

RICH Complexity Resources from students for students



This collection pools together resources from current and former RICH students that have gotten them interested in complexity science, been helpful with starting their research project and/or dealing with an interfaculty project. This includes websites, videos, books, etcetera!

		Type	Available at
EDUCATION & TOOLS			
RICH course catalogue	Convenient overview of complexity-related courses offered at Radboud University	Course catalog	https://www.radboud-complexity.com/courses
Complexity Explorer	Glossary of complexity terminology by the Santa Fe Institute	Glossary	https://www.complexityexplorer.org/explore/glossary

NetLogo

A free simulation and modeling software which can simulate and create nice visualizations (and active parameter changes!) of the behavior of dynamic systems; It also has numerous models readily available to view/share

Software

Vensim

A free simulation and modeling software to model and simulate complex systems; Great for casual loop diagrams and stock and flow diagrams; Has a lot of free tutorials as well

Software

Map the System challenge

Yearly competition in social entrepreneurship/impact

Event

<https://mapthesystem.sbs.ox.ac.uk/overview>

VIDEO

Mindwalk (1990)

Movie

<https://www.imdb.com/title/tt0100151/>

Scale
by Geoffrey West:

Ted Talk <https://www.youtube.com/watch?v=XyCY6mjWOPc>

LITERATURE

Chaos
by James Gleick

Book <https://www.goodreads.com/book/show/64582.Chaos>

Collecting and analyzing
qualitative data for system
dynamics: methods and models
by Luna-Reyes

Article <https://onlinelibrary.wiley.com/doi/10.1002/sdr.280>

Complex Network Analysis in
Python
by Zinoviev

This book is useful if you're going to do any coding in Python

Book <https://lib.ugent.be/nl/catalog/rug01:002394394>

Complex Networks Principles, Methods and Applications by Latora, Nicosia & Russo

This book gives a good introduction to complex networks

Article

<https://dspace.mit.edu/bitstream/handle/1721.1/102741/esd-wp-2003-01.13.pdf?sequence=1&isAllowed=y>

Consequences of the ergodic theorems for classical test theory, factor analysis, and the analysis of developmental processes. In Handbook of Cognitive Aging: Interdisciplinary Perspectives. by Molenaar 2008

This chapter contains equations and formula's, especially the section *Some formal elaborations*. This is a more elaborate and formal explanation of the topics discussed in Chapter 3 of the End of Average by Rose.

Chapter

https://sk.sagepub.com/reference/hdbk_cognitiveaging/n5.xml

Complexity: A Guided Tour. by Melanie Mitchell 2011

The Mitchell book is really useful for a broad overview

Book

<https://www.goodreads.com/book/show/5597902-complexity>

Hidden skills: A dynamic systems analysis of treadmill stepping during the first year. by Thelen & Ulrich 1991

Specifically section 2 has a lot of great examples of properties of complex systems

Article

<https://pubmed.ncbi.nlm.nih.gov/1922136/>

Le Paradigme Perdu by Morin	(in French)	Book	https://www.seuil.com/ouvrage/le-paradigme-perdu-la-nature-humaine-edgar-morin/9782020027175
La vie des plantes. Une métaphysique du mélange. by Coccia	(in French)	Book	https://books.google.nl/books/about/La_vie_des_plantes.html?id=wcZUDwAAQBAJ&redir_esc=y
Overthrowing the Average in End of Average by Rose	The whole book is really a game changer. Very easy to read and with great examples for idiographic science / the importance of the individual in research	Chapter	https://old.sais.org/news/329587/Book-Review-of-The-End-of-Average-by-Todd-Rose.htm
Selling system dynamics to (other) social scientists by Repenning		Article	http://www.natcor.ac.uk/wp-content/uploads/2017/10/3.-Repenning-Selling-SD-to-Other-Social-Scientists-2.pdf
System Dynamics: Systems Thinking and Modeling for a Complex World. by Sterman 2002		Book	https://dspace.mit.edu/handle/1721.1/102741

The structure of scientific revolutions
by Kuhn

Specifically about paradigms and paradigm shifts

Book

<https://www.lri.fr/~mbl/Stanford/CS477/papers/Kuhn-SSR-2ndEd.pdf>

Thinking in Systems: A Primer
by Meadows

Specifically about dynamic thinking and feedback loops, how to "break" or change a system

Book

<https://wtf.tw/ref/meadows.pdf>