Bastiaan Châtel

Complexity Scientist

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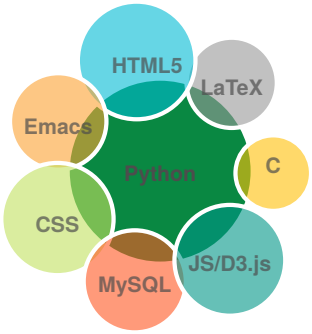
Programming & Markup



Experience

2025-2025 **Research Consultant on Sustainable Behaviors** — Independent Researcher
Co-hosted a group model-building (GMB) session and led the analysis of interviews to construct a causal loop diagram of food-related CO_2 emissions at SAIL 2025, identifying key behavioral and organizational feedback mechanisms that led to on-site field experiments on dietary choices.

2024 - Now **Research Scientist** — TNO
Developing computational models for policy in complex social systems. These models combine system dynamics, agent-based simulation, and behavioral science to study issues such as online gambling, social contagion, and sustainability transitions in bioplastics and the textile industry.

2020 - 2025 **Researcher Ph.D. Candidate** — Radboud University (Nijmegen)
Developed and applied computational and complexity-science methods (including group model building, causal loop and system-dynamics modeling, and agent-based simulation) to study loneliness as an emergent social-psychological system, integrating cognitive, emotional, and social-network dynamics to identify leverage points for scalable interventions.

2018 - 2019 **Research Intern Computational Psychology** — Institute of Advanced Study, UvA
Translating qualitative data from structured interviews into system dynamics models of major depressive disorder, and studied how structural perturbations in network topology affect the predictability and stability of dynamical systems.

2017 - 2019 **Data Query Specialist** — Company.info (subdivision of FD media groep)
Providing business intelligence based on Chamber of Commerce and financial data. I optimized database queries and transformed large relational datasets using MySQL to produce structured, accessible outputs for clients.

2017 - 2018 **Assistant Information Manager** — University of Amsterdam
Served as liaison between academic staff and IT, managing a PLESK server environment and coordinating software and hardware maintenance across departments. Contributed to improving data accessibility and digital research infrastructure within the Faculty of Social and Behavioural Sciences.

2016 - 2019 **Lead Data Management** — Data management for clinical studies
Providing data management services for clinical studies. Tasks included database and process setup, data entry, and quality checks.

2016 - 2017 **Teaching Assistant** — University of Amsterdam
Taught and assessed students in the Programming minor, focusing on C, Python, and web technologies, with an emphasis on computational thinking and applied coding for analysis and simulation.

2016 - 2017 **Teaching Assistant** — Metis Montesorri Lyceum
Contributed to the design and implementation of the project-based Coder-class curriculum, extending the Metis Montessori Lyceum core program with real-world assignments from industry partners.

Publication Metrics

Publications	**9**
Peer-reviewed	7
Policy report	1
Conference	1
Citations	**109**
h-index	4
i10-index	2

Languages

Dutch ★★★★★
English ★★★★★
Spanish ★★☆☆☆

Transferable Skills

OS Preference

Windows ★★★★★
MacOS ★★★★★
GNU/Linux ★★★★☆

Professional Summary

I am an interdisciplinary researcher specializing in computational modeling of human behavior and social systems. With a background in psychology and computational science, I use system dynamics, agent-based models, and network analysis to study how individual cognition and social interaction give rise to collective outcomes. My work bridges behavioral science and policy modeling, supporting evidence-based interventions in domains such as sustainability transitions, resilience, and societal well-being. I value interdisciplinary collaboration and continuous learning, aiming to connect psychological insight with simulation to understand better and influence complex real-world systems.

Education

2017 - 2020 **Master in Computational Science** University of Amsterdam
A Computational Scientist tries to make sense of the world around him by searching for rules that can explain the behavior of complex processes. It is a discipline concerned with the design, implementation, and use of mathematical models to analyse and solve scientific problems.

2011 - 2016 **Bachelor's Degree in Cognitive Neuroscience** University of Amsterdam
As a cognitive neuroscientist, you examine the biological background of psychological processes. With this knowledge, we try to explain human behavior and explore new treatments for psychological disorders such as autism, schizophrenia, or Alzheimer's disease. Moreover, cognitive processes such as thinking, learning, and memory are studied.

In my last year of my bachelor's, I followed the programming minor at the UvA. Here I was schooled in multiple programming languages such as C, MySQL, PHP, HTML, CSS, PYTHON, JavaScript.

Graduate courses

2023	**Career development for PhD Candidates & Postdocs**	Radboudumc
2023	**Networking for Professionals**	Radboudumc
2021	**Scientific Integrity**	Radboudumc
2020	**Projectmanagement for Ph.D. Candidates**	Radboud
2020	**Scientific Writing for Ph.D. Candidates**	Radboudumc
2020	**Education in a Nutshell**	Radboud
2020	**Design and Illustration**	Radboud
2020	**Grant Writing and Presenting for Funding Committees**	Radboud
2020	**Open Science for PhD Candidates**	Radboud

Presentations

2025 **Simulating Information-Driven Polarization via Cognitive-Evaluative Networks.** — International Military Psychology Conference, Antwerpen

2024 **Complexity Science in Social Health: Unravelling and Addressing Loneliness through Empirical and Computational Insights** — Netherlands Platform Complex Systems, Utrecht

2023 **Homophily and social influence as mechanisms of loneliness clustering in social networks** — Dutch NetSci summer symposium, TU Delft

2023 **Homophily and social influence as mechanisms of loneliness clustering in social networks** — CompleNet in Aveiro, Portugal

2021 **Refining the causal loop diagram: A tutorial for maximizing the contribution of domain expertise in computational system dynamics modeling.** — International Conference on Computational Science

2021 **Refining the causal loop diagram: A tutorial for maximizing the contribution of domain expertise in computational system dynamics modeling.** — Radboud Interfaculty Complexity Hub

2021 **Systemic analysis of societal challenges** — System Dynamics Society Symposium

Workshops

2024 **Systems Thinking for Climate Policy – Group Model Building and Causal Loop Diagrams in Practice** — SEVEN Climate Institute, University of Amsterdam

Co-hosted a workshop during the launch of SEVEN, the University of Amsterdam's new interdisciplinary climate institute, bringing together researchers from all seven faculties. The session introduced participants to group model building and causal loop diagramming as tools for understanding and addressing complex policy challenges in sustainability transitions. Through interactive exercises, participants explored how systems-thinking methods can link behavioral, institutional, and technological dimensions of climate-related problems and support evidence-based policymaking across disciplines.

2024 **Launch of POLDER initiative: sustainability through the lens of complexity** — IAS, Amsterdam

Co-led a participatory modeling workshop introducing group model building (GMB) as a method to formalize complex policy systems. The session focused on translating participant knowledge into causal feedback structures to identify leverage points and anticipate policy side-effects. It was used to show that the GMB

approach serves a twofold purpose, both informing research as well as stimulating interdisciplinary exchange between stakeholders, exemplifying how computational and participatory modeling jointly inform sustainable decision-making in the POLDER initiative.

2024 **Invitational conference: Social Health Games** Radboudumc, Nijmegen

Organized the Invitational Conference on Social Health Games, bringing together researchers, policymakers, and practitioners to explore how digital games can strengthen social connectedness and reduce loneliness among older adults.

2022 **Interdisciplinary Research and Complex Systems** Institute of Advanced Study

Complexity method presentation for the introduction of Sustainable Prosperity Institute on more systematic approaches to interdisciplinary collaboration. The Causal Loop Diagram was central all day, a method that can help identifying leverage points for fundamental systemic change.

Publications

2026 **Personalized loneliness interventions: An agent-based simulation approach integrating individual and social contexts** In submission

Châtel, B. D. L., Peeters, G. M. E. E., Olde Rikkert, M. G. M., & Vasconcelos, V. V.
https://doi.org/10.31235/osf.io/h5xj9_v1

2025 **De dynamiek van online kansspelen P102 – Bijsturen in een zelfversterkend systeem** Rijksoverheid – TNO

Veldhuis, G., Spaanderman, K., & Châtel, B. D. L.
https://www.rijksoverheid.nl/documenten/rapporten/2025/02/14

2025 **Homophily and social influence as mechanisms of loneliness clustering in social networks** Scientific Reports

Châtel, B. D. L., Quax, R., Peeters, G. M. E. E., Corten, R., Olde Rikkert, M. G. M., & Vasconcelos, V. V.
https://doi.org/10.1038/s41598-025-99057-x

2024 **Refining the causal loop diagram: A tutorial for maximizing the contribution of domain expertise in computational system dynamics modeling** Psychological Methods

Châtel, B. D. L., Crielaard, L., Uleman, J. F., Epskamp, S., Sloot, P. M. A., & Quax, R.
https://doi.org/10.1037/met0000484

2024 **Social gaming against loneliness in older adults: Recruitment and attrition in a digitally conducted study** JMIR Serious Games

Châtel, B. D. L., Janssen, J. H. M., Peeters, G. M. E. E., Corten, R., Tieben, R., Deen, M., Hendriks, E. J. M., & Olde Rikkert, M. G. M.
https://doi.org/10.2196/52640

2024 **Improving the social connectedness of older adults through digital social gaming: A pilot study** Journal of Technology in Behavioral Science

Janssen, J. H. M., van Es, V. E., Châtel, B. D. L., Tieben, R., Deen, M., Olde Rikkert, M. G. M., & Peeters, G. M. E. E.
https://doi.org/10.1007/s41347-023-00344-z

2023 **A digital gaming intervention to strengthen the social networks of older Dutch adults: Mixed methods process evaluation of a digitally conducted randomized controlled trial** JMIR Formative Research

Janssen, J. H. M., Châtel, B. D. L., Den Heijer, N., Tieben, R., Deen, M., Corten, R., Peeters, G. M. E. E., & Olde Rikkert, M. G. M.
https://doi.org/10.2196/45173

2022 **A global sharing mechanism of resources: Modeling a crucial step in the fight against pandemics** International Journal of Environmental Research and Public Health

den Nijs, K., Edivaldo, J., Châtel, B. D. L., Uleman, J. F., Olde Rikkert, M. G. M., Wertheim, H., & Quax, R.
https://doi.org/10.3390/ijerph19105930

2022 **Older adults' views on social interactions and online socializing games – A qualitative study** Journal of Gerontological Social Work

Janssen, J. H. M., Kremers, E. M., Nieuwboer, M. S., Châtel, B. D. L., Corten, R., Olde Rikkert, M. G. M., & Peeters, G. M. E. E.
https://doi.org/10.1080/01634372.2022.2100548

2020 **A computational model for simultaneous employment of multiple emotion regulation strategies** International Conference on Brain Informatics

Châtel, B. D. L., Visser, A., & Ullah, N.
https://doi.org/10.1007/978-3-030-59277-6_20

Teaching

2022 and 2023 — **Guest Lecturer – Radboud Honours Academy** — Radboud University

An interdisciplinary honours module introducing complexity science methods in healthcare research. Guided students through group model building and system dynamics simulation using the Dutch COVID-19 vaccination strategy as a case study. The project-based course emphasized inquiry-driven learning, collaboration, and application of complex systems thinking to real-world health policy challenges.

2022 — **Co-developer of Minor Program - Complexity Science** — Radboud University

Contributed to the design of a proposed interdisciplinary bachelor minor in Complexity Science at Radboud University. Helped outline the course structure, learning objectives, and integration strategy across faculties, focusing on introducing systems thinking, causal modeling, and complexity methods to students from diverse disciplines.

2021 and 2022 — **Lecturer - Complex System Simulation** — University of Amsterdam

The aim of this course is to introduce students to the field of Complex Systems and get them directly involved in research. As such, the course was project-based with less emphasis on a ”top-down” teaching approach. Students had an opportunity to decide which topics would shape the direction of the course. Responsibilities included: Giving workshops, supervising teamwork, and grading projects.

2021 — **Student Supervisor - Master of Medicine** — Radboudumc

User experience of an online gaming app designed to stimulate social contact in older adults: a feasibility study.

2021 — **Student Supervisor - Bachelor Information Studies** — University of Amsterdam

An Interactive Digital Tool For Creating Annotated Causal Loop Diagrams Using Expert Knowledge

2021 — **Student Supervisor - Bachelor Information Studies** — University of Amsterdam

The difference in performance between (Naive) Monte Carlo sampling, Markov chain Monte Carlo sampling, and local and global optimization algorithms in estimating parameters in system dynamics models

2021 — **Student Supervisor - Master Computational Science** — University of Amsterdam

Complex Network Modeling of loneliness and social interaction amongst senior citizens.