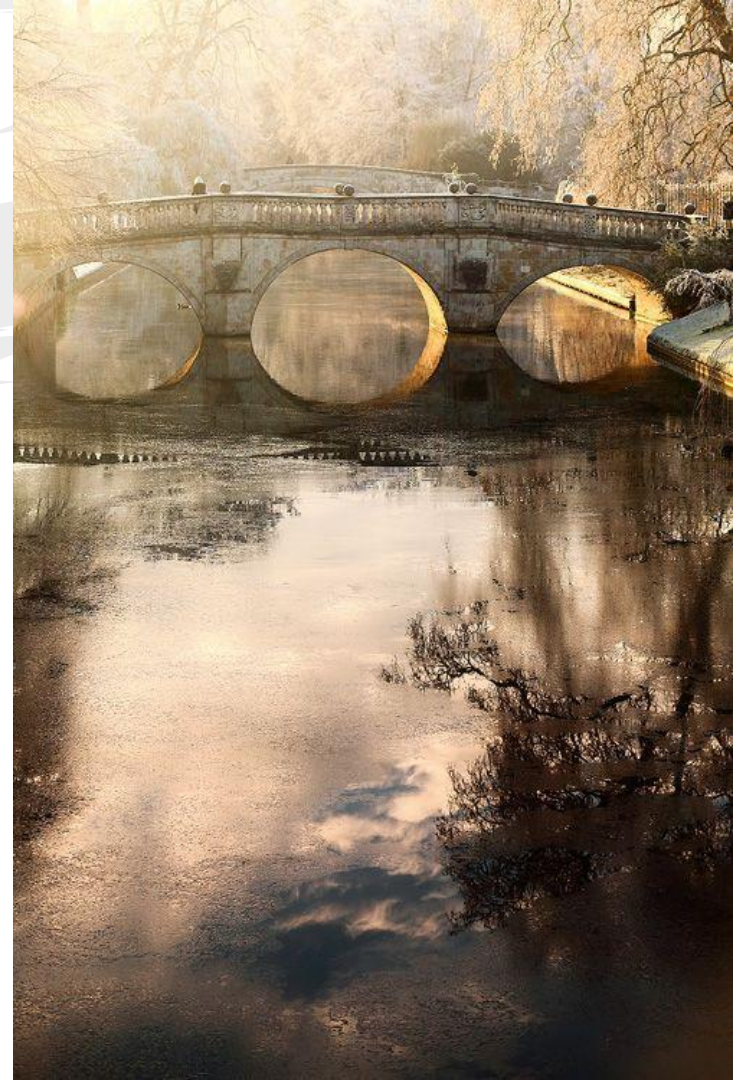
Science24, Algeria

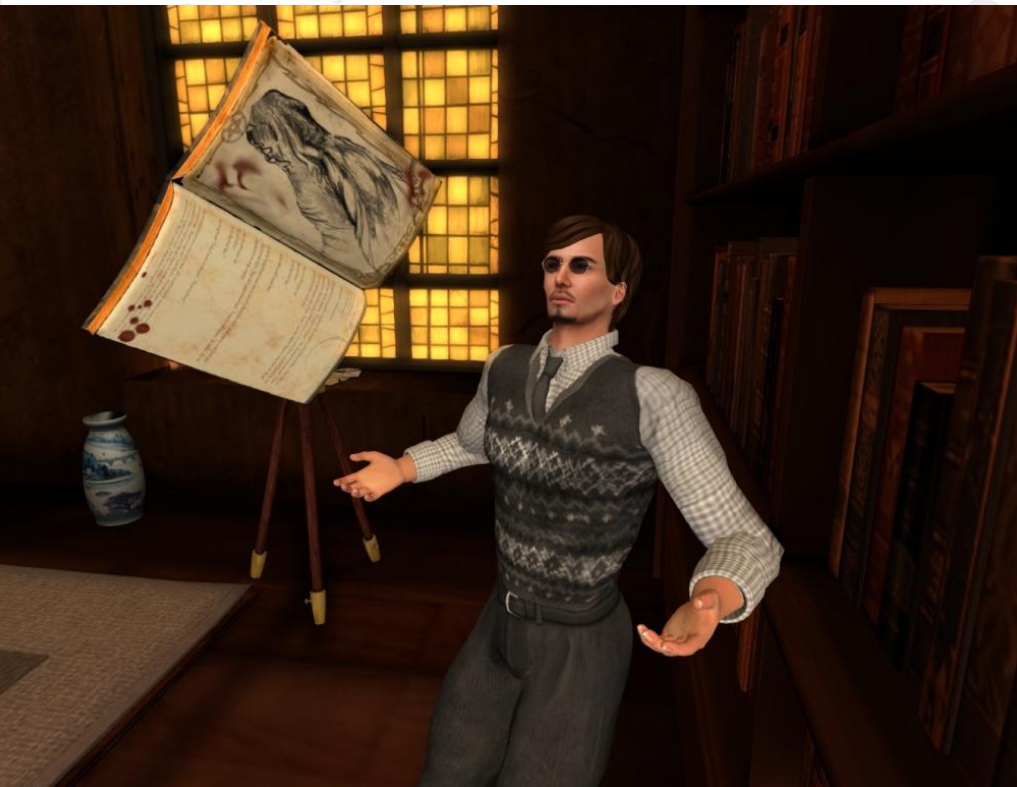
Clare College, Cambridge

Clare College is a constituent college of the University of Cambridge in Cambridge, England. The college was founded in 1326 as University Hall, making it the second-oldest surviving college of the University after Peterhouse. It was refounded in 1338 as Clare Hall by an endowment from Elizabeth de Clare. Clare is famous for its chapel choir and for its gardens on "the Backs" (the back of the colleges that overlook the River Cam).

Clare Bridge

Clare has a much-photographed bridge over the river which is the oldest of Cambridge's current bridges. Fourteen stone balls decorate it, one of which has a missing section. A number of apocryphal stories circulate concerning this - the one most commonly cited by members of college is that the original builder of the bridge was not paid the full amount for his work and so removed the segment to balance the difference in payment. A more likely explanation is that a wedge of stone cemented into the ball as part of a repair job became loose and fell out into the river





Stephen L. Gasior (Ph.D. University of Chicago, 1999) is a biology instructor at Ball State University and an accomplished virtual world educator.

As Stephen Xootfly, he taught nonmajors biology for three semesters in Second Life while at the University of New Orleans. His students engaged in special 3D activities including chemistry manipulatives, animal poster presentations, genetics by breeding virtual bunnies, and population genetics. The last one was with a build codeveloped with Kira Komarov and is available for others.

They also utilized several science installations including Genome Island and Notes from the Beagle (A Darwin recreation learning lesson). He is currently promoting collaborative work for STEM education via Virtual Islands for Better Education (VIBE) focusing on the OpenSimulator Platform.

Science Circle Presentation in November of 2013;
“Moths Black and White. Black and White Proof of Evolution”

Stephen Xootfly - Stephen L. Gasior, USA

Location:

The Cafe Pushkin Restaurant is easy to find in the very centre of Moscow Russia, a few steps from Tverskaya Street and not far from such sights as the Museum of Oriental Art, the Pushkin Square, the Pushkin Theatre and the Monument of Russian poet Sergej Esenin.



Interior:

This is a luxurious restaurant housed in a 19th century mansion with an ancient elevator. The Cafe Pushkin consists of 3 main halls on 3 levels and the interior decor revives the wonderful atmosphere of the early 20th century.

Capacity of the Cafe Pushkin Restaurant is 350 seats.

>The first level: the "Drugstore" room reminds of an old drugstore of the 19th century with such attributes as volumetric flasks, measuring glasses and pharmaceutical scales.

>The second level: the "Library" room with telescopes and terrestrial globes, bookshelves and ancient woodcuts.

>The third level: "Entresol" which is the balcony of the "Library" room.

>The covered summer terrace is situated on the roof of the restaurant.





My name in Second Life is tau Insippo.
I am from Tokyo, Japan and joined The Science Circle in February 2008.

My real life is secret though, I study quantum physics, fundamental physics and quantum technologies in a real institute in a university.

In this Science School, The Science Circle, I sometimes talk about the peculiarity of quantum mechanics which dominates this universe.

One of my subjects: "Does Quantum Cryptography really give ultimate security?"

This season:

Tuesday March 3rd

Title: "It from bit or bit from it : Quantum Nature and Information Theory"

Facilitator: Tau Insippo SL, Japan

Otherwise, I just enjoy being an anthropomorphic blue wolf in Second Life.

Tau Insippo, Japan

Paleolithic flutes

A number of flutes dating to the European Upper Paleolithic have been discovered. The undisputed claims are all products of the Aurignacian archaeological culture, beginning about 43,000 to 35,000 years ago, and have been found in the Swabian Alb region of Germany. These flutes represent the earliest known musical instruments and provide valuable evidence of prehistoric music. The presence of these flutes demonstrates that a developed musical tradition existed from the earliest period of modern human presence in Europe.

Early Flutes

Until 2012 the oldest undisputed musical instrument was the Hohle Fels Flute discovered in the Hohle Fels cave in Germany's Swabian Alb in 2008.

The flute is made from a vulture's wing bone perforated with five finger holes, and dates to approximately 35,000 years ago. Several years before, two flutes made of mute swan bone and one made of woolly mammoth ivory were found in the nearby Geißenklösterle cave. The team that made the Hohle Fels discovery wrote that these finds are the earliest evidence of humans being engaged in musical culture. They suggested music may have helped to maintain bonds between larger groups of humans, and that this may have helped the species to expand both in numbers and in geographical range.

In 2012, a fresh high-resolution carbon dating examination revealed an age of 42,000 to 43,000 years for the flutes from the Geißenklösterle cave, suggesting that they rather than the one from the Hohle Fels cave could be the oldest known musical instruments.

Aurignacian flute made from an animal bone, Geissenklösterle (Swabia)





Dr James Anderson (TheNumberNullity) is a lecturer at the University of Reading, England.

He works on transmathematics which allows division by zero and has designed a supercomputer that exploits this arithmetic.

He runs a Google+ Community, Transmathematica (<https://plus.google.com/communities/103261551046378190173>) where people discuss Transmathematics.

In Second Life he provides a locked island where a UK educational authority hosts classes for secondary school children.

The island is open for use by teachers and pupils from anywhere in the world, subject to appropriate legal checks.

TheNumberNullity - James Anderson, UK

The Twelve Apostles is a collection of limestone stacks off the shore of the Port Campbell National Park, by the Great Ocean Road in Victoria, Australia.

Formation and History

The Apostles were formed by erosion, the harsh and extreme weather conditions from the Southern Ocean gradually eroded the soft limestone to form caves in the cliffs, which then became arches, which in turn collapsed; leaving rock stacks up to 45 meters high. The site was previously known as the “Sow and Piglets” until 1922, after which it was renamed The Apostles for tourism purposes. The formation eventually became known as The Twelve Apostles, despite only ever having 9 stacks.

The stacks are susceptible to further erosion from the waves. On the third of July 2005, a 50-meter- tall stack collapsed, leaving eight remaining.

The rate of erosion at the base of the limestone pillars is approximately 2 centimeters per year.

Due to wave action eroding the cliff face, existing headlands are expected to become new limestone stacks in the future.





Thuja teaches math and physics in RL and is a PhD candidate researching the relationships between neural networks, and advection on the micro- and macro scales. She is keen on learning just about everything.

In Second Life she is Associate Director of Whole Brain Health on Inspiration Island. WBH pursues a holistic approach to foster improved cognition, memory and emotional stability through several modes based upon current research.

Thuja is also Director of Simply Impossible where she researches Second Life Physics and applies discoveries to build unscripted machines, and offers free classes.

She is also Prime Maven of Heroes Walk, which explores the hero latent within each of us, through quests, creation and group process.

Thuja Hynes, USA



Homo sapiens migrations

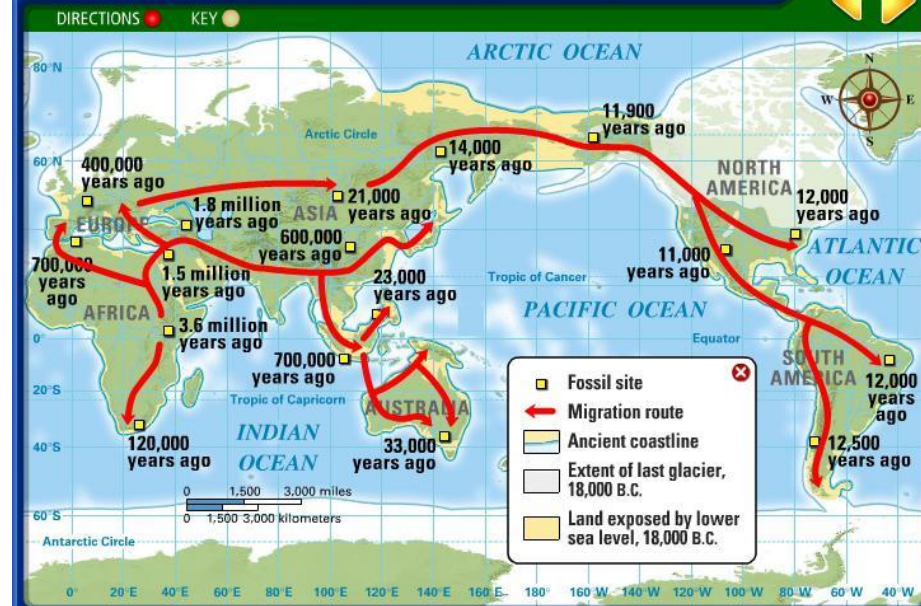
Homo sapiens are supposed to have appeared in East Africa around 200,000 years ago. The oldest individuals found left their marks in the Omo remains (195,000 years ago) and the Homo sapiens idaltu (160,000 years ago), that was found at the Middle Awash site in Ethiopia.

From there they spread around the world. An exodus from Africa over the Arabian Peninsula around 125,000 years ago brought modern humans to Eurasia, with one group rapidly settling coastal areas around the Indian Ocean and one group migrating north to steppes of Central Asia.

A 1.8 million year old skull indicates there may have been just one human species on Earth at that time

There is evidence from Mitochondrial DNA that modern humans have passed through at least one genetic bottleneck, in which genome diversity was drastically reduced. Harpending has proposed that humans spread from a geographically restricted area about 100,000 years ago, the passage through the geographic bottleneck and then with a dramatic growth amongst geographically dispersed populations about 50,000 years ago, beginning first in Africa and thence spreading elsewhere. Climatological and geological evidence suggests evidence for the bottleneck. The explosion of Lake Toba created an 1,000 year cold period, as a result of the largest volcanic eruption of the Quarternary, potentially reducing human populations to a few tropical refugaria. It has been estimated that as few as 15,000 humans survived. In such circumstances genetic drift and founder effects would have been maximised leading to a rapid racial differentiation after that date. The greater diversity amongst African genomes may be in part due to the greater prevalence of African refugaria during the Toba incident.

Early Human Migration to 10,000 years ago





I joined Second Life in 2007. Born in the United Kingdom, I am resident in Canada.

The Science Circle allows me to learn from experts to broaden my limited knowledge in science. I have a strong interest in distance and non-traditional education that extends back over many years, and I appreciate the opportunities that Second Life and the Science Circle provide for education and training.

My current research is toward a PhD in Education (eLearning and Learning Technologies) at the University of Leicester. Although not in Second Life, my research is about how professionals learn informally in online communities.

I am impressed with the dedicated efforts of the directors of the Science Circle, and others, in developing this as a community of practice for the benefit of those at all levels of knowledge and interest.

URL: <http://TonyRatcliffe.com>

LinkedIn: <http://linkedin.com/in/tonyratcliffe>

Twitter: TonyRatcliffe

Tonito Alderson - Tony Ratcliffe, Canada

The European Extremely Large Telescope (E-ELT) is a ground-based extremely large telescope for the optical/near-infrared range, currently being built by the European Southern Observatory (ESO) on top of Cerro Armazones in the Atacama Desert of northern Chile.

The design comprises a reflecting telescope with a 39.3-metre-diameter segmented primary mirror, a 4.2-metre-diameter secondary mirror, and will be supported by adaptive optics and multiple instruments. It is expected to allow astronomers to probe the earliest stages of the formation of planetary systems and to detect water and organic molecules in proto-planetary discs around stars in the making.



With the recent changes in the baseline design (such as a reduction in the size of the primary mirror from 42 m to 39.3 m), the construction cost is estimated to be €1.055 billion (including first generation instruments). The start of operations is planned for the mid-2020s.

The E-ELT will search for extrasolar planets — planets orbiting other stars. This will include not only the discovery of planets down to Earth-like masses through indirect measurements of the wobbling motion of stars perturbed by the planets that orbit them, but also the direct imaging of larger planets and possibly even the characterisation of their atmospheres. The telescope will attempt to image Earthlike exoplanets, which may be possible.



Benny Rigaux-Bricmont (<http://www.fsa.ulaval.ca/personnel/rigauxbb/>) is full professor of marketing at the FSA-ULaval (Quebec City, Canada) since 1979. Before, he worked for 10 years at the « Center for Socio-Economic Research in Advertising and Marketing » of Jean-Jacques Lambin (Catholic University of Louvain in Belgium).

His research and publications are mostly oriented on family purchase decision-making with adolescents influencing the process. More recently, teaming with his avatar Twilight Rhode, he devoted his attention on *Second Life* (SL) as a teaching and research field with special attention to the ethical and methodological problems involved.

Presently, he is concerned with the potential of a virtual life in helping psychologically distressed people : does immersion in a social network such as SL improve the quality of their lives?

Natmoud Island was created for the project (at 161, 104, 31 in SL) and can be visited on invitation.

Members of the Science Circle will be welcome for a field visit on March 11, 2015.

Reference of one of his publications on SL: El Kamel L. and Rigaux-Bricmont B., « The contributions of postmodernism to the analysis of virtual worlds as a consumption experience: The case of Second Life »
<http://rme.sagepub.com/content/26/3/71.full.pdf+html>

Twilight Rhode - Benny Rigaux-Bricmont, Canada

Ishi (c. 1860 – March 25, 1916) was the last member of the Yahi, a group of the Yana of the U.S. state of California. Widely acclaimed in his time as the "last wild Indian" in America, Ishi lived most of his life completely outside modern culture. At about 49 years of age, in 1911, he emerged from "the wild" near Oroville, California, leaving his ancestral homeland, present-day Tehama County, near the foothills of Lassen Peak, known to Ishi as Wa ganu p'a.

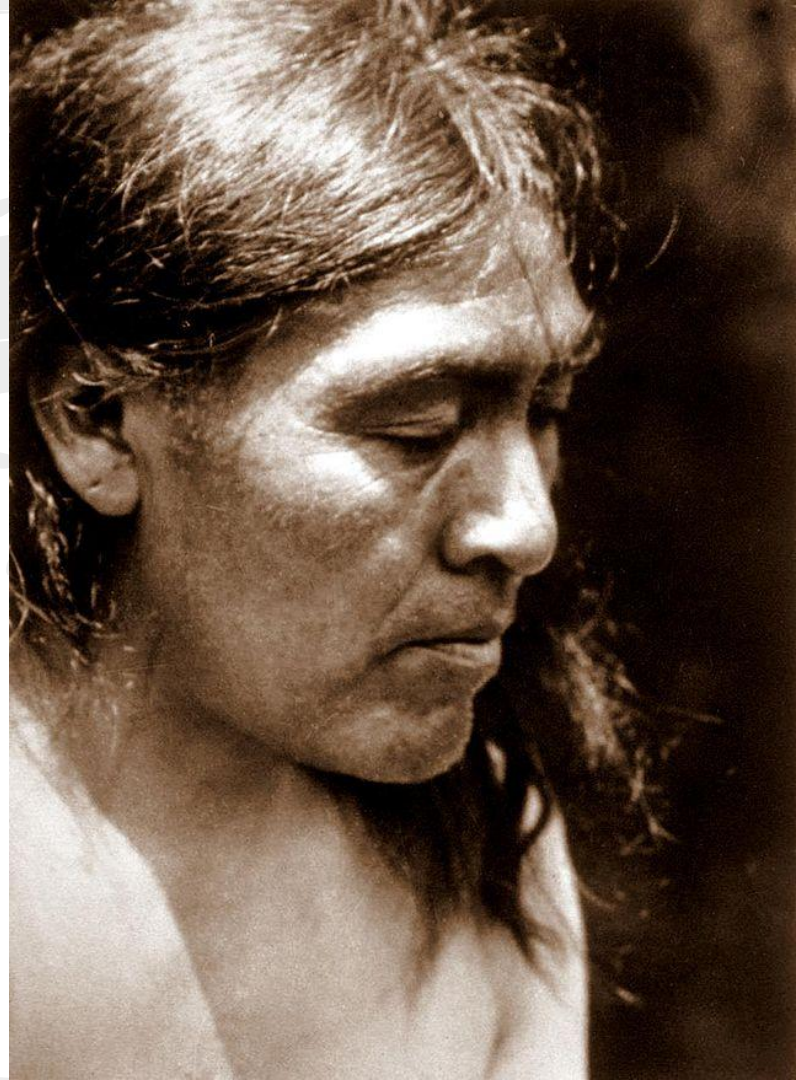
In 1865, when he was a young boy, Ishi and his family were attacked in the Three Knolls Massacre, in which 40 of their tribesmen were killed. Approximately 30 Yahi survived to escape, but shortly afterwards, cattlemen killed about half of the survivors. The last survivors, including Ishi and his family, went into hiding for the next 40 years, and their tribe was popularly believed to be extinct.

In late 1908, a group of surveyors came across the camp inhabited by a man, a young girl, and an elderly native woman — Ishi, his younger sister, and his elderly mother, respectively. The former two fled while the latter hid herself in blankets to avoid detection, as she was sick and unable to flee.

The surveyors ransacked the camp and took everything. Ishi's mother and other relatives died soon after Ishi's return.

Ishi lived three years beyond the raid alone, the last of his tribe. Finally, starving and with nowhere to go, at the age of about 48 or 49 on August 29, 1911, Ishi walked out into the occidental world. He was captured attempting to "steal" meat near Oroville, California after forest fires in the area.

Professors at the University of California, Berkeley, Museum of Anthropology — now the Phoebe A. Hearst Museum of Anthropology (PAHMA) — read about him and brought him to their facility, then housed on the University of California, San Francisco campus in an old law school building. Studied by the university, Ishi also worked with them as a research assistant and lived in an apartment at the museum for most of the remaining five years of his life.





I realized early in 2007 that Second Life was a readily accessible door to the minds of people worldwide. Vic Michalak gave The Science Circle's first presentation in 2008 (see Nymf Hathaway) and continues to present regularly on a variety of subjects. Dr. Piet Hut's (see Curious George) SC presentation in 2009 inspired me to sponsor Kira Institute's KISS biweekly seminar series. In the ensuing years, I have collaborated in SL research projects and presented at SL birthday events and conferences, including VWBPE and MIWoSE.

First Life counterpart Phil Youngblood heads the Computer Information Systems degree program at a private university in San Antonio, Texas, was Academic Director for a Texas Tech University branch campus, a career military officer (retired in 1995), and a research biochemist (with work at NASA's Exobiology Branch). My university's STEM Island in the SciLands (see Zazen Manbi) hosts "Stonehenge" (see JP Euler) and the "Modern Museum" (see Yan Lauria).

I have been teaching undergraduate and graduate level courses for my university in SL since 2008.

Today's Science Circle (www.sciencecircle.org) brings together many of Second Life's past and present luminaries and science enthusiasts to create an innovative venue for international education and I am honored to play a part in this vibrant, visionary and pioneering organization.

Vic Michalak - Phil Youngblood, USA

Dimensions

Titanic was 269.06 meters long with a maximum breadth of 28.19 meters. Her total height, measured from the base of the keel to the top of the bridge, was 32 meters.

She measured 46,328 gross register tons and with a draught of 10.54 meters, she displaced 52,310 tons.

All three of the Olympic-class ships had ten decks (excluding the top of the officers' quarters), eight of which were for passenger use.

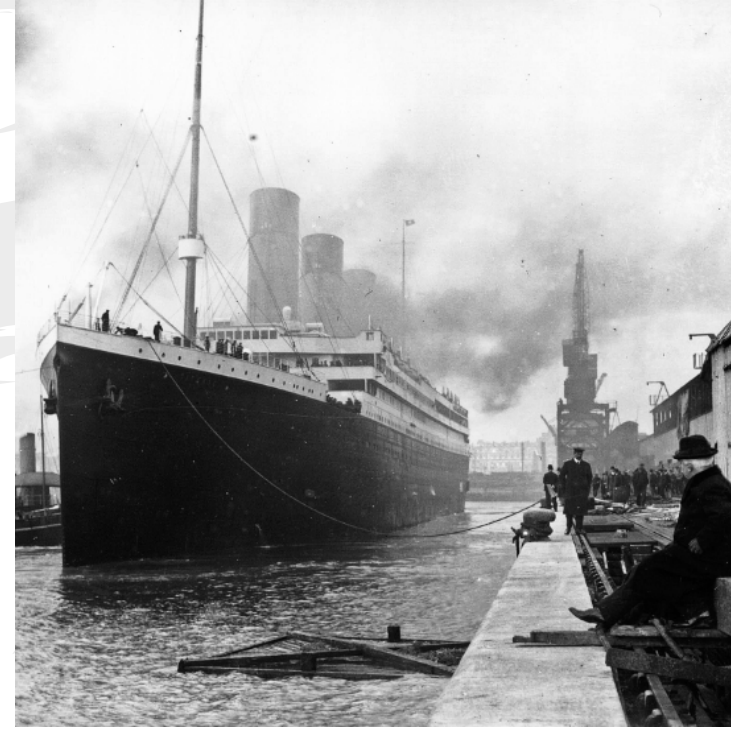
Sinking

At 11:40pm on the 14th of April (ships time), a lookout spotted an iceberg immediately ahead of the Titanic. Though an attempt to steer around and reverse the engines was made, it was too late, and the Starboard side of the Titanic struck the iceberg.

Five of the ships watertight compartments were breached, and the ship could not survive more than four being flooded. The Titanic began sinking bow-first, with water spreading from compartment to compartment as her angle in the water became steeper.

Those aboard the Titanic were ill prepared for such a situation. Lifeboats aboard could only accommodate to about half of the total passengers. At 2:20 am, two hours and forty minutes after the collision, the Titanic's rate of sinking suddenly increased as the forward deck became submerged. As her unsupported stern rose out of the water, exposing the propellers, the ship began to break in two. With the bow underwater, and air trapped in the stern, the stern remained afloat and buoyant for a few minutes longer, rising to a nearly vertical angle. All remaining passengers and crew were plunged into lethally cold water with a temperature of -2°C .

Distress signals were sent by wireless, rockets and lamp, but none of the ships that responded were near enough to reach her before she sank. A nearby ship, Californian, which was the last to have been in contact with her before the collision, saw her flares but failed to assist.



RMS Titanic was a British passenger liner that sank in the North Atlantic Ocean in the early morning of 15 April 1912 after colliding with an iceberg during her maiden voyage from Southampton, UK to New York City, US.

The sinking of Titanic caused the deaths of more than 1,500 people in one of the deadliest peacetime maritime disasters in modern history.

The RMS Titanic, the largest ship afloat at the time it entered service, was the second of three Olympic class ocean liners operated by the White Star Line.



Hello from Hamburg! I am Hanno Tietgens of BÜRO X Media Lab. After decades of working in journalism, publishing and advertising, I am thrilled by the recent transformation of communications, media and education – think social media, game-based learning, interactive storytelling or virtual reality in digital 3D.

I rezzed my avatar on December 12, 2006 to explore new media technology and marketing opportunities in SL – and found so much more. Most important, I met (and keep meeting) inspiring educators and creative people from all over the world.

We started “Hamburg City”, partnering in mixed world activities with German National Theatre (Deutsches Schauspielhaus), Hamburg Animation Awards, the Planetarium and many SL residents. In 2007, I initiated “Campus Hamburg in 3D” with academics at the University of Hamburg, HAW and others, supported by the City of Hamburg. With engineering group TÜV NORD, we broke new ground using avatars and virtual worlds to create and share knowledge. A case study is available at http://secondlifegrid.net.s3.amazonaws.com/docs/Second_Life_Case_TuvNord_EN.pdf; the “TUV Nord” sim is still online.

I taught at Virtual HWR Berlin, publish, talk at conferences and industry meetings. I’m also a father of 2 and have just started SmartCityKids, an initiative to advance computing and coding in schools.

Xon Emoto - Hanno Tietgens, Germany

The Great Blue Hole is a large submarine sinkhole off the coast of Belize, it lies near the center of Lighthouse Reef. The hole is circular in shape, over 300 meters across and 124 meters deep.

Formation

It was formed during several episodes of quaternary glaciation when sea levels were much lower. Analysis of stalactites found in Great Blue Hole shows that formation took place 153,000; 66,000; 60,000 and 15,000 years ago. As the ocean began to rise again, the cave was flooded.





I'm a Coordinator for Earth Information Integration and Analysis, Japan Agency for Marine-Earth Science and Technology (JAMSTEC). I was engaged in development of a deep submersible, an oceanographic research ship and science drill ship, and research projects for global change prediction.

In Second Life, I'm working on visualization for cross-disciplinary collaboration by Abyss Observatory at Second Earth 3 and Farwell and the Modern Museum at STEM Island. I'm also creating OpenSim museums at Japan Open Grid.

I'm maintaining Educational places lists;

- Science related places in SL: <https://docs.google.com/spreadsheet/pub?key=0AkPICOanpEMQdG1MOHFavmVpbINIT3lvXzFOc3k2WIE&output=html>
- One prim teleport Hub for Education: <https://docs.google.com/spreadsheet/pub?key=0ArzfP1cR4AM-dHAtSzBfZWdDV3NWYUMyUzj6c0focHc&single=true&gid=0&output=html>
- Educational places in various disciplines: http://www.vwed.org/wiki/List_of_SITES_and_teaching_resources_in_Second_Life
- Educational Places in OpenSim Grids: https://docs.google.com/spreadsheets/d/1GZQTJ160WFXQ32wiN9rHxvEoBVuFZ2PU_cLX4Fr_tGk/edit?usp=sharing

Paper: "The Abyss Observatory - Designing for Remote Collaboration, Self-directed Discovery and Intuition Development in Multi-user Interactive 3D Virtual Environments"

<https://journals.tdl.org/jvwr/index.php/jvwr/article/view/6304>

Yan Lauria - Hajime Nishimura, Japan

The Pinnacles are limestone formations contained within Nambung National Park near the town of Cervantes, Western Australia.

Formation

The raw material for the limestone of the Pinnacles came from seashells in an earlier era that was rich in marine life. However, the manner in which such raw materials formed the Pinnacles is the subject of debate:

- They were formed through the preservation of tree casts buried in coastal aeolianites, where roots became groundwater conduits, resulting in the precipitation of indurated(hard) calcrete. Subsequent wind erosion of the aeolianite then exposed the calcrete pillars.
- They were formed from lime leached from sand subject to aeolian processes (wind-blown), and by rain cementing the lower levels of the dune into a soft form of limestone. Vegetation then formed an acidic layer of soil and humus, and a hard cap of calcrete developed above the softer limestone. Cracks in the calcrete were exploited by plant roots, while the softer limestone continues to dissolve and quartz sand fills the channels that form. The vegetation died and wind blew away the sand covering the eroded limestone, thereby revealing the Pinnacles.
- On the basis of the mechanism that formed smaller “root casts” in other parts of the world, the third proposal suggests that plants played an active role in the creation of the Pinnacles. As transpiration drew water through the soil to the roots, nutrients and other dissolved minerals flowed toward the root, a process termed "mass-flow" that can result in the accumulation of nutrients at the surface of the root.
In coastal aeolian sands that consist of large amounts of calcium (from marine shells), the movement of water to the roots would drive the flow of calcium to the root surface. Calcium accumulates in high concentrations around the roots and over time is converted into a calcrete. When the roots die, the space occupied by the root is subsequently also filled with a carbonate material derived from the calcium in the former tissue of the roots. Although evidence has been provided for this mechanism in the formation of root casts in South Africa, evidence is still required for its role in the formation of the Pinnacles.





Zazen Manbi aka Jeffrey Corbin is an adjunct Research Associate at the University of Denver. I joined Second Life in August of 2006.

In January of 2007, I co-founded the SciLands, and placed the first island there known as the Science School. It grew to 55+ islands, including the International Spaceflight Museum, the Exploratorium, NASA, and NOAA.

My past project was part of a curriculum for a degreed program in Environmental Impact Statements for nuclear power, using a \$200,000 grant received by the Nuclear Regulatory Commission. There are 4 lab experiments, simulating real life experiments about radioactivity, and a nuclear power plant, modeled after a RL plant, which is about 80% completed. This was the first of its kind in distance education.

Ira Flatow, of Science Friday on NPR caught notice of Second Life, and conducted his first virtual broadcast from the Science School. He began doing weekly broadcasts from there, until we decided it was a good idea to have an adjoining Science Friday Island. I am honored to be an Emeritus member of The Science Circle, where Science Friday and Naked Scientists are now broadcast.

Zazen Manbi - Jeffrey Corbin, USA

Social Media

Website : <http://sciencecircle.org>

Official FB: <https://www.facebook.com/TheScienceCircle>

Facebook Group: <http://www.facebook.com/groups/155012474522202/>

LinkedIn: <https://www.linkedin.com/company/science-circle>

Twitter : <http://twitter.com/sciencecircle>

Flickr : http://www.flickr.com/photos/science_circle/

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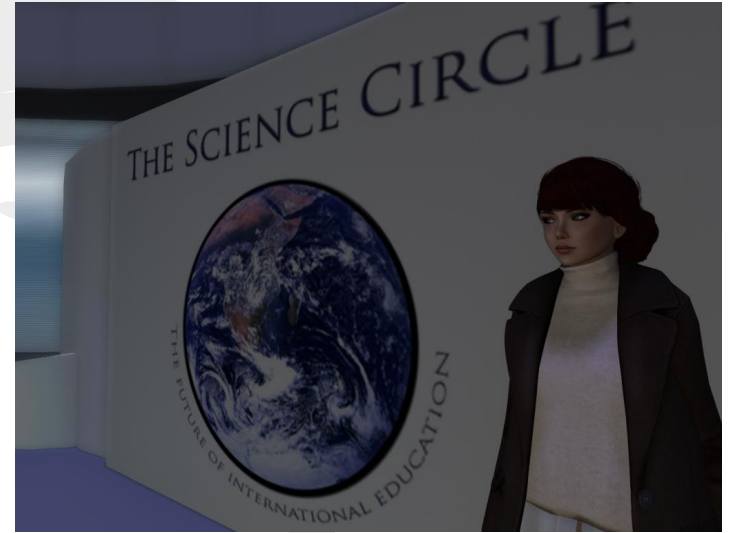
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