Mathematical Biography of Ben Green

I was born in 1977 in Bristol, in the west of England. I spent the first 18 years of my life there, living just around the corner from the house inhabited by Paul Dirac for twenty years. I went to the same primary school as Dirac and the same secondary school, Fairfield Grammar, as Cary Grant.

I was always interested in numbers, apparently begging my mum for "sums" from the age of 3, but it was at Fairfield, around the age of 13, that I discovered a real interest in mathematics. I acquired my first mathematics book, a copy of Richard Guy's book Unsolved Problems in Number Theory, which I love to this day. Later I became involved with the International Mathematical Olympiad, at which I represented the UK twice (in 1994 and 1995). I was extremely fortunate at this stage to be in correspondence with some inspirational teachers - Chris Bradley, David Monk and Tony Gardiner, who sent me many very difficult and beautiful questions to work on. Through the Olympiad I met several very good friends who I see regularly to this day.

In 1995 I went up to Trinity College, Cambridge as an undergraduate. My Director of Studies was Tim Gowers, who made an immediate impression on me and who opened up a world of mathematics far wider than that covered by the Olympiads. I spent four years working towards various parts of Cambridge's legendary Mathematical Tripos, earning the title of "Senior Wrangler", which had earlier been competed for by the likes of G.H. Hardy and J.E. Littlewood.

After that it was a liberating experience to start research under the supervision of Gowers, who had recently been awarded the Fields Medal for his work on Banach spaces and, of great interest to me, on Szemerédi's theorem. It was clear to me from the outset that Gowers' methods gave one hope of proving that there are arbitrarily long progressions of primes, though as a first year graduate student this seemed a rather optimistic programme of research. I did however work on various problems in combinatorial number theory related to Szemerédi's theorem, and these results were enough to get me elected a Fellow of Trinity College in 2001.

In early 2002 I visited a friend in Budapest and had the good fortune to have several conversations with Imre Ruzsa and Endre Szemerédi. Imre and I worked on various questions connected with sum-free sets, and I was invited back for a longer research stay in 2003. During that stay I wrote a paper proving that any positive density subset of the primes contains a 3-term arithmetic progression. This turned out to be an important part of my later work with Tao on primes in AP, and I can trace one of the key ideas, "granularization", back to my work with Ruzsa.

In September 2003 I went to Vancouver, largely because I fancied spending a year in that fine city, mountain biking and learning to ski. It turned out however that the atmosphere at UBC was very conducive to work, and at this point I started my collaboration with Terry Tao. Although I had met Terry in 2001, our joint work started with a chance remark in an

email (in fact, I asked Terry for a reference letter for a job). Our first result was a new bound for Szemerédi's theorem for progressions of length four in finite fields.

I invited myself down to UCLA in February 2004, and at that point we started working earnestly on primes in AP. By April, after several strokes of luck (not least an encounter with Andrew Granville, who pointed me in the direction of the work of Goldston and Yıldırım), we had a manuscript proving that the primes contain arbitrarily long APs. I won a Clay Research Award for this work in 2004.

I am now a Professor of Pure Mathematics at the University of Bristol, where an active number theory scene is developing. I remain a Fellow of Trinity College and visit Cambridge regularly.