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Fact Sheet – Marcelo Gleiser

March 19, 1959: Marcelo Gleiser born in Rio de Janeiro, Brazil, the third of three children of Haluza (née Schneider) and Izaak Gleiser. His father, a dentist with a 1954 internship at the Forsyth Dental Infirmary for Children of the Harvard School of Dental Medicine, and a passionate amateur musician and gardener, and his mother, who held a B. A. in Pedagogy from the University of Brazil (now the Federal University of Rio de Janeiro), were both children of influential leaders in Rio's Jewish community, Jacob Gleiser and Jacob Schneider.

His brother Luiz (b.1950) is a television director and executive producer. His brother Rogério (b.1952), an orthodontist with a master's from Indiana University, serves as associate professor of pediatric dentistry at the Federal University of Rio de Janeiro.

1965: His mother dies in tragic circumstances, an event that would deeply influence his life and career path. During these early years of his life, he is attracted to the supernatural, life beyond death, and the mystery of time, establishing a life-long quest to engage questions of origins and endings.

1968: Izaak marries Lea Kohn (d.2012), who becomes a devoted stepmother. The couple have a son, Ilan (b.1971), now a financial market analyst in San Francisco.

Childhood in the Gleiser home consists of school months close to Rio's Copacabana beach, and long summer holidays with his grandparents in Teresópolis, a mountain resort north of Rio. There, he explores the luxuriant beauty of the tropics, collecting insects, examining flowers, and watching shooting stars in the night sky. At the beach he takes a love to fishing, spending long hours among the elder fishing community. The experience teaches him core values of research including patience, discipline, humility, love of solitude, and appreciation for the cycles of nature.

He attends the conservative Hebrew-Brazilian Max Nordau School, studying Jewish history, the Old Testament, Hebrew, and the standard curriculum. The Old Testament stories, taught as literal history, cause him a mix of fascination and fear, resulting in a growing skepticism of the ancient texts. In his teen years he takes up classical guitar and, through popular books and articles, learns about science and physics. He also enjoys competitive volleyball, becoming Brazilian junior champion at age 15.

1972: At his Bar Mitzvah, his step-grandmother, Ruth Kohn, whose brother-in-law Isidoro Kohn had hosted Albert Einstein in Rio during his visit to Brazil in 1925, gives him an autographed photo of Einstein. From that moment, Einstein serves as an inspiration – his version of God and framing of science as a religious devotion to the mysterious in nature speak to him directly. These reflections, including that science was a rational "flirt with the unknown," allows him to transition his grief over the loss of his mother into an attraction to life in all of its manifestations, from the individual to the planetary. More than a rational description of the world, science, for him, becomes a form of spiritual devotion to nature.

1977: Enters the Federal University of Rio de Janeiro to study, at his father's request, chemical engineering. But he quickly realizes that his future is in physics and, two years later, transfers to the Pontifical Catholic University of Rio de Janeiro. There he encounters Steven Weinberg's popular book on early universe cosmology, *The First Three Minutes*, which convinces him of his future in theoretical research in cosmology and high energy physics.

1981: Graduates from the Pontifical Catholic University with a B.Sc. in physics. Enters Federal University of Rio de Janeiro. Represents Brazil in volleyball at the 1981 Maccabi International Games in Israel, winning a silver medal.

1982: Receives a Master's degree in physics from the Federal University of Rio de Janeiro with a thesis, "Gauge Field Copies and the Higgs Mechanism," under advisor and early-career mentor, Professor Francisco Antonio Doria. Enters King's College, University of London, in September.

1985: Wins championship in volleyball at the British Universities Games representing the University of London.

1986: Earns a Ph.D. in theoretical physics from King's College with a thesis, "Kaluza-Klein Cosmology," supervised by Prof. John G. Taylor. Appointed Postdoctoral Research Associate at the Fermi National Accelerator Laboratory Theoretical Astrophysics Group.

Writes a series of papers on cosmological consequences of theories with extra spatial dimensions as proposed by models of unification (the topic of his Ph.D. thesis), and one of the first papers on the impact of superstrings to the Big Bang.

1986-88: At the Fermi National Accelerator Laboratory, near Chicago, continues research on consequences of extra spatial dimensions and also on the physical properties of boson stars, hypothetical candidates for dark matter.

1987: Marries Wendy Lynn Martin. They have three children: Andrew Philip (b.1988), Eric Izaac (b.1993), and Tali Sarah (b.1996). The couple divorce in 1996.

1988: Appointed Senior Postdoctoral Fellow at the Institute for Theoretical Physics, University of California, Santa Barbara. His research branches out to include aspects of symmetry breaking and the stability of physical systems, concepts that will influence his later critique of "theories of everything." Establishes himself as a leader in studies of applications of phase transitions to early universe cosmology.

1991: Appointed Assistant Professor of Physics and Astronomy at Dartmouth College in Hanover, New Hampshire. During his early years there, his research continues to explore the dynamics of phase transitions and applications to cosmology and high energy particle physics, along with physics of the early universe, black holes, numerical simulations of field theories, and the stability of stars.

1994: Co-discovers "oscillons," long-lived, localized field configurations (small energy "lumps" made of many particles). Oscillons and their remarkable properties become ongoing targets of his research. Receives the Presidential Faculty Fellows Award from the National Science Foundation and the White House.

1995: Becomes Associate Professor of Physics and Astronomy, Dartmouth College.

1997: [*The Dancing Universe: From Creation Myths to the Big Bang*](#) published. It becomes a major bestseller in Brazil (published as *A Dança do Universo: Dos Mitos de Criação ao Big Bang*) and receives the Jabuti Award, the most distinguished literary prize in Brazil. Originally devised as a textbook for a non-science majors class in response to what he sees as a lack of information bringing the sciences into a humanistic focus, the book opens the door for his parallel career as a public intellectual.

It is also the beginning of a journey broadening his view of science as part of a larger cultural context, and his new activities beyond physics research. The exploration of the philosophical and religious roots of scientific thinking, how they inform one another, and how they influence and shape worldviews from antiquity to modern times become central themes in his future books and essays. Science is a spiritual connection to Nature, he asserts, an expression of humankind's search for meaning as it confronts the mystery of existence.

Begins weekly science and society column in *Folha de São Paulo*, the largest circulation newspaper in Brazil, and has contributed more than 900 articles to date.

1997-1998: Serves as Visiting Professor at the Observatory of Rome, Monte Mario.

1998: Appointed Professor of Physics and Astronomy, and, later that year, named Appleton Professor of Natural Philosophy at Dartmouth. His research is funded by grants from the National Science Foundation, the National Aeronautics and Space Administration (NASA) and, later, the U.S. Department of Energy.

Marries Kari Amber McCadam, a psychologist specializing in trauma and post-traumatic stress disorder. She is currently a senior faculty member at the AEDP Institute in New York City and co-director of the Center for Integrative Health in Hanover, New Hampshire. They have two children: Lucian Jacob (b.2006) and Gabriel Lennon (b.2011).

1998-2006: His research gradually starts to distance itself from notions of unification. Develops a critique of such ideas, which he and others contend are not justified by data or history. In his public articles, he becomes a critic of the tendency to make blanket pronouncements about the inevitability of the unification of forces or about physics having solved questions such as how the universe began. He also increasingly rejects the claims of fellow scientists who assert the unimportance of philosophy or religion.

1999: Elected Fellow of the American Physical Society "in recognition of his contributions to early universe cosmology."

2001: Awarded the José Reis Prize for the Public Understanding of Science by the National Research Council of Brazil.

2002: [*The Prophet and the Astronomer: Apocalyptic Science and the End of the World*](#) published. It also receives the Jabuti Award in Brazil.

During his travels as a scientist and writer, he takes up fly fishing, an echo of his youth on the Copacabana beach. He sees fly fishing and science as parallel practices, both using tools to explore worlds beyond reach, often with uncertain results. His global fishing spots range from the English Lake District to the mountains of southern Brazil to the Laxá River in Iceland.

2006: Author and presenter of "[*Poeira das Estrelas*](#)" (Stardust), a 12-part documentary series for TV Globo, Brazil. Broadcast in the weekly news program "Fantástico," the series examined questions of "origins" from a scientific point of view, from the origin of the universe to the origin of life on Earth and other planets. A companion volume is published by Editora Globo.

[*A Harmonia do Mundo*](#) [*The Harmony of the World*] published, a novel based on the life and work of Johannes Kepler and his conflicted relationship with his mentor Michael Maestlin. It becomes a bestseller in Brazil and is his first and, so far, only novel.

2006-2012: Apart from continuing research on oscillons, phase transitions, and early universe cosmology, his research begins to explore the origin of life on Earth, in particular, the role of biochemical asymmetries in the early formation of polymers, the precursors of the more complex biomolecules typical of living organisms. He quickly becomes an important voice in the growing astrobiology community.

2007: Interviewed in "[Beyond the Big Bang](#)," an episode of "The Universe" series on the History Channel.

2008: Author and presenter of "Mundos Invisíveis" (Invisible Worlds), a 10-part documentary series for TV Globo, Brazil. The series focused on the race to find the smallest constituents of matter, from the Greek atom to modern-day particle physics. A companion volume is published by Editora Globo. Also interviewed in "How Life Began," a History Channel documentary.

2009: With Adam Frank, creates "[13.7: Cosmos and Culture](#)," a National Public Radio opinion and commentary blog set at the intersection of science and culture. During the blog's nine-year run, he contributes more than 400 articles.

2010: [A Tear at the Edge of Creation: A Radical New Vision for Life in an Imperfect Universe](#) published. The book proposes a different aesthetics for theoretical physics, opposing the broadly-adopted quest for finding mathematical perfection in nature, based on the importance of both symmetry and asymmetry and celebrating, instead, imperfection and imbalance as joint creative powers in nature.

Narrates the Latin American version of "How the Universe Works," an eight-part documentary series on the Discovery Channel.

2011: Delivers the McNair Lecture in Science and Theology at St. Andrews University, North Carolina, on "Our Place in the Universe." Receives Distinguished Alumnus Award from the Pontifical Catholic University of Rio de Janeiro. Elected permanent member of the Brazilian Academy of Philosophy. Serves as principal investigator on a National Science Foundation grant, "Cosmic Fields: Inflation and Dark Energy."

2012: Narrates the Latin American version of "The Known Universe," a four-part documentary series on the National Geographic Channel.

2012-present: His current research proposes a new measure of spatial complexity in physical systems – Configurational Entropy – applied to a variety of physical systems, from oscillons and the hydrogen atom to stars. Recent results reveal how this measure is linked to the longevity of unstable physical systems. In a serendipitous twist, his work in theoretical physics begins to reflect his childhood fascination with the problem of time and death, now applied to how the lifetime of an unstable physical system is encoded in its spatial complexity. Research groups around the world (including Brazil) now use this measure in their own work on particle physics, cosmology, and astrophysics.

2013: Elected to the General Council of the American Physical Society. Co-Principal Investigator of "Dartmouth Theory Group at the Cosmic Frontier: The Origin and Nature of the Universe," his first grant from the U.S. Department of Energy.

Featured in episode 4, "[Belief: A Change is Gonna Come](#)," of Oprah Winfrey's original TV series, "Belief," on the Oprah Winfrey Network.

Starts participating in obstacle course races – Spartan races – and quickly becomes a devotee. In the following years, he and wife become internationally competitive, near the top few percent of the non-elite runners in the world. Colleagues and family can only surmise he is nuts.

2014: [The Island of Knowledge: The Limits of Science and The Search for Meaning](#) published.

Interviewed in "[Heavenly Destruction](#)," an episode of "The Universe" series on the History Channel. Interviewed in the episodes "[Will We Become God](#)" and "[Is God an Alien Concept?](#)" of the series "Through the Wormhole with Morgan Freeman" on the Science Channel. Delivers lecture on "[The Origins of Life](#)" at TEDxEast in New York City, broadcast on the History Channel.

2015: Awarded the Brazilian Diaspora Prize at Itamaraty Palace in Brasilia, which recognizes Brazilian talents abroad in the areas of science, technology and innovation, and entrepreneurship.

2016: Establishes the [Institute for Cross-Disciplinary Engagement](#) at Dartmouth to advance and transform constructive dialogue between the sciences and the humanities in academia and in the public sphere, especially on fundamental questions where bringing together multidisciplinary insights is essential. So far, the Institute has organized more than 12 public dialogues and workshops featuring scientists, humanists, and spiritual leaders in cities across the United States. It is supported in part by a grant from the John Templeton Foundation.

[*The Simple Beauty of the Unexpected: A Natural Philosopher's Quest for Trout and the Meaning of Everything*](#) published, which also receives the Jabuti Award in Brazil, his third. The book chronicles his personal quest to learn to fly fish, the relation of science to spirituality, and his attraction to mysteries that lie beyond reach, such as the trout below the river's surface. As his proficiency increases, however, so does his sensitivity to this artful sport's environmental predation as he learns that one can be close to nature without maiming its creations.

Delivers the Thomas E. Golden, Jr. Fellowship in Faith and Science Lecture at Yale University, on "Science and Spirituality." Runs his first ultramarathon, a 53km race in Tuscany, and increases his distance and training volume ever since.

2017: Elected Professor Extraordinarius at the University of South Africa.

2018: The NPR "13.7: Cosmos and Culture" blog resurrected as "[13.8](#)" at [orbitermag.com](#), and Gleiser resumes his contributions. Delivers the Drawbridge Lecture at St. Paul's Cathedral, London, on "Unknowns in Heaven and Earth."

Runs the Vermont 100 km ultramarathon and three other ultras in Canada and South Africa, with plans to attempt the difficult Courmayeur Champex Chamonix race in Mont Blanc, France, in 2019. He describes the physical and mental challenges of ultra-running as a companion to his professional life, a spiritual practice with a deep connection to nature, and a cathartic meditation best lived rather than described.

2019: Awarded The Templeton Prize.

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