

# A Tribute to Jorge Stolfi on his 60th Birthday by Leo Guibas

They say that one's first love is always special, and the same is true of one's first graduate student. I started working with Jorge while I was still at Xerox PARC (Palo Alto Research Center) – but was also teaching at Stanford University part time. If I recall right, Jorge was the star student in my computational geometry class the second time I ever offered it, sometime around 1980 or so. The class was all about convex hulls and Voronoi diagrams back then. Over the following years, Jorge joined me as an intern at the Computer Science Laboratory at Xerox PARC and later formally became my first graduate student, after I officially joined Stanford in 1984. At that time there was also an exodus of people from PARC to DEC SRC (the Digital Equipment Corporation's Systems Research Center in Palo Alto) – and we also joined in Bob Taylor's new enterprise.

I feel especially bad about missing the 60th anniversary celebration since Jorge came to mine this past summer in Palo Alto. This should tell you that Jorge and I are not so different in age and in fact our scientific collaboration was much more of a relationship of equals than a traditional advisor-advisee relationship. I'll come back to this point in a little bit.

The early 80's were the heyday of computational geometry and computer graphics as well as still young. Many new technologies were invented and in daily use at Xerox PARC, including the use of personal computers (the Xerox Alto) with bitmap (raster, not vector) displays, and input devices such as mice – and they gave rise to interesting computational geometry problems, such as point location, visibility computation, and so on. Another source of inspiration was scalable geometric descriptions for font shapes and the conversion among different representations (e.g., outline vs. a metafont-style brush-trajectory description). In that environment there was no shortage of interesting research problems to dive into, and Jorge and I looked at a variety of topics involving bitmap manipulation, point-location, Voronoi diagram computation, curve representations, collision detection, and geometric computation with inaccurate primitives. Out of that collaboration came twelve or so publications, including the well-known “Primitives for the manipulations of general subdivisions and the computation of Voronoi diagrams” ACM Trans. on Graphics paper, which has over 1000 citations, perhaps a record for computational geometry work (computational geometry is small community, the annual ACM SoCG meeting is usual about 100–150 people). His thesis on “Oriented Projective Geometry” was published as a well-received book by Academic Press.

After his graduation from Stanford Jorge and I continued to work together at DEC/SRC. In the early 90's DEC/SRC hosted summer joint visits by some of the best computational geometers at the time, including Bernard Chazelle, Herbert Edelsbrunner, Micha Sharir, and Emo Welzl. With Jorge, John Hershberger, Jack Snoeyink, and some of my other students or ex-students of that period we had wonderful research sessions that led to many new results.

Jorge was a tireless worker and would spend long hours at the lab. Rumor had it that he lived on a clock that had 26-hour days, so he would precess and shift his sleeping time from day to day. As far as I know he spent ten years in California without ever learning how to drive, and his wife Rumiko would come to pick him up. I have many memories of coming to the office in the morning to find Rumiko waiting for Jorge to come down and go home.

Jorge combines deep mathematical intuition with remarkable programming skills – many people have one or the other of these capabilities, but the combination is rare. Even more rare is another aspect of Jorge's intellect. Jorge is able, better than anyone I have ever known, to put clean mathematical structure on an amorphous set of vague ideas and produce elegant and informative mathematical abstractions that allow insightful formal reasoning on a problem. I cannot count the number of times that I walked away from a technical conversation with Jorge thinking that now, finally, I understand the essence of the problem we've been discussing. Jorge likes both his ideas and his programs (and yes, not to forget, his  $\LaTeX$  macros) to be clean, well organized, and surgically appropriate to the task at hand. In this respect, and in balance overall, I think Jorge was more of a teacher to me rather than the other way around.

I want to close by mentioning another characteristic of Jorge, his remarkable diversity and versatility, as demonstrated over a long and distinguished scientific career. Jorge's curiosity is not limited to any one special topic. Besides computer graphics and computational geometry, he has made many other contributions to interval arithmetic, splines, image search, the reconstruction or archaeological artifacts, elasticity, and even the Voynich manuscript analysis.

So happy birthday, Jorge, and my best wishes for many more productive years to come. Even after all these years, I still miss having you around – and in that vein let me publically remind you that you promised to come spend a sabbatical at Stanford :)