

# Educating epistemological principles, virtues and research skills. Review on Marina Klimenko's textbook "Research Methods in the Social Sciences"

Book review of: Marina Klimenko (Dept. of Psychology, University of Florida), "Research Methods in the Social Sciences", William England Sentia Publishing 2020

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**Abstract:** Improving university students' research skills, research integrity and best standards for scientific excellence is crucial for all disciplines. Marina Klimenko, a senior lecturer at the University of Florida, developed an innovative digital textbook entitled *Research Methods in the Social Sciences* (2020) with the focus on investigative psychology. The edition was powered by the e-learning portal and published by Sentia Publishing. The author's own epistemological and research expertise is combined here with her competence in higher education didactics. Klimenko's textbook seems to be perfectly tailored for prospective researchers – and useful for various disciplines representing the social sciences and humanities.

**Keywords:** research excellence, scientific and research virtues, science-based learning, promoting students' research competence, investigative psychology, advances in psychological education, M. Klimenko's textbook *Research Methods in the Social Sciences*

## Introduction

In all disciplines, including social sciences and humanities, educators search for high-quality online resources and technical support. Since the unexpected, K.R. Popper's "black swan"-like<sup>1</sup> outbreak of the pandemic this demand has increased—the demand for remote teaching and learning – Marina Klimenko's textbook *Research Methods in the Social Sciences* is keeping up with the time.

Having been invited by *William England* from *Sentia Publishing* to review the *Research Methods in the Social Sciences* e-book, as a philosopher, I submitted an overview of Chapters 1–3, which are most concerned with the epistemological foundations of scientific research methods as well as with scientific and research virtues.

Klimenko's textbook guides a user across the key stages of becoming a researcher with the scientific mindset and research virtues – as the "human intellect" still remains the main source of the epistemological principles that transform knowledge into solid science. The textbook consists of 11 chapters, each chapter provided with a practice quiz or training exercise, each containing several discussion questions in which students can participate for extra credits to advance their research expertise. Supportive instructions, glossaries, examples of appropriately applied research tools, useful links, references, tips on how to search literature, and creative simulations, are also provided.

### Science-based Learning in Teaching Psychology Students for Scientific Work

Klimenko declares the twofold goal in the 1<sup>st</sup>, introductory chapter. Firstly, to "demonstrate that science, as a method of gaining knowledge, did not appear out of nowhere or as an accident, but, in my judgment, has been with us, as part of our human intellect, from the beginning of our human existence, even if it was then in its most primitive form";

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<sup>1</sup> Bruce Janz et al. „COVID-19 Forced Social Distancing and Isolation: A Multi-perspective Experience”, *Ethics in Progress* 2020, vol. 11(1), pp. 20–60 (<https://doi.org/10.14746/eip.2020.1.2>).

secondly, to “to illustrate that the accumulation of knowledge did not begin with the scientific revolution; there are other methods that humans have employed in the past and continue to use today, for example, observation, logical reasoning, and learning from more-knowledgeable others”.

Klimenko’s epistemological claims will be justified in Chapters 1 to 2 (“Principles of Modern Science”) as she revisited the modern science paradigm as originating from the ancient Greek love of wisdom (*philo-sophia*) and the concept of knowledge, initially thought and taught as a cumulative, systematic and encyclopedic totality, and personified by historical scholars such as Aristotle and W. von Humboldt. Symbolic tools (language, social discourse, “social learning” and “cultural transmission”, as Klimenko stresses), technologies (Gutenberg’s invention of the printing press) and institutions (academia/universitas and the academic community) allowed scientists to switch from an individualist and speculative model to conducting science in a more collaborative, collective, and “prosocial” way. Principled thinking was described as *rational* and led to a global “Copernican” revolution, which shaped the modern paradigm of science.

Critical reflection, i.e., advancing the quality of research by questioning research methods and results, and the empirical turn (systematic observation, experimentalism and hypothetism or critical rationalism, respectively) were further milestones in modelling contemporary rational science. This tendency was not only to permanently revise our understanding of how science should be processed; nor was it aimed at letting ‘scientism’ capture all human practices and lifestyles. Rather, it was supposed to create a safe space of knowledge acquisition and to provide knowledge with a thoroughly justified claim for scientific *and* social validity: because human perception and the cognitive apparatus are – and have always been – prone to fallibility. “To err is human”, the English poet Alexander Pope (1688–1744) said. Klimenko’s textbook still contains a strong, humanist and human-friendly message: discovering novel ways of thinking and not necessarily novel facts or regularities constitutes the core value of science. In the era of questioning the place of the Humanities among

other sciences<sup>2</sup>, re-empowering the Humanities' potentials to teach students and scholars how to conduct scientific research as a creative, critical and serious thinker is commendable. Furthermore, her message is "prosocial", as science is a social practice and often focuses on society itself as its research object.

This is so, because Klimenko's textbook, although perfectly suited for prospective professionals in psychology as a discipline of social sciences, derives a great deal from philosophy. In particular, from the philosophy of science, methodology and the critical theory of knowledge (episteme), i.e., of epistemology. In fact, epistemology was not exhausted by the Cartesian and Kantian foundations of modern, critical rationalism. A principled, structured, and reliable knowledge would not be possible to gain without the contemporary scholarship of epistemologists and methodologists with philosophical backgrounds who teach scientists across disciplines how to formulate a sound hypothesis and how to test it; how to define a research problem and how to provide sufficient, experiential/empirical evidence; how to identify independent and dependent study variables, distinguish between deductive vs. inductive reasoning, conduct analysis and provide explanations.

Knowing the limits of one's own competence as a researcher, as well as showing open-mindedness to peer review and discussion of one's research outcomes, also belong to the methodological essentials of conducting research. Before and beyond that (Kantian in nature!) self-critical and self-referring reflection, a more substantive ability is recommended by Marina Klimenko when one is in a research trainee position: according to Bloom, one of Klimenko's favorite epistemologists, "The basic first step is *knowledge*, i.e. before you can engage in critical evaluation, you have to be familiar with the subject matter" itself. "The second step is *comprehension*, understanding the subject at hand. Once you have achieved comprehension, you can apply information as intended. The last three steps are *analysis*, *synthesis*, and *evaluation*".

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<sup>1</sup> Justin Stover, "There Is No Case for the Humanities", 4.03.2018 [<https://www.chronicle.com/article/There-Is-No-Case-for-the/242724>, accessed: 12.04.2021].

In Chapter 3 (“Thinking Like a Scientist”) Klimenko check-listed the core skills enabling a subject to develop cognitive activities as *a scientist*. Among others, “identifying a problem, generating research questions [...] formulating falsifiable hypotheses”, collecting data properly and grounding one’s own research in previous (peer-reviewed) research outcomes are necessary to be recognized as a serious researcher, which is already possible – and even promoted – for a graduate student. Even innovative and original ideas do not entitle a researcher to start research at ‘ground zero’, but to (at least critically) attach his/her research idea to the ideas sufficiently examined and documented in peer-reviewed, professional literature. Klimenko’s maxim: “if no prior scientific work can be found on the topic of your research question, ask yourself why. Does it belong to the realm of science?” seems to compete with other popular maxims which encourage a researcher to find a blank space, a lack of knowledge or evidence, and to fill this lack with new and original findings.

Even an original Eureka-like research objective does not seem to have risen from a vacuum nor are natural elements, structures and regularities its only foundations. Otherwise, it would not have been Isaac Newton who, as a student of mathematics and physics, was quarantined in the village of Woolsthorpe, discovered the law of gravity ‘behind’ a falling apple, but it would have been ‘Tom, Dick and Harry’, the gardeners. The case of Newton’s apple case just exemplifies how “rich in history and content” a single and accidental scientific discovery or fact can be (to recall Ludwik Fleck’s argument from *Genesis and Development of a Scientific Fact*). Thinking like a scientist not only requires knowing the context, but also knowing “the difference between an opinion, a fact, and a claim of fact”, as Klimenko stresses.

Chapter 3 also provides a set of imperatives that are universal for the scientific ‘realm of ends’, to put her teaching method in Kant’s terms. ‘Know the extent of your ignorance’ opens that set; then ‘state a good research question’ and ‘specify a testable hypothesis’ follows. Reminding us of “the non-absolute nature” of hypotheses – especially in Social Sciences and Humanities which tend to get satisfied with

confirmation while brushing aside discussing, disconfirming and falsifying their hypotheses – is another highlight in Klimenko’s methodological textbook for future researchers in psychology and related disciplines. Her detailed descriptions of the confirmation and disconfirmation strategy seem to have come at the right time for adepts and scholars of all disciplines of science, in which the imperative “Both, confirmation and disconfirmation strategies are acceptable in science, as long as the hypothesis that is being tested is falsifiable” is not always observed, properly comprehended, or even taught.

Meanwhile, “A research question and a hypothesis are directly linked: while the former sets the tone and raises the question that will drive the study, the latter specifies how the question will be addressed by predicting what is supposed to happen”. Klimenko provides the textbook user with clear instructions on how not to throw away the link between a prediction, on the one hand, and empirical or theoretical arguments proving it, on the other. First of all, “after formulating a hypothesis, a researcher should have a clear sense of what events or phenomena are to be observed and measured to test the hypothesis”, for both quantitative or qualitative research (mixed models are not considered). Among her methodological maxims, there is one on selecting out the “extraneous” (“confounding”, or just dark) variables which might be challenging to a researcher when a multifactorial analysis or correlational examination must be provided. Klimenko illustrates such difficulties with a tricky hypothesis (also widely discussed in the literature<sup>3</sup>) according to which aggressive juvenile behavior is being stimulated by gaming, whereas an already developed aggressive tendency may provoke a subject’s interest in violent video games – which would deliver an alternative explanation.

The topical parts of Chapter 3 are focused on establishing the internal vs. external validity of a scientific study. Internal validity refers to the degree of an established

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<sup>3</sup> E.g., Patrícia da Silva Leite, Deborah Andrade Torquato Schmidt, „Rethinking Digital Games in a Critical and Participatory Perspectives: A Brief Reflection“, *Ethics in Progress* 2019, vol. 10, no. 2, Art. #10, pp. 112–117 (<https://doi.org/10.14746/eip.2019.2.10>).

causal connection between the studied variables, while external validity refers to a populace of real participants (or to real-life circumstances) and implies generalization of the research findings. “An experimental research design delivers the highest internal validity, but has the lowest external validity. On the other hand, non-experimental design has the lowest internal validity but can achieve the highest level of external validity. Quasi-experimental designs can be placed somewhere in between”, Klimenko assumes. Her clarifications of validity types can sensitize researchers at the stage determining research design, choosing experimental research instruments, formulating their hypothesis, and providing them with well-suited – and carefully formulated – validity claims: Klimenko offers here a methodological toolbox useful across disciplines.

The section addressing conceptual and operational definitions in psychological research also suggests that philosophical thinking is necessary to support scholars in constructing their definitions, by using different semantics. Philosophical definitions might be constructed from abstract and general (sometimes even speculative) ideas, concepts and categories making up the epistemological framework. *Theoria*, *phronesis*, *episteme*, reason and rationality, foundation, and the ‘idea’ itself belong to that semantical legacy inherited by nearly all the disciplines of modern science. Psychologists in particular may still be stimulated by the philosophical concepts of spirit, mind and their various ‘faculties’.

At the same time, conceptualizing and specifying a set of variables describing an experiential – and measurable – reality addressed by one’s hypotheses requires terms, constructs and definitions of a different, technical and demonstrative kind. Although the set of scientific *termini technici* may have originated from philosophy, it evolves as an autonomous and permanently re-defined set within a scientific discourse conducted by scholars. Every single discipline (even sub-discipline) including empirical and experimental psychology develops and also conventionalizes its operational vocabulary. Klimenko’s textbook exemplifies this process with the terms cognition and cognitive ability as *operative*, therefore, effective for a group of scholars whose research is representative for one of the ‘paradigms’

in contemporary psychology, namely for investigative psychology. Using just synonymous or historical terminologies to construct a sound operational definition and hypothesis may alienate a researcher from scientific discourse. Thus, “a scientific concept” – here, e.g., the concept of human cognition and cognitive abilities<sup>4</sup> – is not only “a result of the historical development of thought” (Ludwik Fleck), but also that of researchers’ and authors’ lexical-semantic competence.

Unlike in the case of natural language, it is expected that they would avoid both using jargon and making a cross-linguistic Salto Mortale, i.e., not having managed to represent (“map”) basic concepts by words<sup>5</sup> and not having provided a glossary to bridge the gap between concepts and words if their communication addressed an interdisciplinary audience. The message resulting from Martina Klimenko’s imperative of a diligent operational use of language is how to facilitate the reception of our hypotheses and research findings by the scientific audience and to ensure that one’s research has an impact. Correctly following the principles of rational science and following the rules of the related language game makes a researcher think like a scientist and to belong to a scientific community.

Furthermore, Klimenko explains how to provide a literature review online to both strengthen essential arguments and to examine their strength using the tools of related, prior knowledge. “The role of literature review – she explains – isn’t just limited to assisting researchers in asking the right research questions and formulating sound hypotheses. Literary analysis should inform the entire research process” and support a researcher in making “the connection between the findings of the present study and all prior knowledge. Do the new findings add to what is already known, or do

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<sup>4</sup> Whose connotation is very different than, for example, ‘capabilities’ in socio-economically and socio-environmentally interpreted ‘Capability Approach’ of Amartya Sen and Martha Nussbaum, and even different from the term ‘capacity’ which was popular several decades ago.

<sup>5</sup> Peter Carruthers, Jill Boucher (eds), *Language and Thought: Interdisciplinary Themes*, Cambridge University Press, New York 1998, p. 185.

they contradict it?”. Conducting literature research is basic, though not the only method of conducting scientific research in the social sciences. It should focus on professional (peer-reviewed) journal articles, avoid predatory- and pseudo-journals (the so-called “Chocolate Diet journals”), and stay open to less cited, but potentially stimulating articles, too.

Klimenko also provides the reader with an instruction “how to (seriously) read a scientific paper” which is rare<sup>6</sup>. “If you believe the paper is relevant [...] then you need to know more details. For example, if you want to know more about the topic of the study, read the introduction. It will give you a general idea of why the authors conducted their research [...]. If you are interested in the paper for its methodology, carefully examine the method section. If you want to know more about the findings, examine the discussion section”, so Klimenko’s advises.

Chapters 4–11 range from “Specifying Research Questions” and analyzing the reasons for using “Observational Methods” to the “Experimental Research” overview, “Quasi-experimental Design”, “Data Analysis Parts 1–2”, “Writing an Academic Paper” and “Becoming a Critical Thinker and a Smart Consumer of Science”. All the chapters are provided with rich interactive training opportunities. *Having a universal design for science-based and research-based learning, this textbook covers the core areas explored in an investigative psychology course.*

### **From solid science and research integrity to the fake-less and fair knowledge circulation**

In the twenty-first century, advanced digital technologies offer new opportunities for higher education. These opportunities are not only a supportive tool for users of digital devices. They create a novel, hybrid, interactive space in which a human mind – surrounded by information – starts learning immediately. The nature of the intelligent digital environment and the nature of knowledge (*episteme* and *techne*)

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<sup>6</sup> Charles Adler, Mortimer Van Doren, *How to Read a Book*, New York 1967.

as a social, network-like phenomenon show affinities. Scholars claim that human cognition behaves in a similar way in both environments, where “a mutual interplay between the cognitive apparatus and the information it retrieves”<sup>7</sup> was observed. During this interplay with the learning environment subjects can experience real “epistemic feelings adjusting their cognitive operations”<sup>8</sup>.

Having created a favorable, digital learning environment, Klimenko not only focuses on learners’ cognitive growth, but also promotes educative integrity, research integrity and fake-less, fair knowledge circulation in digital space. What is up-to-date in her manual cannot be reduced to the global request for high-quality tools of remote learning, currently increased by the lockdown of universities.

Dedicating her digital manual to teaching students research methods based on “scientific principles”, Klimenko also advances the digital learning environment to be destined for science-based learning in social sciences, and for the formation of a scientific mindset taking responsibility for new reliable knowledge delivery and dissemination by digital capacities, and for protecting digitalized contents and values of episteme against subjective *doxa* and fake which are distributed, e.g., by social media. She highlighted the very mission of those who ‘believe and act entirely on the basis of evidence and reasons’ inspired herself by Siegel (1989). For scientists, personal virtues begin with – but are not limited to – epistemological values and skills. K.R. Popper personified the link between research excellence and research integrity: “Popper’s method of trial and error [...] is inseparably interwoven with ethical or moral principles”<sup>9</sup>. This applies across disciplines, as emerging dis-

<sup>7</sup> Tom Ziemke, Alexander Riegler, “When Is a Cognitive System Embodied?”, *Cognitive Systems Research* 2002, vol. 3(3), pp. 242–244.

<sup>8</sup> Santiago Arango-Muñoz, “Two Levels of Meta-cognition”, *Philosophia* 2011, vol. 39(1), pp. 71–82; Noawanit Songkram et al., “E-learning System to Enhance Cognitive Skills for Learners in Higher Education”, *Procedia – Social and Behavioral Sciences* 2014, vol. 174, pp. 667–673.

<sup>9</sup> Hubert Kiesewetter, “Ethical Foundations of Popper’s Philosophy”, in: Anthony O’Hear (Ed.), *Karl Popper: Philosophy and Problems*, Royal Institute of Philosophy Supplement, vol. 39, Cambridge University Press, Cambridge 1995, pp. 275–276.

ciplines, research methods and complex theoretical frameworks and conventions would be much more demanding than conducting a monodisciplinary project. However, facing the shift from disciplinarity to postdisciplinarity (or even antidisciplinarity) claimed to forecast „a new knowledge era that follows the era of disciplinarity”<sup>10</sup>, prospective researchers are not absolved from respecting epistemological values and rigors and from developing methodological, organizational and discursive skills.

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<sup>10</sup> Frédéric Darbellay, “From Disciplinarity to Postdisciplinarity: Tourism Studies Dedisciplined”, *Tourism Analysis* 2016, vol. 21, p. 364.

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