UNIVERSITY OF SÃO PAULO

SCHOOL OF ARTS, SCIENCES AND HUMANITIES

GRADUATE PROGRAM IN COMPLEX SYSTEMS MODELING

Daniel Vartanian

tesesusp: a Quarto format for USP theses and dissertations

São Paulo

2023

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Original version

Dissertation presented to the School of Arts, Sciences, and Humanities at the University of São Paulo, as part of the requirements for the degree of Master's of Science by the Graduate Program in Modeling Complex Systems (PPG-SCX).

Area of Concentration: Fundamentals of Complex Systems.

Revised Version incorporating the changes requested by the examining committee on _____ , _____. The original version is held in the reserved collection at the EACH-USP Library and in the Digital Library of Theses and Dissertations of the University of São Paulo (BDTD-USP), in accordance with Resolution CoPGr 6018, dated October 13, 2011. Supervisor: Prof. Dr.

Camilo Rodrigues Neto

Co-supervisor: Prof. Dr. Someone

São Paulo

2023

Ficha catalográfica

ERRATA SHEET

This is the development version (<1.0.0) of this thesis. If needed, corrections will be listed here after its approval.

Qualifying exam text by Daniel Vartanian, under the title **"tesesusp: a Quarto format for USP theses and dissertations"**, presented to the School of Arts, Sciences, and Humanities at the University of São Paulo, as part of the requirements for the degree of Master of Science by the Graduate Program in Modeling Complex Systems (PPG-SCX), in the concentration area of Fundamentals of Complex Systems.

Approved on: _____ , _____ .

Examination committee

Prof. Dr.   _____

Institution   _____

Evaluation   _____

Prof. Dr.   _____

Institution   _____

Evaluation   _____

Prof. Dr.   _____

Institution   _____

Evaluation   _____

I dedicate this work to the skeptics, the radicals, the ignorant, the uncivilized, the subversives, the wild dogs, the irreducibles, the irreconcilables. To the true engines of change. To the destabilizers, who possess equal or greater importance than the stabilizers. To those who act on principle, even knowing that there is no ultimate reward or any meaning in life.

ACKNOWLEDGEMENTS

I would like to acknowledge this awesome Quarto format template! :)

Nullius in verba

(The Royal Society, n.d.)

ABSTRACT

[Surname], [Initials]. ([Year]). *[Title]* [(Master's/PhD) thesis]. [Department/School], [University], [City]. [URL]

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Keywords: Keyword 1. Keyword 2. Keyword 3.

RESUMO

[Sobrenome], [Iniciais]. ([Ano]). *[Título]* [(Tese/Dissertação) de (Mestrado/Doutorado)]. [Departament/Escola], [Universidade], [Cidade]. [URL]

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Palavras-chaves: Palavra-chave 1. Palavra-chave 2. Palavra-chave 3.

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation 1   Abbreviation expanded definition

Abbreviation 2   Abbreviation expanded definition

Abbreviation 3   Abbreviation expanded definition

Abbreviation 4   Abbreviation expanded definition

Abbreviation 5   Abbreviation expanded definition

Abbreviation 6   Abbreviation expanded definition

Abbreviation 7   Abbreviation expanded definition

Abbreviation 8   Abbreviation expanded definition

Abbreviation 9   Abbreviation expanded definition

Abbreviation 10   Abbreviation expanded definition

LIST OF SYMBOLS

Γ Gamma

Λ Lambda

ζ zeta

$\in$ In/Belongs

Table of contents

1 INTRODUCTION

> **ℹ Note**
>
> The text below is for demonstrative purposes only.
>
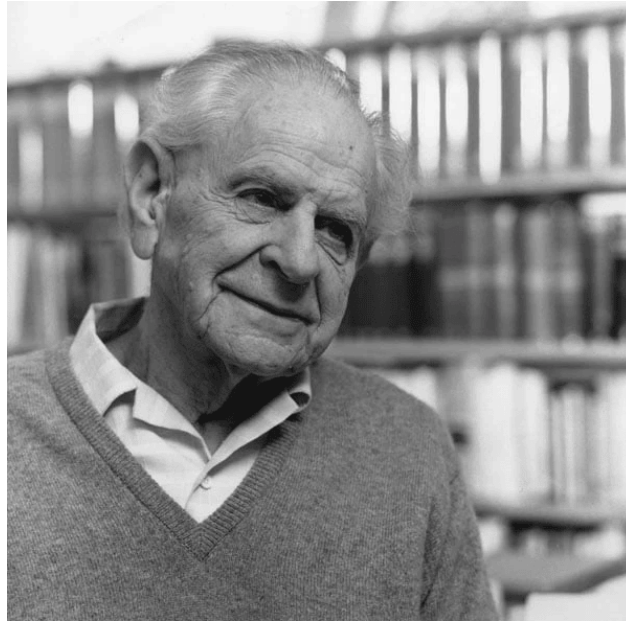> See https://quarto.org/docs/authoring/markdown-basics.html to learn about the basics of Markdown's syntax.

"The activity can be represented by a *general schema of problem- solving by the method of imaginative conjectures and criticism*, or, as I have often called it, by *the method of conjecture and refutation*. The schema (in its simplest form) is this

$$P_1 \rightarrow TT \rightarrow EE \rightarrow P_2$$

Here P_1, is the *problem* from which we start, TT (the 'tentative theory') is the imaginative conjectural solution which we first reach, for example our first *tentative interpretation*. EE (*'error- elimination'*) consists of a severe critical examination of our conjecture, our tentative interpretation: it consists, for example, of the critical use of documentary evidence and, if we have at this early stage more than one conjecture at our disposal, it will also consist of a critical discussion and comparative evaluation of the competing conjectures. P_2, is the problem situation as it emerges from our first critical attempt to solve our problems. It leads up to our second attempt (*and so on*). A satisfactory understanding will be reached if the interpretation, the conjectural theory, finds support in the fact that it can throw new light on new problems—on more problems than we expected; or if it finds support in the fact that it explains many sub-problems, some of which were not seen to start with. Thus we may say that we can gauge the progress we have made by comparing P_1; with some of our later problems (P_n, say)."

(Popper 1979, 164)

Figure 1 – Karl Popper (28 July 1902 – 17 September 1994).
One of the 20th century's most influential philosophers of science.

1.1 SECONDARY SECTION

```
1  datasets::iris |>
2    dplyr::as_tibble() |>
3    dplyr::slice_sample(n = 5)
```
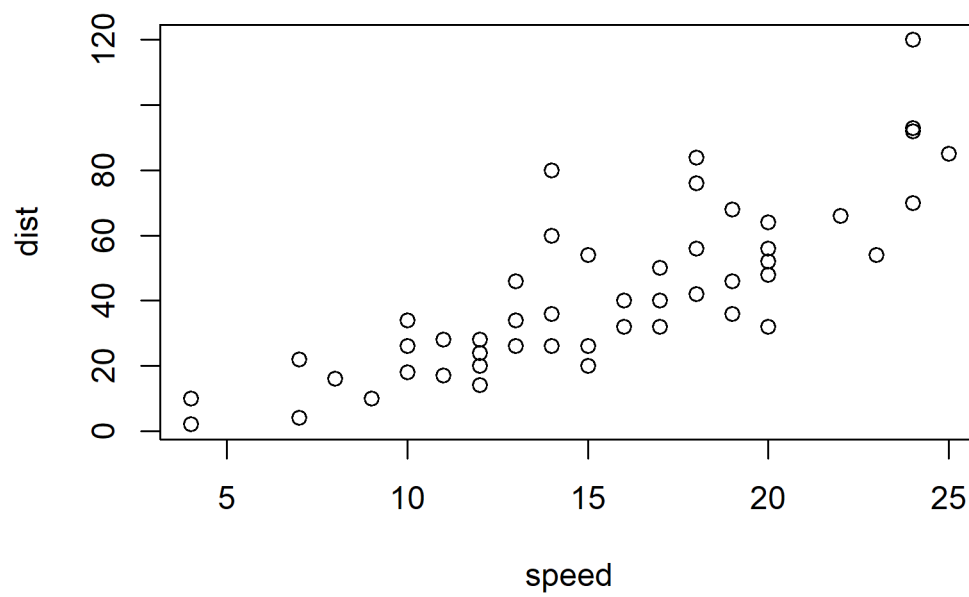
Table 1 – A sample of the famous (Fisher's or Anderson's) iris data set.

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
6.5	3.0	5.5	1.8	virginica
6.5	3.0	5.8	2.2	virginica
5.0	3.0	1.6	0.2	setosa
5.0	3.5	1.6	0.6	setosa
6.2	2.9	4.3	1.3	versicolor

1.1.1 TERTIARY SECTION

```
1  plot(cars)
```

Figure 2 – Speed and stopping distances of cars

QUATERNARY SECTION

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2 DEVELOPMENT

> **ℹ Note**
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2.1   SECONDARY SECTION

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3 CONCLUSION

> **ⓘ Note**
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REFERENCES [1]

Popper, Karl R. 1979. *Objective Knowledge: An Evolutionary Approach*. Rev. ed. Oxford University Press.

The Royal Society. n.d. "History of the Royal Society." Accessed September 9, 2023. https://royalsociety.org/about-us/history/.

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[1]   According to the APA style - American Psychological Association.

A APPENDIX 1

> **ℹ Note**
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A.1 SECONDARY SECTION

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