

Genomic Psychiatry

OPEN

INNOVATORS & IDEAS: RESEARCH LEADER

Robin Dunbar: The neurobiology of human sociality

© The Author(s), 2024. This article is under exclusive and permanent license to Genomic Press

Genomic Psychiatry; <https://doi.org/10.61373/gp024k.0064>

Keywords: Brain evolution, primates, social networks, endorphins, mentalising

Robin Dunbar is an eminent evolutionary psychologist and anthropologist whose pioneering work has permanently redefined how we think about human social relationships. Dunbar, who is an emeritus Professor of Evolutionary Psychology at the University of Oxford, became world-renowned for, among other contributions, his formulation of “Dunbar’s number,” a theoretical limit to the number of stable social relationships an individual can maintain, typically cited as about 150. That idea, which he developed as he studied the relationship between brain size and social group size in various primate species, has since had broad influences across areas from social media design to organizational management. Over time, Dunbar’s number has become more widely known and discussed, particularly with the advent of social media and online social networks. This has led to renewed interest in its implications for digital social interactions. Dunbar’s illustrious career spans multiple prestigious institutions, including, prior to joining Oxford in 2007, the University of Cambridge, the University of Stockholm (Sweden), University College London and the University of Liverpool. He is a fellow of the British Academy and the Royal Anthropological Institute, a Foreign Member of the Finnish Academy of Science and Letters, and an elected Honorary Member of the Hungarian Academy of Sciences. His interdisciplinary expertise is reflected in his professorships in psychology, evolutionary biology, and anthropology at institutions such as Liverpool and Oxford Universities. He has held a visiting chair in statistical physics and computer science at Aalto University, Finland, which has also awarded him an honorary doctorate. Dunbar studies the evolution of social processes in primates and humans, with work that blends neurobiology, cognitive science, and the social dynamics of how we communicate via friendship networks. His insights into friendships and community cohesion continue to shape our understanding of human social behaviour in the digital age. It is an absolute pleasure that Professor Dunbar answered the Genomic Press Interview as we celebrate the extraordinary story of his scientific odyssey with our readers.

Part 1: Robin Dunbar – Life and Career

Could you give us a glimpse into your personal history, emphasizing the pivotal moments that first kindled your passion for science?

Although I went to university to study philosophy, I was quickly attracted to psychology and animal behaviour, which converted me from a humanities person to an enthusiastic scientist. The opportunity to carry out field-work on monkeys in Africa as an undergraduate led to a PhD in primate behavioural ecology in Ethiopia. Puzzling about the factors that determined group size in primates and other mammals led to the discovery of the social brain hypothesis (the quantitative relationship between group size and brain size) and later to Dunbar’s Number (the natural size of human social groups predicted by this relationship) and the fractal structure of social networks (Dunbar Graphs) in both the animal and human social worlds.



Figure 1. Robin Dunbar MA PhD DSc(Hon), University of Oxford, UK.

We would like to know more about your career trajectory leading up to your most relevant leadership role. What defining moments channelled you toward that leadership responsibility?

Although my academic career started in Psychology, my subsequent post-docs were in Zoology Departments, where I acquired new skills in ecology and energetics, genetics, and evolution. An early interest in human evolution led to a faculty post in biological anthropology and then a swing back through the same disciplines (this time with Full Professorships), culminating in a return to my roots in Psychology at Oxford University in 2012.





This last move back into psychology was motivated by an increasing interest in neuroimaging and what was happening beneath the brain's surface. At the same time, my work on social groups started to attract attention in computer science (and the social media industry) and in network science, leading to the parallel development of several collaborations with mathematicians and network scientists – a genuine coming together of top-down research on structural patterns in networks with bottom-up studies of the neurobiological mechanisms that create these patterns.

Please share with us what initially piqued your interest in your favourite research or professional focus area

Undertaking field studies of monkeys and ungulates (small antelopes and wild goats) in Africa and elsewhere piqued my interest in the social world. It made me think about the differences and similarities between species. Spending hours each day observing wild animals going about their daily lives, day after day, month after month, gives deep insights into what animals are doing and why.

What impact do you hope to achieve in your field by focusing on specific research topics?

The psychological and behavioural sciences typically view the social world as purely dyadic (you do something, and I respond somehow). However, in social species like primates (and, of course, humans), this is a multi-individual web of relationships – how I respond to your action depends not just on who you are but also on who your friends are and how they might see my actions. Most sciences (and medicine) ignore the most important features of our world. I aim to introduce a better understanding of this extraordinarily complex, multi-dimensional world into the psychological and life sciences. Epidemiological evidence from the last decade consistently points to the medical benefits of this multi-individual world.

Please tell us more about your current scholarly focal points within your chosen field of science

My principal focus now lies in two directions: building a better understanding of the structural constraints that limit the size of our social world (your personal social network) and achieving a better understanding of its neurobiological underpinnings.

What habits and values did you develop during your academic studies or subsequent postdoctoral experiences that you uphold within your research environment?

First, never be satisfied with an answer: the answers to all questions always raise more questions at deeper and higher levels, and pursuing these often challenges our initial assumptions and can lead to unexpected discoveries. Additionally, I have learned that it is fundamental to rely on an instinctive understanding of how the organism sees the world (based on deep ethological observation of the organism behaving in its natural environment) when framing questions and hypotheses.

At Genomic Press, we prioritize fostering research endeavours based solely on their inherent merit, uninfluenced by geography or the researchers' personal or demographic traits. Are there particular cultural facets within the scientific community that warrant transformative scrutiny, or is there a cause within science that deeply stirs your passions?

Science rises above the particularities of culture because it focuses on the fundamental principles of nature. Disciplines that have lost sight of that (as many social sciences did in the 1980s) invariably end up in various degrees of unproductive chaos – usually because they devote their time to worrying about definitions (an invention of our minds) rather than trying to understand the natural world for its own sake.

What do you most enjoy in your capacity as an academic or research leader?

Trying to unpack the puzzle that is the world. We sit amid a giant jigsaw puzzle: we have all the pieces, but we do not know where they fit. Most of us spend our time playing with the pieces in one small corner of the picture. However, if we try to spend time in other corners as well, that often



Figure 2. Robin Dunbar defending the future of science at the famous Speakers' Corner in Hyde Park, London, where any member of the public is, by tradition, allowed to say anything they like, no matter how controversial or treasonous, without fear of intervention by the police or the state.

helps us see the big picture faster. The magical moment when suddenly everything starts to fit, and the picture begins to emerge is exhilarating.

Outside professional confines, how do you prefer to allocate your leisure moments, or conversely, in what manner would you envision spending these moments given a choice?

Music, hill walking (though I am getting too old to do that....), local history, reading novels, and poetry when I can find time.

Part 2: Robin Dunbar – Selected questions from the Proust Questionnaire¹

What is your idea of perfect happiness?

Listening to music.

¹In the late nineteenth century, various questionnaires were a popular diversion designed to discover new things about old friends. What is now known as the 35-question Proust Questionnaire became famous after Marcel Proust's answers to these questions were found and published posthumously. Proust answered the questions twice, at ages 14 and 20. In 2003 Proust's handwritten answers were auctioned off for \$130,000. Multiple other historical and contemporary figures have answered the Proust Questionnaire, including among others Karl Marx, Oscar Wilde, Arthur Conan Doyle, Fernando Pessoa, Stéphane Mallarmé, Paul Cézanne, Vladimir Nabokov, Kazuo Ishiguro, Catherine Deneuve, Sophia Loren, Gina Lollobrigida, Gloria Steinem, Pelé, Valentino, Yoko Ono, Elton John, Martin Scorsese, Pedro Almodóvar, Richard Branson, Jimmy Carter, David Chang, Spike Lee, Hugh Jackman, and Zendaya. The Proust Questionnaire is often used to interview celebrities: the idea is that by answering these questions, an individual will reveal his or her true nature. We have condensed the Proust Questionnaire by reducing the number of questions and slightly rewording some. These curated questions provide insights into the individual's inner world, ranging from notions of happiness and fear to aspirations and inspirations.



What is your greatest fear?

Dying before I have had time to write all the books I want to write.

Which living person do you most admire?

What is your greatest extravagance?

Good whisky.

What are you most proud of?

Dunbar's Number.

What is your greatest regret?

No longer being able to run effortlessly.

What is the quality you most admire in people?

Honesty.

What is the trait you most dislike in people?

Not reading what I have actually written.

What do you consider the most overrated virtue?

Faith.

What is your favourite occupation (or activity)?

Writing.

Where would you most like to live?

In a small community on an island.

What is your most treasured possession?

Photographs and belongings of my ancestors.

When and where were you happiest? And why were so happy then?

Every day brings new reasons to be happy.

What is your current state of mind?

Better than it was 50 years ago.

Among your talents, which one(s) give(s) you a competitive edge?

Persistence in asking questions and seeing the link between different phenomena.

What do you consider your greatest achievement?

Dunbar's Number. It was completely unexpected, and so, at the time, it seemed just mildly interesting. Its significance became increasingly apparent later on – mainly thanks to other people's perceptiveness.

What do you most value in your friends?

Loyalty and a sense of humour.

Who are your favourite writers?

Dylan Thomas, T.S. Eliot, Robert Burns

What aphorism or motto best encapsulates your life philosophy?

"Per ardua ad astra." This Latin phrase means "through adversity to the stars." These few words do a great job representing the scientific endeavour and personal development in general. Throughout my career, as in life, the projects that have been most rewarding are often those that require the surmounting of considerable obstacles. It reminds me that the road to our highest hopes is not a smooth one, but those bumps and hedges bring value as we get there.

Robin Dunbar¹ 

¹Department of Experimental Psychology, University of Oxford, Oxford OX2 6GG, UK

✉ e-mail: Robin.dunbar@psy.ox.ac.uk

Publisher's note: Genomic Press maintains a position of impartiality and neutrality regarding territorial assertions represented in published materials and affiliations of institutional nature. As such, we will use the affiliations provided by the authors, without editing them. Such use simply reflects what the authors submitted to us and it does not indicate that Genomic Press supports any type of territorial assertions.



Open Access. This article is licensed to Genomic Press under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0). The license mandates: (1) Attribution: Credit must be given to the original work, with a link to the license and notification of any changes. The acknowledgment should not imply licensor endorsement. (2) NonCommercial: The material cannot be used for commercial purposes. (3) NoDerivatives: Modified versions of the work cannot be distributed. (4) No additional legal or technological restrictions may be applied beyond those stipulated in the license. Public domain materials or those covered by statutory exceptions are exempt from these terms. This license does not cover all potential rights, such as publicity or privacy rights, which may restrict material use. Third-party content in this article falls under the article's Creative Commons license unless otherwise stated. If use exceeds the license scope or statutory regulation, permission must be obtained from the copyright holder. For complete license details, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license is provided without warranties.