EXPLORING THE POTENTIAL OF CRITICAL REALISM IN FUTURES STUDIES

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DOCTOR OF PHILOSOPHY
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10 April 2023

To

my parents,

my spiritual teachers,

my fellow kalayanamitra

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บทคัดย่อ

วิทยานิพนธ์นี้มีวัตถุประสงค์เพื่อสำรวจศักยภาพของปรัชญาสัจนิยมเชิงวิพากษ์ในการวางพื้นฐานทางทฤษฎีที่สอดคล้องกันในอนาคตศึกษา การอธิบายหลักการทางปรัชญาที่ชัดเจน ซึ่งอยู่ภายใต้กระบวนทัศน์การวิจัย สามารถเพิ่มความเข้าใจเชิงลึกให้กับนักอนาคตศึกษาและผู้กำหนดนโยบายในการตีกรอบปัญหา การกำหนดวิธีการรวบรวม วิเคราะห์และตีความข้อมูล สัจนิยมเชิงวิพากษ์ยึดหลักภววิทยาเชิงลึก (ontology) โดยใช้หลักการอธิบายความเป็นจริงด้วยการหาเหตุผลเชิงลึก ทำให้สามารถแยกแยะปัญหาที่ซับซ้อน ด้วยการวิเคราะห์เป็นลำดับชั้น หลักการการวิจารณ์เชิงอธิบายของสาเหตุ และการวิเคราะห์แบบหวนกลับ (retroduction) สามารถทำความเข้าใจความซับซ้อนของสังคม เปิดให้เห็นถึงข้อมูลเชิงลึกเกี่ยวกับต้นตอของปัญหาในหลายๆ ภาคส่วนที่เกี่ยวข้องกัน และชี้ให้เห็นเงื่อนไขที่เป็นกลไกที่นำไปสู่การเปลี่ยนแปลงทางสังคม ปรัชญาสัจนิยมเชิงวิพากษ์มีความมุ่งมั่นทางจริยธรรมในการวิจัยเพื่อนำไปสู่อนาคตที่พึงปรารถนา และความเป็นอยู่ที่ดีสำหรับทุกๆ สิ่งมีชีวิต จึงเหมาะกับการเป็นรากฐานทฤษฎีความรู้ที่เหมาะสมสำหรับอนาคตศึกษา

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ABSTRACT

This dissertation aims to explore the potential of critical realism philosophy in providing a coherent theoretical basis for future studies. Explicitly articulating the philosophical principles that underlie a research paradigm can enhance the comprehension of how foresight practitioners and policymakers approach the framing, collection, and interpretation of data. Critical realism, which is founded on a deep understanding of reality, supports complexity in the social sciences and is a fitting epistemological framework for futures studies. Grounded in a deep explanation of reality, Critical realism highlights the complexity of social science and serves as an appropriate theory of knowledge for futures studies. Through the application of the CR positions of stratified ontology, the explanatory critique of causation, and retroduction, the findings highlight insights into the root causes of complex problems across inter-relating sectors and reveal the generative conditions for social change. Guided by judgmental rationality, critical realists challenge false consciousness and affirm the refinement of knowledge about the real world and claims about social reality. This ethical commitment steers futures studies and policy-making toward desirable futures and prosperity for all.

Keywords: Critical realism, futures studies, emancipatory foresight, complexity, social change

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AQI	Air Quality Index
CDL	Circular Design Labs
CMU-SPP	Chiang Mai University, School of Public Policy
CLA	Causal Layered Analysis
CR	Critical Realism
EFR	Ethnographic Futures Research
FAO	The Food and Agriculture Organization
FS	Futures Studies
GDP	Gross Domestic Product
HRM	Human Resource Management
IFI	Innovative Foresight Institute
IPPD	Institute of Public Policy and Development
MHESI	Ministry of Higher Education, Research & Innovation
NSTDA	National Science and Technology Development Agency of Thailand
NCPO	The National Council of Peace and Order
NIA	The National Innovation Agency
NIDA	National Institute of Development Administration
NXPO	Office of National Higher Education Science Research and Innovation Policy Council
PS	Praxis Foresight
SAC	Structure, Culture, and Agency
SDG	Sustainable Development Goal
SOIF	School of International Foresight
SPP	The School of Public Policy
TCAN	Thailand Clean Air Network
TFF	Thailand Futures Foundation
TDRI	The Thailand Development Research Institute
UNDP	United Nations Development Programme

VLV	Village Health Volunteers

GLOSSARY

Critical Realism Terminology

Ontology

What is the reality of the future?

Epistemology

How do we know about the future? How do we come to understand reality or generate knowledge about the future?

Judgmental Rationality

Judgmental Rationality is based on the notion that reality is intransitive, but human knowledge is transitive. The world is operating independently of human perception and knowing (Ontological Realism). There is more to reality than human perception. So, our knowing has limitations and changes according to the context, thus being prone to error (Epistemic Relativism). Therefore, it is essential to use rational judgment to evaluate diverse and competing claims about the world we live in.

Emergence

Emergence is the process of forming a new entity with distinct characteristics. This notion is the opposite of reductionism which argues that the whole is nothing but the sum of its parts. Society is rooted in its people but irreducible to the people. The formation of this open system creates a hierarchy. The higher the hierarchy, the more complex it becomes. In an open system, causality takes place in both directions. The higher level has causal power over the lower, but the lower can act back within its boundary. This interaction demonstrates the space for autonomy and freedom, which is vital to creating alternative futures.

Open-Systemic Causality

One key distinctive characteristic of CR is the rejection of causality formulated by regularity, succession, and sequence of events. In science, an experiment is conducted in a closed environment, where conditions are controlled. But the real world is operating in an open system. Therefore, an event that regularly occurs in the closed setting condition might not necessarily do so in an open environment. Why is this so? In an open system, there are many extra variables

yet to be identified, some of which could contribute to the cause of an event. Each of the variables belongs to interconnected and complex systems, making it even more difficult to identify or explain the causation law. The theory and law merely generate some prediction of the tendency. Still, we cannot rule out the possibility of a surprise because of the continuous interaction within the open systems. Causes are not equivalent to conditions.

Depth Stratification and Emergence

The world is not only intransitive but also stratified. There is more to reality than meets the eye. This means our world is comprised of countless layers of reality, but our sense perception is limited to only the empirical layer of reality which is on the surface. Stratification also implies emergence. The conjunction of two or more situations gives rise to new phenomena. For example, hydrogen and oxygen combine to create water, but water cannot transform back to its original two constituents.

Stratified Reality

The past and present reality is set in motion and operates independently of human perceptions. The three domains of reality are known as The Empirical, The Actual, and The Real.

The Empirical is the experience or human observation through five sensory channels: Both observable and measurable events.

The Actual is the outcomes of the mechanics that have been actualized or the tendential outcomes which have not been actualized

The Real refers to the generated mechanisms and their causal powers that create the top two layers.

Causal Powers

The concepts of open systems and conditionality requires that forecasts are subjected to uncertain conditions: multiple processes and mechanisms (such as homeostatic causal loops) and the responsive modes resulting from learning and self-regulation.

Generative Mechanisms

Generative mechanisms possess powers that wait for the right conditions to manifest in the actual and the empirical.

Cautious Ethical Naturalism

The value goes beyond the debate of "what is and what should be." Rather, the focus is on the conditions of a good society where humans can collectively flourish.

Retroduction

The retroductive method moves the argument "from a description of some phenomenon to a description of something which produces it or is a condition for it" (Bhaskar, 2009, p. 11). It is based on the critical realists' belief that it is possible to make judgments regarding "sound" explanations of social events through criticism by demonstrating the "validity" of the explanation given.

Structure, Culture, and Agency

Structure, culture, and agency have distinct properties and powers, which separate them from each other, but they continuously interact, imposing and resisting their influence to shape new events.

Foresight Terminology

BANI

A newly coined acronym created by Jamais Cascio, American anthropologist, author, and futurist, to describe the new world as *brittle, anxious, nonlinear, and incomprehensible.*

CYNEFIN

Based on a cognitive framework, CYNEFIN was developed to make sense of complex thinking. It helps us to understand how the future emerges as well as how to handle different types of complexity.

DELPHI

A foresight process that aims to gather information from expert knowledge and experience, particularly on structural research questions

SCENARIOS

A foresight approach that creates stories to illustrate possible, probable, and plausible sets of futures. Unlike a prediction, the scenario method is a simulation of possible future events.

STEEP

One of the most popular foresight tools used to gather and categorize trend drivers, namely social, technology, economics, environment, and politics

VUCA

Based on the leadership theories of Warren Bennis and Burt Nanus, VUCA is a widely used acronym in futures studies to describe the *volatility, uncertainty, complexity, and ambiguity* of situations.

ข้อความแห่งการริเริ่ม

1) วิทยานิพนธ์นี้วิเคราะห์ปรัชญาพื้นฐานในอนาคตศึกษา ปัจจุบันซึ่งถือว่าเป็นยุคที่มีปรัชญาหลากหลาย รวมถึง ประจักษ์นิยม (empiricism), สรรคนนิยม (constructivism), หลังโครงสร้างนิยม (post-structuralism), และ ปฏิบัตินิยม (pragmatism) ปรัชญาเหล่านี้เป็นแนวคิดพื้นฐานในการนำไปปฏิบัติใช้ในอนาคตศึกษา และต่อมาได้สำรวจศักยภาพของ สัจนิยมเชิงวิพากษ์เพื่อเสนอให้เห็นถึงความเหมาะสมสำหรับการนำไปใช้ในอนาคตศึกษา

2) วิทยานิพนธ์นี้แสดงให้เห็นถึง ประวัติของอนาคตศึกษาในประเทศไทย วิวัฒนาการ และแนวทางปฏิบัติในปัจจุบัน โดยพิจารณาจากญาณวิทยา (epistemology) ของอนาคตศึกษาในระดับโลก และแสดงให้เห็นถึงความสำคัญในการอธิบายพื้นฐานทางมโนธรรม และจริยธรรมของหลักวิชานี้

3) วิทยานิพนธ์นี้ได้ทำการถอดบทเรียนจาก กรณีศึกษาเรื่องมลพิษทางอากาศ โดยใช้องค์ประกอบของอนาคตศึกษาทางหลักภววิทยาเชิงลึก (ontology), การอธิบายสาเหตุ (causation), การวิเคราห์เชิงโครงสร้าง และบุคคล (Structure and persons) มีการนำหลายแนวคิดที่เกี่ยวข้องกับสัจนิยมเชิงวิพากษ์ (Critical Realism) มาใช้ เพื่อหาจุดที่เหมาะสมกับการเข้ามาแก้ไขปัญหาเพื่อก่อให้เกิดการเปลี่ยนแปลง โดยใช้ทฤษฎีการมองอนาคตสู่อิสรภาพทางความคิด (emancipation theory), กรอบความคิดเรื่องการพัฒนาให้เกิดการเปลี่ยนแปลงทางสัณฐาน(morphogenesis framework), และแนวคิดเกี่ยวกับโครงสร้าง, วัฒนธรรม cและตัวตนของบุคคล (Structure, Culture, and Agency) หากใช้แนวคิดเหล่านี้อย่างถูกต้อง จะสามารถปลดปล่อยเราจากแนวคิดที่ครอบงำ ซึ่งได้รับการยอมรับโดยกว้างขวางในอดีต และช่วยให้เราสามารถตรวจสอบสมมติฐานเกี่ยวกับความเป็นจริงทางสังคม ด้วยคำอธิบายทางปรัชญาได้

4) ท้ายสุดวิทยานิพนธ์นี้เสนอการทำความเข้าใจเกี่ยวกับ นโยบายและการวางแผนรับมือเกี่ยวกับอนาคตของสาธารณสุขในประเทศไทย โดยใช้วิธีการวิเคราะห์แบบหวนกลับ (retroduction) ของสัจนิยมเชิงวิพากษ์ (Critical Realism) เพื่อทำความเข้าใจในหัวข้อการวางแผนบุคลากรสาธารณสุขของประเทศไทยและผลกระทบในเชิงนโยบาย การวิเคราะห์อนาคตศึกษาแนวนี้จัดทำเพื่อเตรียมพร้อมกับการรับมือในอนาคตของการออกแบบนโยบายสาธารณสุขที่เหมาะสม โดยเป็นการอธิบายที่เชื่อมโยงสาเหตุ และผลกระทบจากทิศทางการปฏิบัติส่วนบุคคลและส่วนรวม ที่จะก่อให้เกิดผลกระทบต่อ โครงสร้าง, วัฒนธรรม, และตัวตนของแต่ละบุคคล

STATEMENT OF ORIGINALITY

1) This dissertation investigates the underpinning philosophies of foresight (including empiricism, constructivism, post-structuralism, and pragmatism) which are the core approaches of practice in today's fragmented era. Then, it illustrates the potential of critical realism as a suitable theory of knowledge for futures studies.

2) It depicts the history of foresight programs in Thailand, their development, and current practices in view of the global foresight landscape, their underlying epistemologies, and postulates the significance of explicating the underlying moral and ethical foundation within the discipline.

3) Through the elements of ontology, causation, structure, and persons, lessons are drawn from two foresight case studies of air pollution in Thailand. Multiple CR concepts are adopted to find an intervention point towards transformation—namely emancipation theory, the morphogenesis framework, and the concepts of structure, agency, and culture. Possible interventions are located to emancipate us from widely accepted epistemologies and help us examine our presuppositions about social reality using philosophical explanations.

4) Finally, the study applies CR's retroduction methodology to understand "The future of Thailand's healthcare workforce" and its policy implications. This foresight analysis explains how the causal links of individual and collective trends impact structure, agency, and culture—enabling future responses to healthcare policy.

CHAPTER 1

Introduction

1.1 Background

"The future is completely open and we are writing it moment to moment."

—Perma Chodron

De-globalization, changing demographic structures, cultural practices, environmental affairs, and social services are some of the forces impacting the viability of industry, governments, and organizations. Recently, these entities have widely adopted foresight practices to assist with decision-making and policymaking to shape society's future (Saritas, 2010). Foresight activities have been adopted to inform strategic planning, help organizations to think more critically about the future, and to identify potential challenges and opportunities in this modern era.

However, the history of modern Western futures studies started with scientific inquiry and rationalization of futures from 1945 to the1960s. The predominance of science increased the prevalence of technological forecasting (Son, 2015). The most probable futures were calculated and rationally chosen as the means for strategic moves and decision-making toward desirable outcomes. This gave a false sense that humans could accurately predict the future and control the outcomes of their decisions with certainty. The second phase began in the 1970s during the rise of global institutions and the industrialization of the future. The pessimistic message of *The Limits to Growth* (Meadow et.al, 2018) sparked concern about global danger, as unlimited economic and population growth might cause natural resource scarcity, ecological disaster, and economic collapse. There was a sense of an urgent need for a paradigm shift within the next two decades. The current era of futures studies is populated with a great number of foresight tools. To date, Paxis Foresight (PF), principally serving practical needs, is criticized for lacking a coherent theoretical basis (Hideg, 2017). Systems theory,

innovation studies, and critical futures studies have been proposed as foundations for foresight theory, however, these mainstream foresight theories have made only a weak contribution to scientific knowledge, as they overlook their ontological bases and are dominated by practical use (Patomäki, 2006; Piirainen & Gonzalez, 2015; Slaughter, 2009).

Despite over 70 years of history, the current era of modern Western futures studies is defined as fragmented under the neoliberalism view. Futurists are framed by their assigned topics, limiting them to a manageable practice that is assessed by economic advantage and management targets. There is a wide range of foresight tools readily available online, but choosing the tool without understanding its underlying philosophy can lead to fallibility and degrade the quality of research.

The ongoing lawsuit of Exxon is a good example of foresight practice that has been manipulated, creating profound implications for climate change. The Guardian headline news on Jan 12, 2023, applauded this giant conglomerate for its incredibly accurate forecast outcomes of its climate models and, then, instantly posed condemnation on misleading the public and delaying action on the implied risks (Milman, 2023). Since the 1950s, Exxon scientists aptly predicted global heating at 0.2c a decade from the burning of oil, coal, and other fossil fuels. This upward curve of global temperatures was reported to the executives, only to be rejected on the ground of its incompetency and external uncertainties. This lack of honoring moral obligations undermined the benefit of future thinking by not advocating for knowledge dissemination and communicating the possible destructive images of the future. Useful scientific data and its projections were rejected due to a corporate strategic move to protect the bottom line. Something is missing from futures studies if a report on this imminent crime against humanity can simply be rejected based on individuals' subjective views for the benefit of a small group at the expense of the public at large.

Considered transdisciplinary action science, future studies is based on scientific knowledge of society. However, what constitutes good science is shaped by the larger society and changed in the backdrop of the social environment. The domination of pragmatism in the current era aims for actionable outcomes and bypasses the moral

obligation of the public at large (Son, 2015). Truth can be distorted and manipulated to serve the interests of particular groups. Under the neoliberalism view, the attempt to seek the truth is diminished by the excuse of subjective interpretation. This tends to exacerbate a great number of environmental and social problems, expediting the movement toward disastrous climate tipping points on our planet.

The popularity of future studies in recent years stems from the conviction that its expansion will have some distinctive contribution to human well-being. Some extend these contributions to the welfare of all beings, plants, and ecosystems (Bell, 2003). However, foresight is usually narrowly perceived with the expectation of the accuracy of the predictions, or adopted as a strategic move towards business decisions or policy design. Under this assumption, less attention is paid to the comprehensive scope of information, how it is synthesized, for whose benefit, against whom, or for what purposes. The challenge lies in the disparate knowledge under the influence of many different values.

Developed by Richard Slaughter, critical theory emerged in futures studies to rethink the way we perceive and construct the reality of the world (Ramos, 2002). This epistemological reformulation was significant in pinpointing the naïve assumptions of optimistic futures involving continuous economic growth as projected in "The Year 2000" by Herman Kahn (1967). Slaughter (1996, p. 810) criticized the domination of the underpinning Western worldview that frames futures research into a one-sided worldview and calls on futurists to "*explore the transformative possibilities of working with the already-powerful.*"

Integrating empiricist, interpretive, critical, and action learning, Causal Layered Analysis (CLA), developed by Sohail Inayatullah, provides a new research tool to deconstruct social reality into four layers: litany, social systems, worldview, and myth/metaphor. CLA focuses on opening up the present and past to make transformative room for alternative futures.

A widely accepted critical theory and methodology in the future studies field is based on post-structuralism. Thus, surprisingly, the Critical Realism philosophy championed by Bell (2003) has been ignored in the main foresight books since 1996.

The increasing awareness of the interconnectivity and complexity in the modern world calls for a holistic view of society, with an agreeable truth inquiry towards prosperity for all.

The philosophy of CR was developed in the 1970s by Roy Bhaskar as an alternative paradigm to both the scientific form of positivism and the postmodern turn of relativism. Its theoretical position seeks to explain the nature of social reality and the relationship between multi-layers of reality and the role of social structures in shaping human cognition and behavior (Archer et al, 2016). The futures are not formulated from a clean sheet of nothingness but from the abundance and scarcity of the past and present. Whether or not the social sciences can capture the reality of the world is a question that researchers must continually examine.

The main characteristics of CR are composed of two components: Critical and Realism. Realism is based on the ontological assertion that "*much of reality exists and operates independently of our awareness or knowledge of it* (Archer et al, 2016, p.2). Critical is rooted in the conviction that it "*is possible for social science to refine and improve its knowledge about the real world over time, and to make claims about reality which are relatively justified, while still being historical, contingent, and changing* (Archer et al, 2016, p.4).

Critical Realism offers a philosophical explanation based on the elements of the ontology of transcendental reality, recognizes the diverse ways in which knowledge is formulated, asserts criteria for sound judgments, and adheres to a cautious ethical obligation towards prosperity for all. CR has the potential to provide a coherent theoretical framework for understanding the underlying structures and mechanisms that shape future developments. This knowledge can be adopted in futures studies to provide a practical application of critical realist insights by using them to develop scenarios and strategies for shaping the future in desirable ways.

1.2 Research Objectives

This research project has the following objectives:

1.2.1 Study I examines the theoretical underpinnings of foresight practices in the context of Thailand. By bringing awareness to the historical development of future studies, this study investigates the underlying philosophical foundations within the discipline, makes explicit assumptions about possible futures, and reflects on the implications of foresight practice and tool selection in Thailand.

1.2.2 Study II reviews the theoretical underpinnings of futures studies within the existing literature. While most futures studies have focused attention on the development of foresight tools, it is important to investigate the ontological and epistemological foundations of foresight practice. In addition, it examines the potential of the epistemological basis of critical realism in approaching foresight by drawing lessons from air quality policy design in Thailand. The goal is to present the impacts of foresight theories and epistemologies on policy analysis and mark the shortfalls and concerns of each theory that could be overlooked by foresight practitioners. It also compares CR with the existing CLA method and illustrates the potential of CR through a case study of foresight practice in Thailand.

1.2.3 Study III applies the morphogenesis and structure-agency-culture concepts within critical realism to analyze "the air pollution paralysis in Thailand" and explain the phenomena through the mechanisms of social stasis. Critical Realism is presented as a framework and methodology for steering anticipatory and participatory activities, appropriately analyzing complex problems, and aiming toward a transformative change.

1.2.4 Lastly, study IV explores the potential of the structure-agency-culture nexus of critical realism in analyzing policy issues by using a case involving the healthcare workforce in Thailand that uses a Critical Realism (CR) theory—specifically, retroduction—as an interpretive methodology.

1.3 Theoretical Framework

Both critical realism and foresight aim to create knowledge by understanding complex social phenomena. Critical realism is a philosophy of social science that seeks

to understand the underlying structures and mechanisms that generate observable social phenomena by focusing on ontology (the nature of reality) and epistemology (the relationship between knowledge and reality). Futures studies is an interdisciplinary field that explores possible futures and the implications of different scenarios. It draws on a variety of academic disciplines, including sociology, psychology, economics, politics, technology, and science. Its knowledge base is the notion that the future is not predetermined and that it can be shaped by human decisions and actions in the present. With the recognition that it is impossible to make an absolute prediction with accuracy, futures studies focus on anticipating uncertainty, preparing for possible future developments, and identifying potential risks and opportunities.

According to Inayatullah (2005, 2013), there are four main types of futures studies: predictive, interpretive, critical, and participatory action learning/research. (Figure 1)

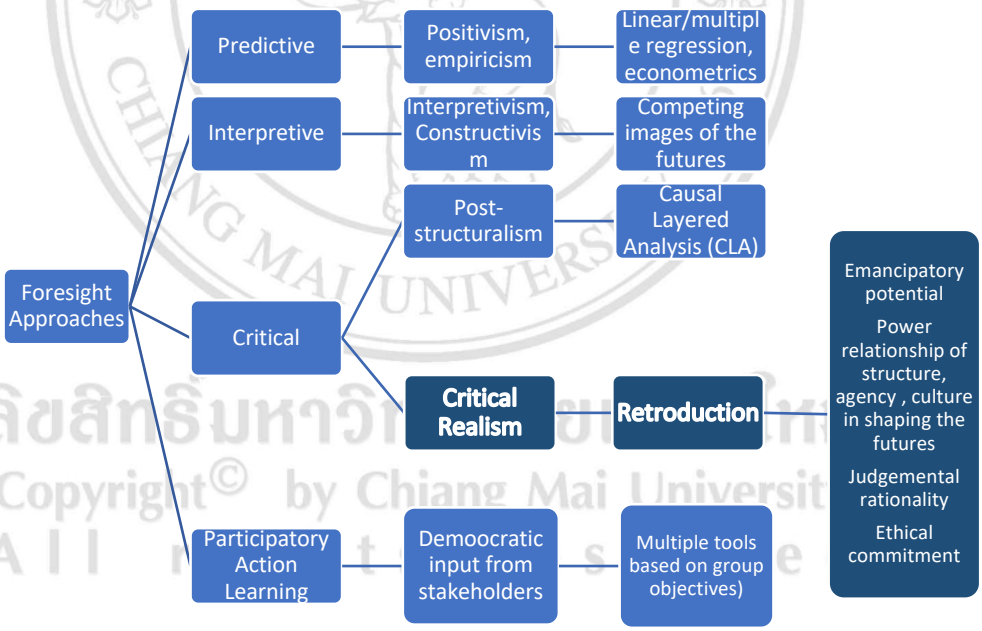

Figure 1: The Theoretical Framework of Critical Realism as an Approach in Futures Studies

The predictive approach is rooted in empiricism, to create knowledge from empirical evidence. Linear and multiple regression, as well as forecasting models, are

often used to determine the most probable future. This information is then used for planning purposes, to control and limit risks in the future. This approach often gives privileged positions to experts and economists, who determine what is desirable for society.

The interpretive approach considers diverse cultural backgrounds, aiming to understand the competing images of the future through insight into human conditions. Truth is relative, as the future is determined by diverse cultural backgrounds.

The critical approach seeks to undefine the future by investigating the assumptions of reality and aiming to reveal power relations and problematize the hegemonic view. The goal is to liberate from oppression and open up transformative futures.

Participatory action learning relies on stakeholders to contribute to desirable futures. Deep participation is required to develop an agreeable probable, possible, and preferred future. Although it is considered a more democratic approach, the future is determined by the cooperation of those who have an interest in the future.

Critical Realism can be categorized as a critical approach, as it aims to examine the existing belief system by identifying the false perceptions and challenging the oppressive powers that reproduce the process.

1.4 Conceptual Framework

Futures studies is a systemic study that produces knowledge about possible, probable, and preferable futures (Inayatullah, 2005). Under the pressure of increasing uncertainty, complexity, and velocity in today's dynamics, governments and organizations have widely adopted foresight practices to assist with policymaking and decision-making. Underlying theories have the power to influence futures thinking by framing expectations in particular images and guiding the decision-making of today's policy for the next generation (Minkenen, 2020).

The roles constructed by human activity and adopted by each individual, once set in place, are resistant to change. These pre-existing cultural norms and expectations automatically operate and control our expectations for our (re)actions. To look into the future, the existing practice is to imagine the desirable future and think of suitable cultural forms, then backcast what has to happen to reach that goal. However, this process of imagination, which lies in the anticipatory capacity of each individual, is sometimes difficult to act upon. CR offers an alternative by 1) highlighting the layers of reality, 2) acknowledging the complexity of the social world, and 3) committing to the uncertainty of the tendential projection of knowledge (Figure 2).

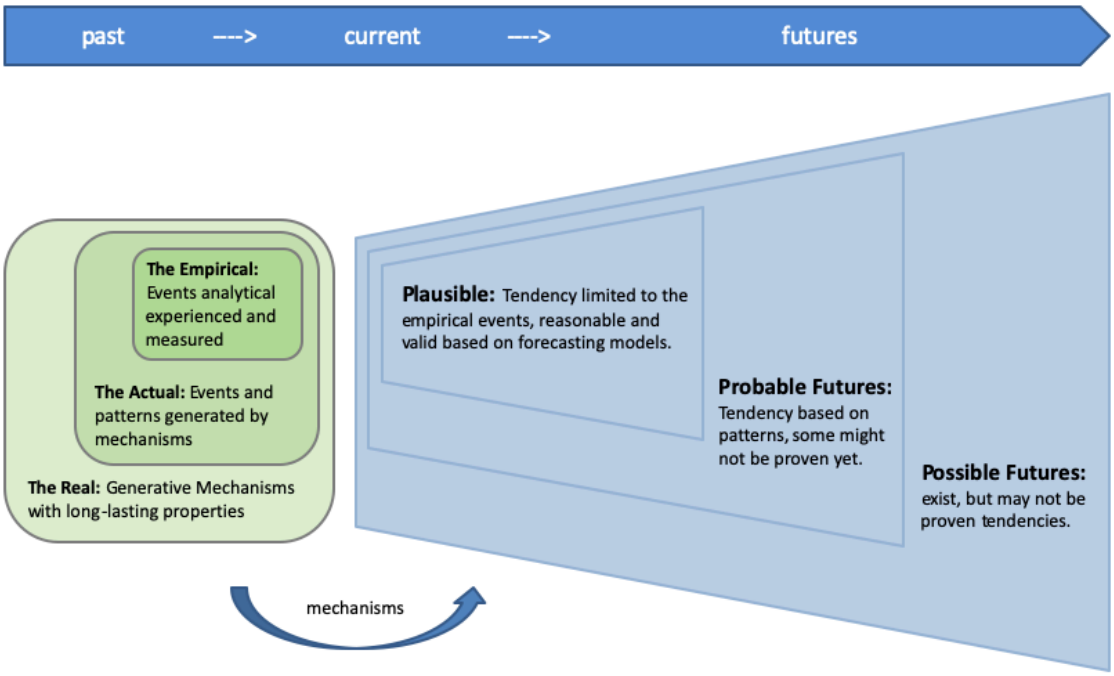

Figure 2. Framework in Applying CR to Futures Studies

Critical Realism framework enables us to investigate our influential, yet unconscious assumptions from the past, which can redefine and open up alternative or transformative projections for the future. All of this is crucial for informed decision-making in the present.

1.5 Critical Realism as a Potential FS Philosophy

"If I have seen further, it is by standing on the shoulders of giants."

---Sir Isaac Newton

This view of social reality was conceptualized into the philosophy of Critical Realism in the 1970s by Roy Bhaskar. Categorized as a branch of social science, Critical Realism was developed as an alternative paradigm to the 'linear' scientific form of positivism, distinguishing the research methodology for the natural and social world.

Scientific study has been positively characterized as a protagonist whose character is related to intellectual honesty, integrity, and impersonality. Scientists have the obligation and the commitment to seek and tell the truth. However, there is a difference between the natural world and the social world. The natural world consists of a universe, a galaxy of stars, the Earth, water, fire, and wind that all can be broken down into atoms. The social world is created by and can be understood through human activities. Presuming the assigned roles, humans interact, invent, and observe social forms such as media, institutions, money, borders, and occupations; these activities produce social structures which are observable or unnoticeable but have the power to shape or constrain our behaviors. Without humans, the social world would disappear, but the natural world would still exist (Anderson, 2019). The systems (policy and regulations) and the society in which we are living have shaped us regardless of our awareness of them.

Futures are shaped by human decisions based on their historical, social and cultural contexts. Critical realists argue that social phenomena are shaped by deep underlying structures that are not directly observable but can be inferred through careful analysis.

Depth Stratification This notable CR concept explains social reality, which is set in motion and operates independently of human perceptions. The world is not only intransitive but also stratified. There is more to reality than meets the eye. This means our world is comprised of countless layers of reality, but our sense perception is limited to only the empirical layer of reality on the surface. Stratification also implies emergence. The conjunction of two or more situations gives rise to new phenomena. For example,

hydrogen and oxygen combine to create water, but water cannot transform back to its original two constituents (Archer et al., 2013; Go, 2022).

The iceberg analogy is used to illustrate the layers of three domains, which are known as The Empirical, The Actual, and The Real. (Figure 3)

The Empirical is the experience or human observation through five sensory channels: Both observable and measurable events.

The Actual is the outcomes of the mechanics and they have been actualized or the tendential outcomes which have not been actualized

The Real refers to the generative mechanisms and their causal powers that create the top two layers.

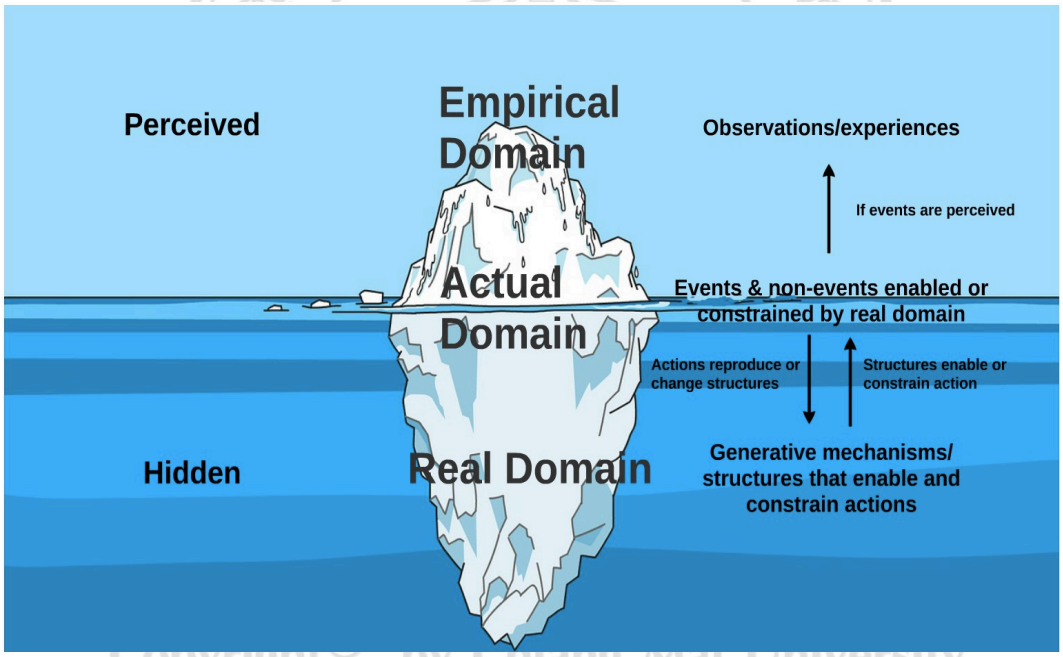

Figure 3 "Critical Realism's Stratified Reality" (Anderson, 2009)

Understanding the reality of social problems calls for deep explanation. The empirical evidence represents only the tip of the iceberg, which is continuously formed by the generative mechanisms in the (hidden) bottom layers. The power to reproduce or constrain observable events lies in the structural and cultural conditions. Overlooking this domain can lead to fallibility in research and short-term solutions, as the key intervention is contingent upon the insight into the operations of the unnoticed conditions (Figure 4).

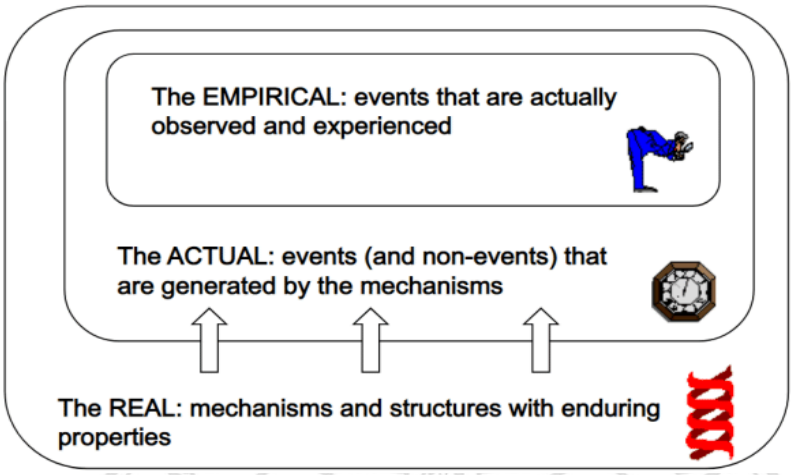

Figure 4 Stratified Ontology of Critical Realism (Mingers, 2004)

Ontological Emergence

According to Bhaskar (1983, p. 18), *"...social structure and human agency are seen as existentially interdependent but essentially distinct."* There are multiple levels of reality, and each level has its own unique properties that are not fully determined by the properties of the lower levels.

Society imposes the pre-existing conditions that constitute the being of human agency. This continuous (re)production by human agency creates an emergence of new entities with distinct characteristics. Society is rooted in its people and irreducible to the people. The formation of this open system creates a hierarchy. The higher the hierarchy, the more complex it becomes. In an open system, causality takes place in both directions. The higher level has causal power over the lower, but the lower can act back within its boundaries. Therefore, understanding the social world requires us to look into the pre-existing social forms prescribed to any particular agent.

This interaction demonstrates the space for the autonomy of the human person and freedom, but only if we apply the concept of *Ontological Emergence* to have an insight into the formation processes of social forms. (Figure 5)

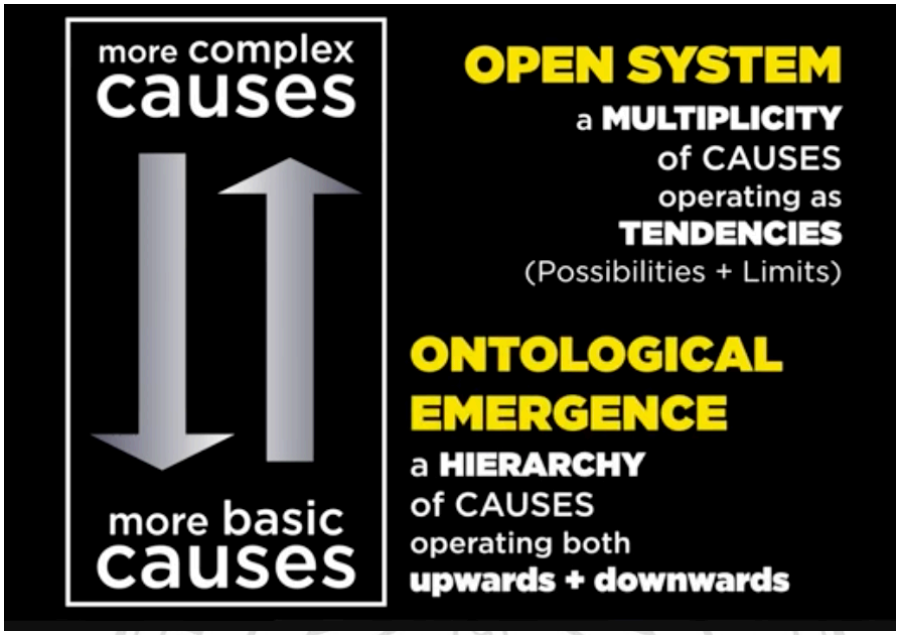

Figure 5 CR's Theory of Ontological Emergence in Open system (CR Network Asia Pacific Youtube Channel by Johnny Go)

This concept can be applied to the layered approach, as the interplay of agency, social structures, cultural norms, and global systems offers a dynamic view of the upward and downward influence among each other. To understand reality, we need to examine and understand each level on its own terms, and recognize the interactions between the different levels. By doing so, we can identify emergent properties and patterns that may shape the future.

The scenario approach involves develop developing future scenarios based on driving forces. Examining the interactions between different levels of reality in each scenario helps to identify emerging properties that may have a significant impact on the future. This helps policy makers to anticipate and prepare for potential futures, and to identify strategies that are robust across different scenarios.

Open Systems

Traditional philosophies of science do not distinguish theoretical from practical explanations (Bhaskar, 1983). In a closed system, a theory is constructed in the form of

models by identifying regularities, patterns, and phenomena. If these empirical pieces of evidence are determined as adequate, models of the mechanisms are drawn to explain plausible outcomes. However, outside the laboratory where all conditions cannot be artificially controlled, determinants do not always produce the same outcomes because other intractable ones might intervene. An event can have multiple causes, operating as tendencies. This notion is the opposite of reductionism which argues that the whole is nothing but the sum of its parts. In a social world full of complexity, a practical explanation is required to evaluate the existing theoretical explanation by re-describing related components. Mainstream science study an event in isolated manner, ignoring the open-nature of social problems. Maintream scientific methods tend to focus on studying isolated events and overlook the complex and interconnected nature of social issues. However, a more progressive approach called "intermediate science" uses retroductive reasoning to examine how multiple factors intersect and contribute to a particular phenomenon. By delving deeper into the underlying, often overlooked, causes of a problem, we can gain a better understanding of it and potentially unlock new solutions for a alternative futures.

Judgmental Rationality is based on the notion that reality is intransitive, but human knowledge is transitive. The world is operating independently of human perception and knowing (Ontological Realism). However, our knowing has limitations and changes upon the context, thus being prone to error (Epistemic Relativism). Therefore, it is essential to use rational judgment to evaluate diverse and competing claims about the world we live in (Archer et al., 2016).

Critical realists acknowledge there are different ways to make sense of the world, but assert that it is possible to judge competing theories and craft sound criteria for these judgments with a better account of reality. Good science does not stop at the description of shallow empirical events or experiences, but seeks to refine and improve its social knowledge over time. This critical approach to causation uses partial regularities as prime inquiries into mapping complex relationships involving layered structures and processes.

Historically, social science prioritizes epistemology over ontology, focusing on how we know what we know instead of inquiring about the nature of our social world.

Starting with the question of "what the world must be like for science to be possible," the philosophy of critical realism pays attention to the nature of existing entities in the social world and posits that there are many features of the world that are not verifiable using empirical evidence and, therefore, cannot be articulated into theories. The four conceptual tenets—depth stratification, ontological emergence, open systems, and judgmental rationality—captures the essence of this commitment.

In the modern world of complexity and uncertainty, some problems such as poverty, pandemics, and global warming are defined as wicked problems and, therefore, cannot be solved by scientific viewpoints alone because of open-system environments and subjective human values. Alternatively, relativist views are suggested as an approach for policymaking given the goal of social policy issues is not to seek the truth, but rather to improve society. Critical realists reject judgmental relativism which claims that all views are equally valid and there cannot be a way to rationally judge one over another. They affirm that *truth, consistency, coherence, and rationality* are the prerequisites for science. Price (2016, p. 109) postulates that "Science must play a strong role in policy formulation, but to do so we need to adjust our view of what qualifies as good science." Retroduction is suggested as a key research methodology for insight into social problems, by re-introducing possible causes, eliminating alternative components, and identifying the generative mechanisms or causal structures in operation (Archer et al., 1998).

The traditional role of policy science was designed to settle rather than stimulate the process of policymaking. However, social reality is complex and multi-dimensional and therefore can no longer depend solely on the long-established belief of objectivity in hard science (Fischer, 1998). From VUCA to BANI, future studies have enormously contributed to policy recommendations towards preferable futures. Policy processes are power-laden, placing excessive influence on the effectiveness of foresight practice. Understanding futurists' underlying paradigms helps us understand how possible futures are formed, how their desirability is evaluated, and who should make the final decisions (Tapio and Hietanen, 2002). Multiple Critical Realism frameworks aim to unveil this coercive power and make room for anticipatory capacity toward alternative futures.

The existence of future studies lies in the emergence of goodwill and intelligence among humanity to shape our future (Slaughter, 2009). Modern technologies combined with collective human intelligence have created a multi-faceted dilemma. A good example is social media platforms, such as Facebook, Instagram, and YouTube. While they have enabled us to connect with people around the globe, and provided tremendous knowledge along our interests, they also cause both physical and mental harm. The data collection and processing generate the content suitable to the audience's liking and create addiction to the platform. Despite its initially good intentions, the business model mandates AI logarithm to maximize the users' engagement, discreetly hacking our brains and controlling our behaviors by feeding the contents that shape out thoughts and feelings. The more time we spend on the platform, the more tests by AI, and the more accuracy on our future interests. Policy-making lacks behind the speed-light development of modern technology and requires anticipatory capacity to map the futures for a better sense of direction and regulation. Critical reflection on futures studies is crucial on both the social and individual level, as "…(the) future became the result of human perception, responsibility, and action. Its very success could bring it to the point of extinction" (Slaughter, 2009, p.18). The dilemma is how to balance the benefits of technology with its negative consequences and how to regulate it for the betterment of society. Therefore, it is imperative that we cultivate a sense of awareness and responsibility towards our use of technology, and utilize future studies to guide us towards a future that prioritizes the well-being of humanity and the planet.

1.6 Problem Statement

This dissertation explores the existing epistemologies and philosophies of futures studies and re-introduces CR as an alternative methodology in future-oriented policy formulation with an insight into social reality.

Study I research questions:

What is the history of foresight practice in Thailand? How are futures studies being conducted in theory and practice? What are the main epistemologies underlying foresight practice in Thailand, including their advantages and disadvantages? How do these epistemologies impact the choice of foresight tools and the implications of research?

Study II research questions:

Reviewing the existing works of literature, what is the theory of foresight? What are the underlying philosophies behind futures studies? What are the dominant foresight epistemologies underlying foresight practice? Drawing lessons from an air pollution case study in Chiang Mai, what potential does CR philosophy and methodology have on the theory and practice of futures studies?

Study III research questions:

Based on the case study of "The Future of Clean Air," how does CR theory explain social stasis/social change in order to provide insights into air pollution paralysis in Thailand?

Study IV research question:

The covid-19 pandemic created a health policy crisis in Thailand in early 2021. What does CR theory—specifically, retroduction—suggest as causes of medical personnel shortages in Thailand?

1.7 Scope of the Research

This research explores 1) the existing foresight theories, epistemologies, and approaches using available research reports and participation as action research; (2) the potential of CR philosophy in futures studies; (3) the application of the structure-agency-culture nexus on case studies of air pollution and healthcare human resources in Thailand; and (4) the possible development of a foresight framework that incorporates CR concepts based on case studies in the field.

CHAPTER 2

Research Articles

2.1 Published paper

2.1.1) Boonmavichit, T. (2021). Foresight in Thailand: Some Development and Underpinning Theories. *NIDA Journal of Development*, 61(2)

This study depicts the evolution of futures studies in Thailand by tracing their history since the inception of the first futures work by a Thai scholar in 1975. Based on a literature review, direct observation, and participation in foresight workshops and conferences, it provides an overview of the discipline's progress until today. In addition, it explores the current practices of foresight in the context of the global landscape, highlighting their underlying epistemologies. The conclusion also emphasizes the importance of identifying the moral and ethical foundations that underpin the discipline.

Thailand's foresight landscape is outlined into six sections, as follows:

Hindsight: The development of foresight in Thailand can be divided into three stages. Initially, there was a small academic community that had adopted western influence on their futures studies approach. They made critical observations about the lack of academic involvement in shaping alternative futures in the midst of political uncertainty in Thailand.

In the second phase, which was around 1998, foresight was mainly used for strategic planning in APEC.

The last stage began after the coup in 2006 when efforts were made to reunify the politically divided country in 2010. As part of this, Adam Kahane was invited to conduct a "Transformative scenario planning workshop" aimed at creating a safe space for dialogue among Thai citizens to explore possibilities for what Thailand might look like over the next 25 years. Unfortunately, this project was cut short due to another coup in 2014.

After the military government, the minister of higher education, science, research, and innovation, Suvit Maesincee, made foresight a mission under the policy plan and

budget department. As a result, foresight has now been widely adopted as part of the strategic planning and policy design processes of numerous private and public organizations.

Onsite: Since 2018, foresight has been adopted as a mission under the Policy, Plan, and Budget departments, within the Ministry of Higher Education, Research & Innovation (MHESI). The main objective is to support Thailand's 4.0 policy in advancing technology, improving research and development, and planning human resources for future demand.

A great number of foresight institutions have formed, including the National Institute of Development Administration (NIDA), Thailand Futures Foundation (TFF), Institute of Public Policy and Development (IPPD), and Chiang Mai University, School of Public Policy (CMU-SPP). This paper illustrates that both public and private organizations that have applied foresight work to their planning processes.

Insight: The theoretical bases of foresight are explained by using three main philosophical outlooks as follows:

1) The (Post) Positivism or empirical realism approach focuses on drawing conclusions from the available empirical data and draws conclusions in the format of trends, regressions, and extrapolations. Although this approach is widely accepted in science and technology, the accuracy of the forecasted outcomes are in question due to the uncertain implications of a long-time horizon.

2) The interpretivism and critical theory approach attempts to view the reality beyond the empirical data at the surface level. CLA, an in-depth analysis tool developed by Inatalluyah (1998), has been adopted by notable foresight institutions in Thailand. Its goal does not lie in an accurate prediction, but rather in locating a transformation point towards alternative futures through the analysis of each of these following layers: litany, socio-cultural norms, worldviews, myth, and metaphors.

3) The pragmatism approach, dominating both the foresight platform in Thailand and the global platform, prioritizes actionable outcomes. Aiming to fulfill the assigned objectives, some foresight tools are chosen to produce knowledge and suggestions on strategic plans and policies. Due to its narrow focus, the major drawback of this approach is that it overlooks the power relations of the pre-existing paradigm, limits the research scope within, and ignores how the problems are framed.

Resight: presents the development of modern futures studies on the global landscape since 1945. This section includes a brief discussion of the foresight practices in Western and Eastern Europe, the US, and Canada.

Oversight: Drawn from observations and participation, this section presents a reflection on some overlooked aspects, practical knowledge, and limitations of past foresight workshops in Thailand.

Foresight: Investigating the past is the pathway to the future. The last part offers a reflection on the history of foresight development in Thailand. A forewarning about the lack of confidence within academic bodies to assert their power in shaping Thailand's future has not made an impact or been widely translated into practice. The current futures studies and practices are dominated by Western paradigms, therefore critical thinking is urgently required to explicate the underpinning philosophies of the practice. This paper cautions that the creation of futures should be distributed among Thai citizens with equality and justice, and concludes with a plea for Thai foresight practitioners to better understand the underpinning philosophies, social responsibilities, and moral implications of steering the desirable futures in public policy.

2.1.2) Boonmavichit, T., & Boossabong, P. (2022). Approaching foresight through critical realism: lessons drawn from Thailand. *Journal of Futures Studies*, *26*(4), 41-54. DOI: 10.6531/JFS.202206_26(4).0005

Foresight practice has attracted both private and public sectors, as modern institutions attempt to keep up with the fast-changing world and prepare themselves for uncertainties. In the current fragmented era of futures studies (Son, 2015), most foresight practices are dominated by pragmatism, emphasizing tool selections, while overlooking the underpinning philosophy of its development. This raises some concerns by notable futurists about its long-term implications involving ethics and utility (Slaughter, 1996).

The focus of the second paper was to examine the theoretical underpinnings of various foresight approaches by reviewing existing literature. The study draws on global literature reviews and examines the four fundamental philosophies of empiricism, constructivism, post-structuralism, and pragmatism. These philosophies are explored by outlining their perspectives on ontology, epistemology, and methodology, and how they impact outcome projection. This comparison gives an insight into the advantages, disadvantages, and implications of these foresight practices.

Considered one of the most influential books in future studies since 1985, "Foundations of Future Studies" by Bell featured Critical Realism (CR) philosophy as a suitable theory of knowledge for futures studies. As CR seems to be the missing approach in modern foresight theories, this paper re-introduces its conceptual framework on the ontological grounds of social reality, including the explanation of the three domains of reality (the empirical the actual, and the real) by using the iceberg analogy to illustrate these layers. This concept was applied to analyze the air pollution problem in Thailand. This resulted in a progressive policy design when comparing the causal layered analysis with the critical realism approach.

Through the case study, it is noted that critical thinking is urgently required to raise awareness of the power of invisible structures in protecting the dominant views while suppressing the opposing views. The CR approach was illustrated as a suitable foresight practice, especially, in the global South to emancipate people from unconscious exploitation so that transformation towards a better future can take place.

2.1.3) Boonmavichit, T. (2022). AQI revisioned: a critical realism approach to transforming air pollution. *foresight*, (ahead-of-print). https://doi.org/10.1108/FS-06-2021-0129

Modern foresight practice has developed under the influence of Western cultures which have served as the dominant paradigm. The increasingly complex and interconnected issues call for the investigation of the underlying epistemologies. This paper offers an alternative analysis of complex problems by raising awareness and identifying the intervention points toward transformative change.

The case study of 'The Future of Clean Air', organized by Circular Design Lab (CDL) and Thailand Clean Air Network (TCAN), is a collective design thinking activity to inform Thai citizens about the health hazards of air pollution and brainstorm grassroots solutions to better the urban and countrywide environments. Through data analysis from white/blue papers, observation, interviews, and facilitation, the first part of the paper offers an alternative analysis of complex problems by articulating CR concepts on the iceberg mapping in order to allow for problem framing that reveals the underlying mechanisms.

The second part of the paper applies the CR framework to re-investigate the key findings of the foresight activities. The ontology of Structure, Agency, and Culture (SAC) and transformation is adopted to explain social change, maintaining the distinctive analysis between culture and structure, and between agency and culture. Critical Realism is presented as a framework and methodology for steering the anticipatory activities. The morphogenesis concept and emancipation theory are applied to explain the “social stasis” phenomena of air pollution paralysis in Thailand.

The analysis of morphogenesis demonstrates how pre-existing structural and cultural conditions shape human thinking and behavior. Humans are born into these structures, which can outlast us and have a higher power to determine our future. However, these structures operate within open systems, which means that humans still have the power to accept or uphold their existence or reject them and seek an alternative. It is important to note this relationship and to distinctly analyze the conditions in three parts. Understanding agents' motives and reasoning leads us to a powerful causal mechanism towards alternative futures.

Emancipation theory identifies the problems, describes the false perceptions, critically evaluates its source, and advocates for actions that remove the illusion. Beyond human perception, the perspective of power and oppression has been brought forward through emancipation theory, revealing the dominant colonialism paradigm that prioritizes economic development over health risks. Possible interventions are located to emancipate us from widely accepted epistemologies and examine our presuppositions about social reality.

Conventional foresight practices without critical analysis can be exploited as a means to perpetuate power hierarchies and injustices. Under the colonized economic development paradigm, future studies and their tools could be framed to limit the anticipatory capacity to imagine different futures. As shown by the paralysis symptoms of air pollution in Thailand, Critical Realism presents a framework to emancipate people from conventional belief systems. Cultivating this awareness is an initial step to freeing us from false beliefs.

Serving the moral obligation to support communities and individuals to voice for better tomorrows, futures studies based on CR provides an understanding of the underlying causal powers of discourse and analysis, which has created the social constitutions and practices that direct our attention to power and oppression. This insight is a fundamental step towards real emancipation, which ultimately involves the decolonization of our individual and collective imaginations.

2.2 Accepted Papers

2.2.1) Boonmavichit, N., & Hobbs, J. D. (In Press), The Future of Thailand's Healthcare Workforce in Light of the Covid-19 Pandemic: A Retroduction Analysis.

Wicked problems are understood as complex, difficult to make sense of, and consisting of multiple causes. While it is wise to remain humble when facing complexity, Critical Realists argue that it is possible to improve these social conditions by the explanation of tendencies and causal mechanisms.

The case study of healthcare workforce shortages in Thailand during the Covid-19 Pandemic revealed the domination of science in Human Resource Management (HRM) and healthcare policy planning. The oversimplified concept of scientism mainly deals with empirical data while disregarding the pre-existing structures and their mechanisms that are in motion. CR's retroduction methodology is applied to critically review existing practices. This methodology includes the following steps:

1. Data collection and diagnosis
2. Data analysis and diagnosis
3. Explanation of the problem using retrodiction
4. Elimination of weak ideas, leaving only sound explanations.
5. Action to advocate for the appropriate action suggested above and eliminate obstacles that keep one from reaching the goals
6. Correction involving reflective thinking upon the feedback

Retroduction methodology is applied to STEEP trends by re-categorizing them into SAC analysis (structure, agency, and culture). Understanding the dynamics of SAC enables analysts to view society as in continuous (re)formation. The pre-existing structures and cultures have a hierarchy to reproduce and restrain the agency's choices. Although some structures can be observed through empirical evidence, cultural factors must be taken into consideration.

This methodology shed light on "The future of Thailand's healthcare workforce" and its policy implications. The Covid-19 pandemic crisis in Thailand was saved by the support of the flexibility of healthcare workers in cross-training into different roles. The tremendous support from volunteer workers and free ordinary citizens in adopting new technologies and services quickly transformed healthcare services for the masses. The

traditional healthcare protocols were seen as obstacles to immediate action and, thus, need to be re-evaluated for emergency cases in the future.

This foresight analysis explains how the causal links of individual and collective trends impact structure, agency, and culture—enabling improved responses to healthcare policy in the future.

CHAPTER 3

Conclusions

This last chapter includes a summary of key findings corresponding to the research objectives and problem statements. It also discusses the contribution of CR on foresight and policymaking, presents the limitations of this study, and proposes suggestions for future research.

Foresight has increasingly gained popularity in the private and public sectors in the past few decades. The impact of the Covid-19 pandemic that started in 2019 is still felt today. This vulnerability has created an insight into the interconnectedness of our existence on this planet. This calls attention to the problem of how to deal with increasing ambiguity and complexity, especially in public policy. This dissertation investigated the history of Futures Studies and its underlying philosophies to highlight the importance of understanding the underlying philosophical approaches in foresight practices, their impacts on the practice, and their influences on individual decision-making and collective policymaking.

The policy development process has traditionally been described as a reactive solution by the government towards clear evidence and identifiable problems. Instead of conventionally narrowing the focus on the existing harm, an increasing number of policymakers have made some attempts to project into the future and identify "anticipatory problems" and their potential catastrophic impacts that generate concerns in the present. This increasing complexity calls for the capacity to anticipate and mitigate risks (DeLeo, 2015). Along the same line, the mainstream futures practice in this current era tends towards pragmatism, which is expected to produce some actionable results from a consensus about desirable futures. Because the practice is confined to solution inquiry, the framing of the questions in the assignment is left unchallenged.

The results of the first study depict the existing philosophies under foresight practices by discussing their ontology, epistemology, and methodology that create different types of projections. It looked into the fragmented eras of futures studies and

analyzed the implication of futures studies based on empiricism, interpretivism ((post)-structuralism), pragmatism, and critical realism. Comparisons are drawn to highlight the advantages and disadvantages of each underlying philosophy in steering foresight methodology and tool selections.

Positivism believes in the laws that explain human activity. From the application of scientific or mathematic models, we can draw an understanding of human interaction and develop theories about how social groups interact. As a result, models are expected to yield some accurate predictions about future events upon which we can design a policy or system that controls how social groups behave. However, society doesn't operate as isolated events. Human beings, non-human beings, visible or invisible beings, are all interconnected and their actions cannot be predicted by only observable evidence. Drawing linear futures from past events has proven to be insufficient, as unexpected environmental disasters, technological disruptions, or health hazards can erupt and cause significant damage on a global scale.

Interpretivism, on the contrary, asserts that there is no single reality or truth and draws futures knowledge from discourses and stories rather than immutable laws. Social reality is generated through discourses among humans that are based on their social and cultural contexts. This emphasis on individual interpretations of meaning leads to multiple realities which are accounted for to understand social interaction. The drawback is that socially constructed knowledge can be distorted, partial, and/or biased by powerful groups. Without questioning its validity, some false beliefs can be perpetuated and create harm to society, as seen in mass killings or cults.

Along the same line, Post-structuralism focuses on the construction of social reality. The insight is created by critically deconstructing and reconstructing past understandings. This continual process doesn't lead to conclusions on what is good for the future of society as a whole.

Pragmatism limits the knowledge inquiry to actionable outcomes. Constrained by the utility of the output and practical function, pragmatists do not prioritize the search for reality, but rather the delivery of solutions based on mixed tools. The framework has been set with objectives and output. This prerequisite ignores the theoretical background

and the crucial elements of how the question was framed, by whom, and for whose benefit.

Critical Realism takes a step back to consider what the world must be like for science to be possible. Deviating from the flat ontology of positivism, it acknowledges the complexity of the social world as consisting of emergent beings whose interactions cause layers of events. Some of these are observable, but some are inexperienced or not actualized. Therefore, perceived problematic situations are not investigated in isolation, but rather as part of larger systems with active actors creating emergent events. Contrary to interpretivism, CR commits to judgmental rationality by asserting it is possible to make justifiable claims about social reality. This understanding is important for considering the meaning of knowledge and knowing and how it influences research paradigms.

The second study shows the development of foresight practices in Thailand. Its formation started in academic circles as early as the 1970s. Sangchai's (1975) research emphasizes the lack of philosophical viewpoints in foresight practices based on pragmatism and cautioned that its goal of actionable plans limits the imagination of alternative futures. Textor (1978) warns about political uncertainty and the lack of confidence and contributions from the community. Unfortunately, these two meaningful works have been overlooked by the foresight community in Thailand. Since then, the prevalent practices have aimed strategic plans and policymaking toward economic prosperity following the western development concept. Despite the surge of future studies in policy-making, most practices and tools are limited to strategic plans, abandoning the cautions of the formative years.

The third study notes the limited development of foresight based on CR philosophy and explores the potential of the CR framework through an air pollution case study in Chiang Mai. Futures studies contribute to the policymaking process in multiple stages. Traditional policy design and analysis are largely based on empirical evidence, which confines any understanding of existing paradigms. However, a deep understanding requires investigation into the underlying mechanism of the systems—which the Critical Realism framework can provide, thus, creating transformative change.

The application of a CR framework in futures studies is adopted to understand the air pollution problem in Thailand in study three. The findings explain that this complex issue stems from an interconnected network of problems, including colonialism and a focus on economic development.

The Emancipation theory was applied to the existing data and explanation of air pollution paralysis. The retroduction process was adopted to correct the error of false convictions regarding the problem. These four steps include 1) Identifying problems, 2) Describing the source of falsifications or suppression, 3) Criticizing those sources of illusion and oppression, and 4) Advocating actions that remove those sources. The result illustrates the existing belief system by connecting the lack of Thailand's individual and collective actions to the missing information about emission standard and the promotion of economic development over environment protection. The result of this explanatory study revealed the elusive power of some in reproducing distorted realities among Thai citizens. Despite its limited adoption in the foresight process, CR can provide a framework and tools to analyze current problems and anticipate the future. The findings indicate the potential for great contributions to be made by critical realism to future studies.

Conventional foresight practices may perpetuate power hierarchies and injustices without critical analysis. CR provides a meta-theory that accounts for evidence from the empirical to structures, agents, and cultures. Morphogenesis theory highlights the power hierarchy and the pre-existing nature of both structure and culture which dominate and limit agential power towards social change. The suggestion was made that foresight, as a social science field, has a moral obligation to support communities and individuals to voice futures that reflect their imaginations and aspirations for better tomorrows. CR framed foresight provides an understanding of the underlying causal powers of discourse and analysis, which has created the social constitutions and practices that direct our attention to power and oppression. This insight is a fundamental step towards real emancipation, which ultimately involves the decolonization of our individual and collective imaginations.

The final study analyzes the shortages in the healthcare workforce during the Covid-19 pandemic in Thailand by using retroduction as a methodology to understand how trends in structure, agency, and culture impact healthcare policy. The results show the interaction and impact of these factors and provides the insights for future plans and strategies for medical care in Thailand. Retroduction methodology provides a process of retroactively constructing the underlying generative mechanisms that caused observable phenomena. This knowledge can be used to identify the causal powers and mechanisms that are likely to shape the future. These comprehensive understandings of the futures and the involved stakeholders can provide more effective strategies and recommendations towards desirable futures for all parties.

In summary, futures studies and the CR philosophy of social science have similarities in their approaches, as both deal with complex systems and social phenomena. CR has a potential to provide philosophical, theoretical and methodological framework for understanding the underlying structures and mechanisms that shape social phenomena, including those that will shape the future.

Serving as a philosophical foundation, CR provides a way of thinking about the nature of social phenomena. Acknowledging the limitations of knowledge, it postulates that our understanding is always partial and subject to revision, and that there may be multiple interpretations of the same phenomena. However, it is possible for social science to make a valid explanation and justifiable claim about the reality. And, it is of crucial concerns to include ethical inquiry to provide information about the conditions for good society and good life where human beings can flourish.

As a theoretical framework, CR emphasizes on the deep explanation entailing causal mechanisms and relationships among structure, culture and agency. Understanding the connections between different variables, such as economic, social, and political systems, and how they interact to shape potential futures. By examining the underlying mechanisms that drive these systems, critical realism can help to identify key drivers of change and to develop scenarios that account for the complex interactions between these drivers.

The concept of false consciousness, while not typically central to future studies, is becoming increasingly relevant in the modern world, particularly under the paradigm of neoliberalism that controls and manipulates information distribution, perpetuating oppression and limiting people's rights. Emancipation theory aims to reveal power structures that constrain prosperity and to liberate people from false consciousness, enabling them to become aware of this oppression.

More importantly, CR also suggests that theories about the future should consider the actions and decisions of individuals and groups, and the role that they can play in shaping the future. These theories can be used to inform the selection of research methods, data analysis techniques, and the development of scenarios.

With respect to the methodological framework, critical realism provides a way of conducting research with an open mind. Although the objectives may have been set and the problems framed in a particular angle, the CR framework enables researchers to step back and question their pre-existing understanding of the problem. Critical realism is a useful sense-making tool for problem framing when examining the interplay between structure, culture, and agency. This framework suggests that social phenomena arise from the complex interaction of these three elements, and an understanding of this interaction is key to addressing social problems.

Structures refer to the enduring and relatively stable aspects of social life, such as economic systems, political institutions, and social norms. Culture encompasses the shared beliefs, values, and practices of a particular group or society. Agency refers to the individual capacity to act and make choices within a given social context. By examining these three elements, we can develop a more refined understanding of social problems and work towards more effective solutions.

Critical realism as a framework for analysis also recognizes the importance of context in shaping social phenomena. It emphasizes the need to situate analysis within a particular historical, cultural, and social context in order to understand the complexity of social life. This approach to analysis can help to identify the underlying causes of social inequalities and injustices, as well as the possibilities for social transformation and change.

Since futures studies have been criticized for their weak theoretical basis, critical realism, which is based on sound scientific principles, can serve as a strong philosophical foundation rooted in ontological realism. By considering diverse perspectives, exploring various trajectories, analyzing uncertainty, and evaluating tendential consequences, critical realism can facilitate better individual and collective decision-making for the prosperity of all.

This dissertation represents an early effort to apply a critical realism framework to future studies in a limited number of case studies, specifically focused on air pollution and the healthcare workforce in Thailand. It is important to note that the conclusions drawn from this research are solely based on the selected case studies and cannot be generalized to other problems or geographic areas.

While CR offers a multitude of concepts and methodologies, this dissertation has focused on applying a selected few to test the feasibility of using a CR framework. However, it is crucial to acknowledge that CR concepts have a wide range of applications, spanning from social science to the philosophy of metaReality, with dialectical critical realism serving as an explanatory tool. The last two concepts are particularly important for the advancement of emancipatory foresight, as they offer a causal account of social reality that can inform interventions aimed at increasing human potential for freedom and creativity.

The multitude of critical realism concepts extends from their applications in social science to the explanation of dialectical critical realism and the philosophy of metaReality. The latter two are crucial to the development of emancipatory foresight as they provide a causal explanation of social reality, where intervention can enhance human capacity for freedom and creativity. The framework developed in this dissertation is based on the author's interpretation and understanding of critical realism philosophy. It is limited to a few theories within this field and has not been tested in other types of problems or geographic regions. Therefore, further research is recommended to test and develop the critical realism framework in future studies. Futures studies have the potential to benefit from the following critical realism concepts: concrete utopia, MELD

dialectic, four planes of social beings, interconnectivity through metaReality, internal conversation, and individual reflexivity.

FS methodologies based on Critical Realism is currently limited to a small academic circle. One unfortunate limitation of Critical Realism philosophy is the perception of its relationship to Marxism due to its implicit critique of capitalism and modernity. Emancipation theory can be misperceived as the solution to all oppression and power related social problems. However, it is aimed primarily at liberation from false beliefs. Designing a policy for social improvement requires the consideration of the causal powers of the structural establishment and of cultural norms which are much harder to change.

The economic development paradigm is deeply rooted in society, decolonization theory attempts to only create a crack in this system and not change the entire landscape. The goal of emancipation theory discloses the existing hegemony of social economic and political powers. This implicit activism against oppression and for justice is unappealing to many business (capitalist) communities.

While CR philosophy and its methodologies have been widely accepted in Economics, Management, Development studies, and Education, it has not received as much attention within the future studies field. More research on possible foresight tools should be conducted, especially using the SAC framework that creates a distinctive analysis of structure, agency, and culture, differentiating the measurable structure from the hidden norms and belief. In planning and policy analysis, the focus on evaluating the feasibility of specific policies can shift the discussion away from the deeper mechanisms of the problems. The future is often seen as limited within the pre-existing framework and decision-making. However, potential new CR tools and methods can be integrated into the foresight process to provide insights into policy development and implementation that are more responsive to the complexities of reality.

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- https://jfsdigital.org/2022-2/vol-26-no-4-june-2022/approaching-foresight-through-critical-realism-lessons-drawn-from-thailand/

"AQI Re-visioned: A Critical Realism Approach to Transforming Air Pollution"

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- https://www.emerald.com/insight/content/doi/10.1108/FS-06-2021-0129/full/html

"Foresight in Thailand: Some Development and Underpinning Theories"

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- Thailand Futurist Conference 2021: Transforming Through Crisis, National Institute of Development Administration (NIDA),12/21
- Asia Pacific Futures Conference, 09/22

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