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Stephen L. Zegura (July 2, 1943–May 26, 2019)

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Short Title: Stephen L. Zegura Obituary

KEY WORDS: STEPHEN L. ZEGURA, OBITUARY, ANTHROPOLOGY

Stephen L Zegura passed away on 26 May, 2019, at the age of 75. Born in San Francisco, California, Zegura was the eldest child of Dragomir Božo Zegura and Adele (June) Perelli-Minetti. He earned his BA in anthropology, magna cum laude and with departmental honours, at Stanford University. Even as an undergraduate at Stanford, Zegura was extremely active, brainstorming creative ways to create an academic career focusing on the study of humans. His energetic appreciation for Stanford and the inspirational professors he met there was often shared with his students – he was a devoted Cardinal. He then moved to the University of Wisconsin (Madison), where he was a Woodrow Wilson Fellow, and received his master's degree and doctorate in human biology in 1971. His PhD research focussed on multivariate analyses of variation in native Alaskan ("Eskimo") crania. Zegura relocated briefly to New York University before moving to the University of Arizona (U of A) in Tucson, where he stayed for the remainder of his career and life. For nearly 40 years, Zegura taught biological anthropology, human evolution, and human genetics at U of A. He was the recipient of the 2009-2010 Raymond H. Thompson Award in honour of his distinguished service and contributions he made to the School of Anthropology throughout his career.

How do you measure the impact of a life, especially for someone as alive – as large as life – as Steve Zegura was? He was brilliant and tough and kind and generous. He was mischievous, with a slightly irreverent sense of humour. He was an extraordinary teacher, with a sharp intellect and a passion for sharing knowledge. And Zegura was an exceptional scholar, interested in presenting theoretically rigorous and well-written contributions, with approximately 50 journal articles to his name. He leaves behind important contributions to knowledge in these research outputs, and here, we reflect on the arc of these outputs and their relevance then and now.

Zegura's first works focussed on measuring skulls and applying statistical methods to differentiate them from each other and from other groups (Zegura 1971) , a popular pastime

in biological/physical anthropology since the discipline developed in the 1800s, and one that has deep links to racial science (Gould 1981, Sussman 2014) . Even at this early stage, Zegura displayed two traits that continued to shine throughout his research career: meticulous attention to detail and a creative ability to synthesize disparate methodologies into a coherent framework for hypothesis testing. While many skeletal biologists were continuing to use older, traditional methods to examine skeletal variation in human populations, Zegura was quick to include linguistic analyses in his studies, examining degrees of correlation between these distinct datasets (Zegura 1975). This early work on Inuit populations led to numerous highly regarded publications. By integrating linguistics and skeletal biology, Zegura was ahead of the curve, and today, this work is considered highly creative and synthetic. Zegura was also an early contributor to our understanding of inter- and intra-observer measurement error in craniometric studies, and the importance of conducting baseline measurement error analyses in order to accurately interpret the biological significance of any results (Utermohle and Zegura 1982, Utermohle, Zegura et al. 1983), a topic that still garners considerable attention (e.g. (Robinson and Terhune 2017)).

Ultimately, Zegura's interests turned to broader questions that highlighted the degree to which racial typology and theoretical approaches had limited the research focus of the study of prehistory in the North American Arctic (Schindler, Aigner et al. 1985). In this, he was in keeping with the general movement away from typological "racial" thinking in anthropology, as well as the landmark study by Richard Lewontin showing that genetic differences attributable to traditional "races" are a minor portion of human genetic variability (Lewontin 1972), making "race" a biologically meaningless category.

All of this culminated in the research for which Zegura is best known: (1) his collaborative efforts to understand how genetics, morphology and linguistics together might provide insight into phylogenetic relationships and especially the early peopling of North

America, and (2) Y chromosome as marker for constructing gene trees and reconstructing the phylogenetic history of populations and ultimately the origins of humanity.

In the late 1980s, Zegura represented the genetics portion of the three-wave theory of the peopling of the Americas (Greenberg, Turner II et al. 1985, Greenberg, II et al. 1986) . The combination of genetic, linguistic, and dental data to reconstruct past behaviour and biological variation was unique and inspired many anthropologists to test hypotheses, debate, and review the complexity of the migration process. Zegura was generous in his consideration of all of the new datasets and reviewed the scientific contributions as they occurred in his Encyclopedia Brittanica Book of the Year columns (1998-2013). New datasets that challenged the three-wave hypothesis were exciting and his approach to rigorous science was infectious. Zegura's writing style made this information accessible and his presentation of the science was alive with intrigue. Zegura also had a keen interest in his family roots in Croatia, and the peopling of the region, and some of his early genetic work showed the complexity of migration (Zegura, Janicijevic et al. 1990, Zegura, Janicijevic et al. 1991).

In the mid-90s, Zegura began collaborations with the Michael Hammer lab in Ecology and Evolutionary Biology at the University of Arizona. He brought theoretical expertise and writing skills to co-author almost 20 papers on Y-Chromosome variation and evolution between 1995-2009 (e.g. (Karafet, Zegura et al. 1997, Hammer, Karafet et al. 1998, Karafet, Zegura et al. 1999, Hammer, Karafet et al. 2001, Hammer and Zegura 2002, Zegura, Karafet et al. 2004, Zegura, Karafet et al. 2009)). This work led to novel insights into human migration patterns out of Africa, in addition to range expansions that brought genetic diversity back into Africa. In particular, this research provided the first model-based inference of a sub-Saharan African origin of Y-chromosome diversity, and the first demonstration supporting the hypothesis of population movement out of Africa rather than

isolation by distance or genetic drift. These collective contributions have been highly cited, and were critically important to informing the scientific community about human dispersal and Y-chromosome evolutionary pathways.

It would do Steve Zegura a disservice to focus on his manuscripts as his sole (or even primary) academic output. We are certain that he would have considered the students he inspired his most important contribution to knowledge. Zegura taught over 125 courses at the University of Arizona, and had a major impact on undergraduate and graduate education. His classes were among the most challenging in U of A Anthropology, yet he drew many to the major and was extremely popular. A 78% on a Zegura exam was a highlight of a graduate career for many students. His approach to both biological/physical anthropology and holistic anthropology was characterized by breadth and depth that is absent in many scholars, and this permeated his teaching. He inspired us and taught us that telling the story of our science was as fundamental as the science itself. He lit a fire in us. Very few could capture a room like he did, and his energy and enthusiastic embrace of knowledge propelled more than a few of us into the world of academia. Many of us who worked with him and studied under him modelled our own teaching style and content after his, and emulated his style of mentoring with our own students. Indeed, we continued to be affected and inspired and mentored by him, as he commented on and engaged with our scholarship – the scholarship of generations of previous students and colleagues – right up until his death. His huge personality and sharp intellect, wrapped together with his generous spirit and fair-mindedness, made him an exceptional mentor, and one we will never forget.

But importantly, Steve also inspired us in life. His appetite for life was equal to his appetite for knowledge, and he voraciously participated in golf, rooted for sports teams, attended performing arts events, and most notably revelled in food and drink. We all have stories of sharing a bottle of red wine with Steve, with great food and excellent conversation.

But above everything he loved his family, and this, too, was an important lesson that he left his students and colleagues. Enjoy your research, but don't forget what is most important.

Rebecca Rogers Ackermann (University of Arizona: MA 1991–1994)
Michelle Bezanson (University of Arizona: PhD 1999–2006)
Michael Hammer (University of Arizona: Professor 1991–present)
David Raichlen (University of Arizona: Professor 2006–2019)

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Figure 1.

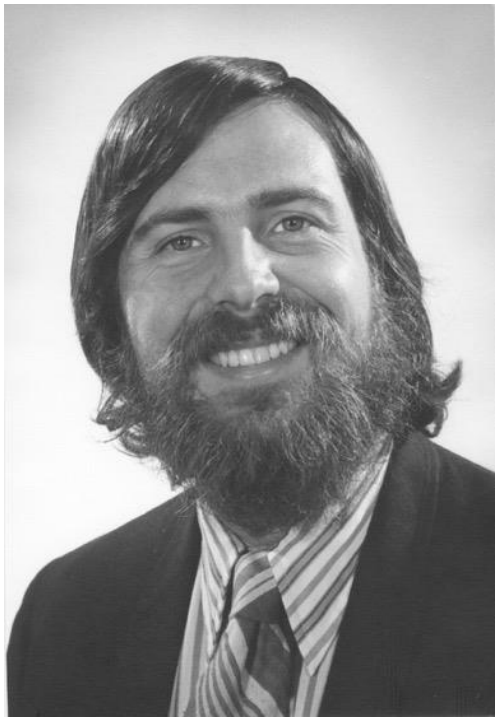

Figure 2.

Figure 3.

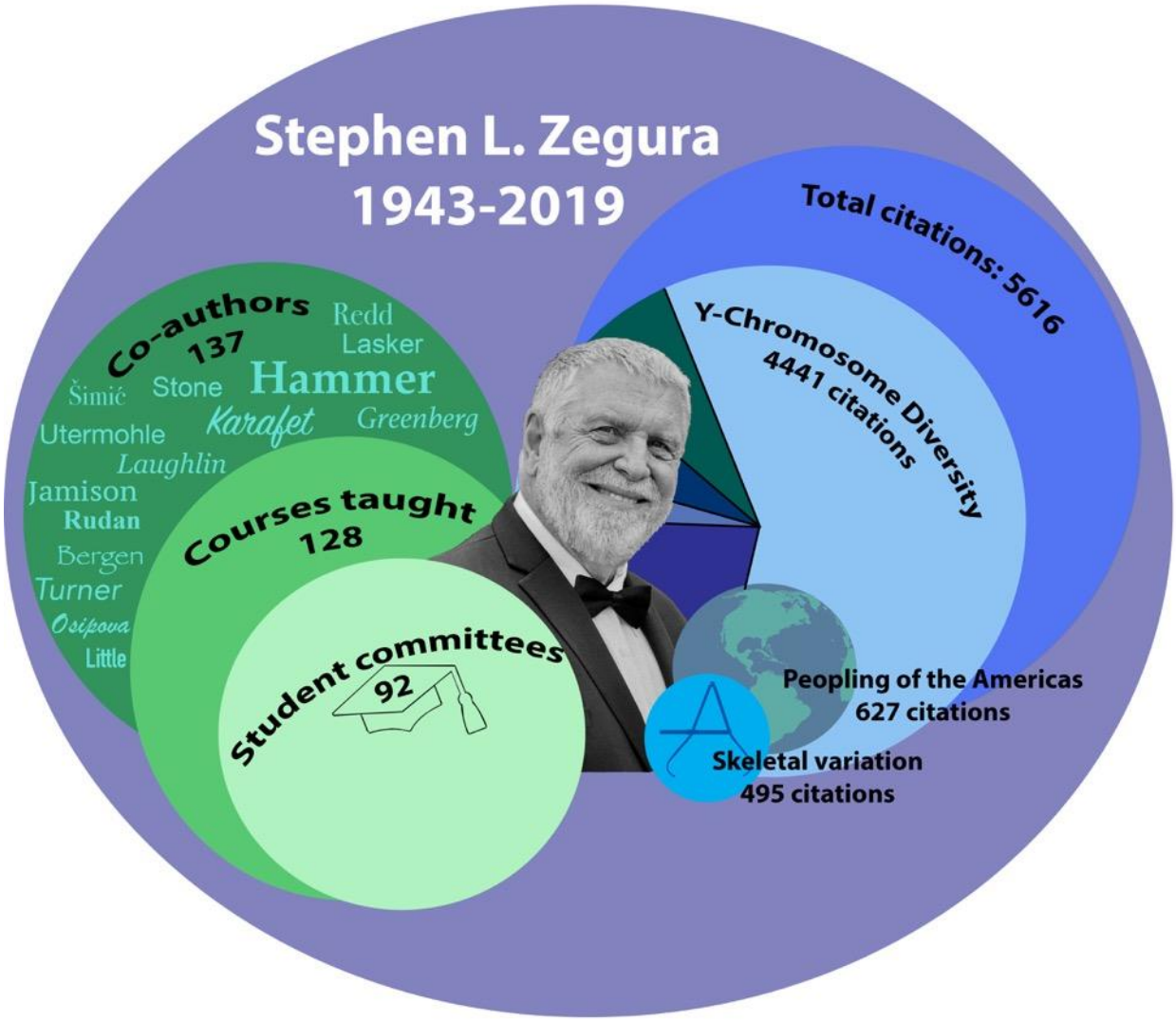
Stephen L. Zegura
1943-2019
Total citations: 5616
Y-Chromosome Diversity
4441 citations
Co-authors
137
Redd
Lasker
Hammer
Šimić
Stone
Karafet
Greenberg
Utermohle
Laughlin
Jamison
Rudan
Bergen
Turner
Osipova
Little
Courses taught
128
Student committees
92
Peopling of the Americas
627 citations
Skeletal variation
495 citations

Figure Captions

Figure 1. Stephen Zegura, early 1970s. Photo courtesy of Elizabeth Chesney Zegura.

Figure 2. Stephen Zegura (right) and Fred Hulse at the Arizona State Museum.

Figure 3. Stephen Zegura's lasting impact as a scholar, teacher, and mentor. Citation numbers at time of writing, September 23, 2019.