

# **Contributions to Management Science**

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Editors

# Facilitation in Complexity

From Creation to Co-creation, from Dreaming  
to Co-dreaming, from Evolution to  
Co-evolution



Springer

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# **Messages from the Editors**

## **Geert**

Van Renata's co-promotor in 2017 naar Renata's (en Goce's) co-auteur en co-editor in 2022. Collega's (dus co-werkers) zijn we altijd geweest en zullen we altijd blijven. 'Co-' dit en 'co-' dat zijn de buzzwords in dit boek. Welke mooiere boodschap kunnen we brengen dan een boodschap die we zelf in de praktijk brengen. Als 'co'-zoveel van Renata is zij de persoon die ik in de eerste plaats wil danken voor dit boek. Van al het dromen, plannen, coördineren (daar gaan we weer met 'co'), uitvoeren, zweten, zuchten, hopen, wanhopen, vloeken, juichen, enzovoort, heeft zij 97% gedaan, waardoor mijn 1% (en Goce's 2%) beperkt kon blijven tot corrigeren en tevergeefs tot schrappen condemneren ("less is more" gaat niet echt op voor dit boek). Dankjewel Renata voor het voorrecht om je co-denker geweest te mogen zijn bij dit project. Je hebt het mijn leven als co-editor echt makkelijk gemaakt. Ik kijk al uit naar ons volgende project. Verder gaat mijn dank uit naar Tom, Gilles en Wouter, drie voormalige MSc studenten aan de Universiteit Gent, wiens masterproeven herwerkt zijn naar twee hoofdstukken in dit boek te vinden. Dank voor de tijd die jullie in deze herwerking gestoken hebben, ondanks alle drukte van het prille beroepsleven. Dank ook aan de UGent collega's Stijn, Jan, Frederik, Amy, Dirk en Thomas voor het bereid zijn om moeilijke en lange teksten na te lezen. Uiteraard ook dank aan de lieve mama's van de vakgroep, Martine en Machteld, voor de logistieke en administratieve steun bij het tot stand komen van het Open Access deel van het boek. Tot slot dank ik mijn mega knappe vrouw Kaat en mijn hyper leuke dochter Siska voor het compenseren van de bij mij ontbrekende rechter hersenhelft. Dank voor jullie poëtische en artistieke bijdragen. Ik vind het echt heel mooi!

From Renata's co-promoter in 2017 to Renata's (and Goce's) co-author and co-editor in 2022. Colleagues (i.e., co-workers) we have always been and always will be. "Co-" this and "co-" that are the buzzwords in this book. What finer message can we deliver than one that we put into practice ourselves. As Renata's "co-" so

much, she is the person I want to thank for this book in the first place. Of all the dreaming, planning, coordinating (there we go with “co” again), executing, sweating, sighing, hoping, despairing, cursing, cheering, and so on, she did 97%, allowing my 1% (and Goce’s 2%) to be limited to correcting and vainly condemning to deletion (“less is more” does not really apply to this book). Thank you Renata for the privilege of having been your co-thinker on this project. You have really made my life as co-editor easy. I am already looking forward to our next project. Furthermore, my thanks go to Tom, Gilles, and Wouter, three former MSc students at Ghent University, whose master’s theses have been reworked into two chapters to be found in this book. Thank you for the time you put into this reworking, despite all the pressure of early professional life. Thanks also to the UGent colleagues Stijn, Jan, Frederik, Amy, Dirk, and Thomas for being prepared to read difficult and long texts. Of course, thanks also to the dear moms of the department, Martine and Machteld, for the logistical and administrative support in the creation of the Open Access part of the book. Finally, I would like to thank my mega gorgeous wife Kaat and my hyper cute daughter Siska for compensating for my missing right hemisphere. Thank you for your poetic and artistic contributions. I think it is really beautiful!

## Gjorgji

Прекрасно е чувството (Рената) кога некој твој ученик на сите академски звања не штедејќи се себеси сака да го даде најубавото и највозвишено од себе си и сличните на себе. Уште поголемо е задоволството кога во тој тим се твоите помлади колеги во друштво со колеги од други држави, други простори и други димензии. Не знам што е поубаво, дали тие што ги познаваш и соработуваш со нив, или тие што ме ги познаваш по лик но можеш да ги споделиш нивните дела, или пак некои кои само си ги сретнал и преку нивните дела ги запознаваш. Како и да е создавањето на нешто во кое сите веруваат и живеат за него и можноста да бидеш и минорен дел од тоа создава незаборавно чувство, на припадност, енергија и синергија која толку посебна и толку незаборавна. Особено ми е драго за професорот Герт кој заедно со неговиот тим дадоа непроценливо значење на ова дело. Се надевам дека овој проект е само зачеток на нешто кое само што започнува да ги отвора очите, а можеби е ZYGOT кој ќе ја доживее “светлината на сонцето.”

It is a beautiful feeling (Renata), when your mentee with all academic degrees selflessly gives the best from oneself and the most important to the world and the likes. It is even greater pleasure when such a team enlists your younger colleagues and collaborates from other countries, other contexts, and other dimensions. I could not choose what is better, the co-creation with the ones you know personally and in person, or with the ones you have had the pleasure to meet only through your mutual work and deeds. Either way, the co-creation of something everybody believes in, and living through it, and the opportunity to be a part of it gives birth to a memorable feeling of belonging, energy and synergy, unique and impactful. I am especially glad

for my friend and colleague, professor Geert and his department, who have contributed immensely to this work. I hope that this project is a pure eye-opening inception, or maybe it is a ZYGOT to see the light of the Sun!

## Renata

Оваа книга е израз на огромна работа во тежок период за човештвото, а уште потежок за индивидуите и семејствата. Овие турбулентни години на пандемија и војни во кои одевме на работ на хаосот, меѓу животот и смртта, кон заедничкиот спас со внатрешниот мотор полн љубов, сочувство и поддршка, го овозможија патот на ко-сонување. Ова не беше пишување научни трудови. Ова беше кокреација на научно-апликативна основа. Низ изминатите години работевме во експерименти, измислени безбуџетни волонтерски проекти, хакатони, бизнис концепти, човек да се зачуди колку многу се работело на применета наука. Во еден момент се создадоа услови тоа да се собере и објави во книга. Како е можно таа книга да има свој заеднички содржател, и како дојде до тоа да биде со ваква структура од два дела, едниот со состојки другиот со изработки и рецепти - тоа не можам да го објаснам. Опортунистичка креативност. Но дојде. Се инспирираме едни со други, си помагавме да преживееме, да се справиме, да процветаме, да го подигнеме светот, ко-сонувајќи. Оваа книга е светот, науката, практиката и нашите директни обиди за да изградиме милион функционални мостови во мало.

Од каде јас копнеам за кокреација и коеволуција? Сржта и перпетуалната инспирација доаѓа од моите родители. Целиот живот гледам како моите прекрасни родители создаваат нешто од ништо или од многу малку, а со сè што се има прават волшебни творби со многу способности, креативност, издржливост, работливост, отворен ум, срце полно љубов. Чудата што ги направиле моите родители јас само се обидувам да ги опишам, реплицирам, кодирам и преточам во насоки, упатства, принципи. Во тоа влегуваат чувствата - да се сака да се создава, а не уништува, да се сработи и облагороди и да се напредува заедно. Во тоа влегуваат квалитетите - работата на себе и поддршката на другите. Во тоа влегува несебичноста - волонтерството и давањето од себе. Во тоа влегува љубовта - за својот близок, за семејството, за животот и светот. Она што моите родители го вградуваат во мене цел живот, го продолжувам со моите најблиски пријатели и соработници, со моите ментори Гоце и Геерт кои ми ги одржуваат и корените и крилјата, со чудесните ко-сонувачи, и со луѓето што ги сакам, како дар за светот и животот што сè бесценети. И тута доаѓа мотивацијата за кокреирање подобар свет - нашите деца. Секое едно човечко битие е фрагилно и мортално, но човештвото живее и трае. Мојата волшебна, креативна и бисерна убавица Ноела ме прави да се раѓам одново и тоа секојпат посилна, почувствуителна, подетерминирана да постојам чисто, искрено и да градам. За неа, за нив, за светот, за животот, знајте, возможно е, заедно да сонуваме и да создаваме.

So much work has been put into this book, in especially difficult times in the history of humanity, and even harder period for the individuals and families. These turbulent years of pandemic and wars, when we were walking on the edge of chaos, between life and death, toward mutual salvation with inner engines filled with love, compassion, and support, we were co-dreaming. This is not writing research papers. This is generating applicable science by co-creation. Through these years we have worked on experiments, made-up no-budget voluntary projects, hackathons, matchathons, business concepts, and so much work on applicable science. At one point in time, things matured to publish all that into a book. How it came to bundle, align, and configure all that work into such a structure—part with ingredients and another—with recipes, is beyond my comprehension. Opportunistic creativity. But, it is here. We have inspired each other, we helped to survive, deal, bloom, raise this world, co-dreaming. These works are the world, the science, the practice and our direct trailblazing efforts to construct million functional bridges in a book.

Why am I longing for co-creation and co-evolution? The core and the perpetual inspiration comes from my parents. All my life I witness how my amazing parents create and co-create something from nothing, or from very little, optimizing, managing, devising magical deeds with abundance of capabilities, creativity, perseverance, hard work, open minds, and hearts full of love. The wonders made by my parents I am just trying to describe, replicate, encode, translate into guidelines, models, principles. This means including feelings—the will to create—not destroy, to make and enrich to progress together. This means including competence—built within and for supporting others. This means selflessness—voluntary and emerging. This means love—for your family, for life and world. I am sustaining the ripples generated by my family with my closest friends and collaborates, with my eternal mentors Goce and Geert who sustain the roots and the wings, with the amazing co-dreamers and the people I love, as a gift for the world and life and all that is priceless. And here comes the main reason, the purpose, the motivation to co-create a better world—our children. Every human being is strong, yet fragile and mortal, but humanity lasts. My magical, creative, pearly beauty Noela makes me get reborn over and over again, each time becoming stronger, more sensible and more determined for pure and honest existence with building strength. For them, for her, for the world, for life, know this, dear readers, it is possible for us to co-dream and co-create!

# Real-Life Analogy



Photo by Vladimir Petrovski

*Dear reader, welcome to our co-creation!*

*We hope you will see trailblaze and it will cause ripples in your co-evolution with this world, in a good way.*

*We aimed to portray how “one plus one emerges to be greater than two,” but also why it is a remarkable setting when that “one” happens. Co-dreaming while co-creating, with eyes, minds, hearts wide open.*

*Who are the actors? What are the principles? Which are the mechanisms? Who is the boss or is there a boss? How can it be sustained? Can it be replicated? What was the strategy? Tactics? Operations? What was the budget? What was the primary purpose and how could people, nature, and all resulting from that coupling align so harmoniously around it?*

*Galichnik, North Macedonia (on the image above) . . . and a certain number of other co-evolutionary tales across the world which overcame co-destruction, and co-evolved. So can and so should we.*

*Open the window and you may see the trail . . .*

*of ants, . . . the dancing vortices created by a windmill, . . . of dreams, . . .*

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2. Tim O'Brien, Harvard University, Center for International Development, USA
3. Gilles Kittel, DG REGIO, European Commission
4. Prof. Dr. Jelena Zdravkovic, Stockholm University, Sweden
5. Prof. Dr. Ir. Jan Devos, Ghent University, Belgium
6. Prof. Dr. Frederik Gailly, Ghent University, Belgium
7. Prof. Dr. Shushma Patel, De Montfort University, Leicester, United Kingdom
8. Prof. Dr. Maja Micevska, Vrije Universiteit Brussel, Belgium
9. Prof. Dr. Ivana Bilic, University of Split, Croatia
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Another co-dreamer, Gordon, moved mountains and enabled us to co-create the amazing *visual abstracts* of chapters “Academia Diffusion Experiment: Trailblazing the Emergence from Co-creation” and “Multi-vortex Tornado Blueprint for Disruptive Global Co-creation (Inspired by the EUvsVirus Phenomenon)” —the ones to disrupt the applied science communication principles for sure. The works have been effectuated by Lukas Kaisler.

To our colleagues, friends, collaborators who have joined us in this endeavor—thank you and it has been a privilege to have worked together with you. We are honored and this is our way to show our appreciation. Let the future generations be the validators of this trailblazer.

Repository of materials regarding this book can be found on <http://tactical-management-in-complexity.com> and more specifically on <http://tactical-management-in-complexity.com/course/view.php?id=25>



FULLY HUMAN

*Life unfolds to us in never ending spirals. Most probably we'll never accomplish the final Courage-Collaboration-Connection steps towards real and pure whole-hearted creative living. But some of us sure will live (and breathe in-and-out) trying.*

Kaat Van Wonterghem and Siska Poels (poem), Noela Nechkoska (drawing)

# **Editorial (Fig. 1)**

## **From Creation to Co-creation, from Dreaming to Co-dreaming, from Evolution to Co-evolution: Complexity in Foresight**

Create ... but also ... Co-create!  
Dream ... but also ... Co-dream!  
Evolve ... but also ... Co-evolve!



**Fig. 1** Imaginary, dynamic, self-organised yet facilitated system of roles and accountabilities for alignment of individual and collective purpose(s), using the Denica managerial method

In times of pandemics, wars, despair, humanity creates in order to save life. However, science knows of no borders since it aims to sustain life. There has to be a matching force in academia and allies which knows no borders; in volunteers which know no profits; and in co-creation which knows no isolation. We have been part of such real-life/academic/voluntary endeavors, in all their beauty and hardship, so *this book is the story of “we,” generated from “I” where both the “I” and the “we” come to fruition.*

The introductory visual depicts a multi-peaked environment humanity is situated in. For some, the challenges are substantial, diverse, for others the view is better, higher, but also more dangerous, for third ones there are environmental difficulties or ease and so on. The contexts are different, and evolution cannot occur if it is not co-evolution. Especially humanity. The ovals denote an imaginary managerial system of roles and accountabilities all aligned around a purpose (the Sun) and diverse tactics (Denica star)<sup>1</sup>. We need to co-create because zoomed out like this we are in this together. We need to self-organize around collective and individual aligned purpose(s). The actors on this planet need to co-evolve. Not co-destroy for sure. We need to co-dream because we challenge ourselves for beauty and creation then. And we can do that. This book attempts to portray “why” and to some extent, with original and interesting blueprints—“how.”

## Setting the Scene

How do we grasp the notion of *facilitated co-creation*, after this amazing set of co-authors worked on generating and intertwining the science and practice and writing about them in this book?

Historically threaded under diverse notions, such as participatory design, collaborative inquiry, placemaking, human-centered design, crowdsourcing, co-creation in its broadest sense includes various actors jointly identifying problems, setting the action, conveying it, generating solutions, undertaking missions. Our in-house historian of art, selfless volunteer saving and improving the world, Kaat Van Wonteghem would say: “Co-creation has been a widely accepted value-creation tool in various contexts. No matter in which context co-creation is being used, it enables different stakeholders to take part in and bring new perspectives on, either on a small scale or on a large scale. Whether it is a relationship between customers and companies, or in an educational context facilitating lifelong learning or in an artistic context where poets are working together with street artists and everybody is doing his utmost best in creativity,... There are so many possibilities created via co-creation. But one correlation can be seen throughout history: co-creation has

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<sup>1</sup>DENICA and DENICA 2.0 managerial method as described in the first book entitled *Tactical Management in Complexity: Managerial and Informational Aspects*, and in this book. Hopefully in future works too.

been there since man, after a prehistory of 40,000 years, began to think about heaven and earth and the afterlife, and started on different places on earth—at the same time—to build big cultures and mighty memorials all together. These gigantic monuments were based on star constellations and had all more or less the same scientific base with even spiritual teaching aims. We're talking here about the great pyramids in Egypt, the pyramids in Teotihuacan in Mexico, Machu Picchu in Peru, the web figures in Bolivia, the temple complexes of Angkor Wat and Angkor Thom in Cambodia, the Moai statues on Easter Island as the most known. Never, ever these majestic and phenomenal buildings would be our witness today, if not every member of these civilizations was eager to co-create and learn. Amongst humans themselves, but also with and within nature." Our idea of *co-creation* denotes multiple stakeholders being actively involved in each of the stages of development and action creating and shaping both the content and the flow, the motivation and the drive, the output and the outcome, in diverse contexts of space and time. We perceive it as "the" situation where  $1 + 1$  is greater than 2 (i.e., synergy) but also where 1 happens (i.e., action)!

If it wasn't for the pandemic, the work to generate chapters . . . wouldn't happen. Traditional or life as usual, continues with not-so-disruptive stamina. The imaginary projects addressing real issues with voluntary effort, the real phenomena whose vortices created a disruptive beautiful amalgamation of particles never being joined together before nor afterwards, . . . they all happened during the pandemic. And we encode and describe them firsthand in the chapters in Part II of this book. Most of these engagements and co-creation occurred within the realm of academic citizenship, proving that so much can be done with zero money transfers but with priceless competence and co-creation.

### ***A Brief Reflection and Scoping of This Manuscript***

This book succeeds the Tactical Management in Complexity: Managerial and Informational Aspects, where this editorial trio then had the setting of a Ph.D. student and two mentors as initial conditions for this fruition. The Denica managerial method for tactical management, based on the Sense-and-Respond framework by Haeckel (for strategic management) has been plowed into different grounds in the chapters here. But also, some of the generic aspects such as complex adaptive systems, complex environment, governing principles, primary purpose, system of roles and accountabilities have been threaded as applicable in very creative manners across the different challenges in the chapters. More importantly, this book attempts to bundle the main "ingredients" for its mission.

The first part starts with initial conditions for triple transition (digital, social, and green) as radical position for global co-evolution in complexity, then shape management and management information systems accordingly and touch upon project management, gig economy, circular economy, and collaborative innovation with agent-based modeling, considering disruptive technologies for marketplaces for

coopetition. We are also incorporating Harvard's PDIA as a strategy for complexity, to ensure the complexity profile is met.

Part II showcases four “recipes” on facilitated co-creation scoping diverse functional and/or geographical areas: MultiCreation ecosystem for academia/business/civil society/institutional co-creation on local scale, regional positive deviance in the Western Balkans Alumni Association, then global Academia Diffusion Experiment sustained through the years, with global EUvsVirus phenomenon—swirling disruptive co-creation.

You will read many “we have performed this, . . . we have experienced that” as firsthand experiences, but it is because we, the co-authors, have been doing that, as involved parties, action researchers, and ethnographers. Feelings, impressions, motivation, passion, belief, metaphors, voluntarism, and academic citizenship—need to be mentioned too, as the non-standard ingredients in the rigorous scientific intellectual outputs. But maybe the most important ones in the “how to” manual of applicable science.

### ***Key Concepts of and for Co-creation, Co-dreaming, and Co-evolution***

We perceive *Complex Adaptive Systems (CAS)* as a set of interrelated independent agents interacting to achieve individual, and ideally collective purpose(s). Facilitating CAS in our understanding means finding ways to dynamically reconfigure the alignment of those individual and collective purpose(s), ideally utilizing the potentials to achieve emergence.

One of the distinctive points on facilitating co-creation: *The purpose is on a higher level than any individual actor's motivation for participating in the co-creation system.* In this context, the individual or collective motivation is not just (or any) profit, getting salary, . . . but it is to achieve something, solve problems, address challenges by co-creative action.

As you read the book, you will come across another new concept we are introducing: the “*opportunistic creation*,” “*opportunistic creativity*,” and “*opportunistic co-creation*.” Hence, tracing *facilitated opportunistic co-creation* is one of the main goals of this book. It is needed because of the complexity of the inner and outer environment and its turbulent dynamics, where planning and exact competence cannot be obtained, but intuitive, creative, iterative probing and shaping of solutions which work in that spacetime is a feasible road to be taken. Of course, our lifelong pursuit is to uncover and discover ways how humanity can self-organize and self-manage as if being facilitated and managed. But that is not yet our truth. However, the *opportunistic creativity* denotes ceasing the opportunity when it occurs, with resources at hand, even though it has not been in the initial plan, nor was an expectation or prediction. It is about skimming the core competence agents possess without inevitably engaging the entire professional/private being. Facilitating

chunks and modules of knowledge, workload, inspiration, heart and motivation. Juggling with what is at hand, given. For this to be brought to fruition, a great deal of individual and collective creativity, competence, and knowledge are needed. But when done so, the effects are very original, unique, and amazing.

*Bridges* of all kinds (physical and metaphorical) are detected as needed in each of the multi/trans/cross/interdisciplinary solutions, approaches, and blueprints in the second part of the book. Not dividers. In our Venn-diagrams as visuals, the zones of overlaps are where alignment occurs between the worlds. Not as a clash between the East and the West (Ukraine), nor as a clash between Non-EU and EU (Western Balkans), nor as a clash between traditional and open collaboration in science even though indeed those are geographic regions and metaphysical edges where it is most turbulent but because the tectonic plates meet. We are emphasizing those meeting points and bridges as maybe most important, for alignment.

*Matchmaking* is yet another significant concept for facilitating co-creation. It is an action when one knows a person, solution, platform, referral for another's problem, need, interest, challenge, ambition, mission and acts to get them together. It needs to happen on every level, in any context, circumstance, problem, mission. And it needs to be conveyed by each agent in any role, as a governing principle.

Some of the main *challenges* in facilitating co-creation: with a constant switch turned on/off of human resources, the magic lies in steering and navigating with what exists as resource, capability dedicated at the moment, now and here; utilizing its full potential then and there, without promises for future sustainability (but with hopes to do so). If you are a human, you should know that: (1) you need to take on diverse roles, (2) be proactive, and (3) know that if there is a will there is a way, it all comes down to how much we are willing to invest.

We find ourselves in the premise of Gell-Mann, paralleling quarks and living beings: "*Think how hard physics would be if particles could think!*"<sup>2</sup> And we have been excited and overwhelmed to find and shape the answers to the questions posed in this book: can it be done? Can humanity and its cohabitation partners on this planet self-organize to co-create and co-evolve? And why has not it been done so far on a global scale? Or has it? The list of excuses includes being idle, incompetent, lazy, with no interest, but then, how do we co-evolve if the actors reason this way? Platforms, instruction, competence, honesty, matchmaking, virtual and global are ingredients in our recipe for facilitating co-creation.

## Methodology

Methodology is a multi-layered scientifically-philosophical discipline which allows us to dive into the secrets of scientific research. Being led through the labyrinth of what is already known, and what needs to be uncovered, with certain trails on how it is to be done.

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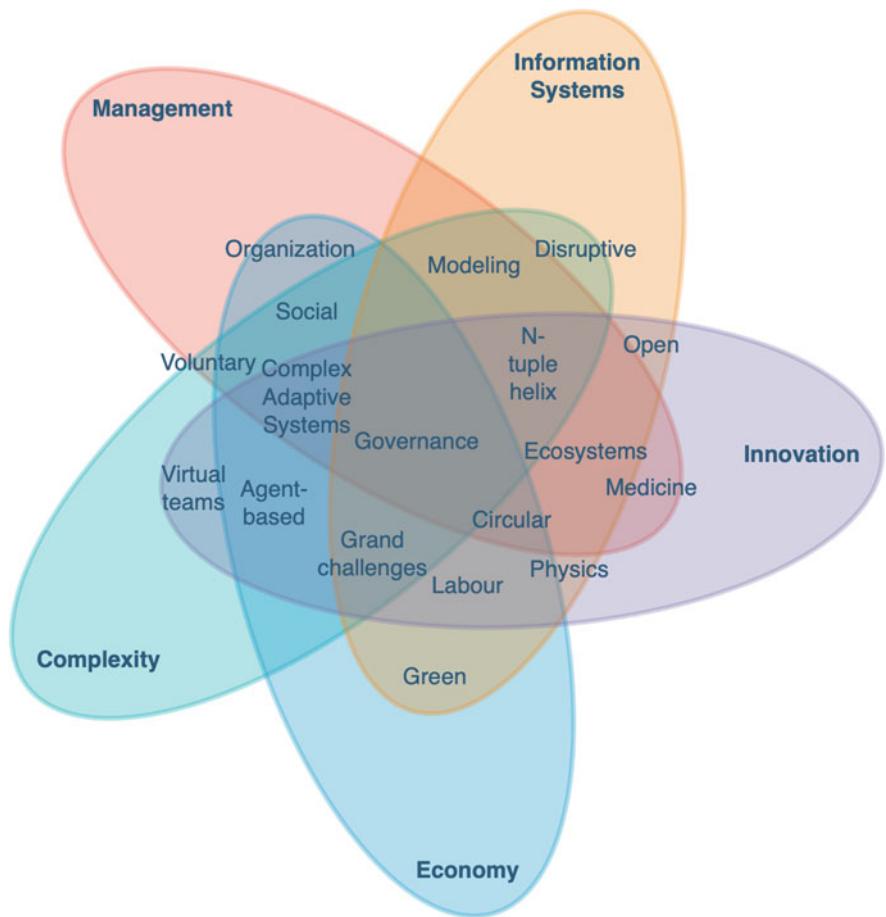
<sup>2</sup>Murray Gell-Mann. 1995. *The quark and the jaguar: adventures in the simple and the complex*. W. H. Freeman & Co., USA. <https://dl.acm.org/doi/10.5555/211536>

Methodology attempts, in the endlessly complex and substantially chaotic interrelatedness of events, mechanisms and processes, to uncover certain order. It is one of the ways to understand this world and life—by realizing a certain regularity in it. Otherwise, we would be facing endless enigma and mystery. Hence, the methodology, founded on the logical and normative, is the most essential epistemological instrument on the road of humanity's scientific understanding of reality, of course, with the inherent limitations of its creator and his/her cognitive capacity. Science attempts to tell a story, and sensemaking consists of stories we can tell against reality. However, each of them is coloured by the profile of the storyteller, by his/her personality, experience, orientation . . . so the result is not and cannot be one universal story (Pecijareski, 2020).

In order to be true to our words, we engaged in deeds and codified them. The content in this book has been predominantly created within the realms of *Qualitative research* and *Design Science Research*, as methodological foundations. Within those tracks, you will encounter methods, tools, approaches, techniques enlisting but not limited to: qualitative analysis and qualitative comparative analysis, GAP analysis, Action Design Research, modeling, simulations, Problem Driven Iterative Adaptation (PDIA), fishbone analysis, experimentation, ethnography, interviewing, analogy, grounded theory, triangulation, all used with the purpose to situate, understand phenomena, initial conditions, principles, mechanisms, components, guide our efforts to applying ideas and concepts and encode that for application and inspiration.

We have produced *novel artifacts* in these endeavors. From position and principles, through Denica 2.0 managerial method, Tactical Management Information System (TMIS) requirements and prototype, a concept for Project Management Tactics (PMT), (re)definition and conceptual model of the gig economy, model of the circular production chain via its micro and meso perspective, a PLS-ABM simulator for collaborative innovation, ERP marketplace model, principles and solution with disruptive technologies such as blockchain, MultiCreation generic model, PDIA strategy for higher education systems across Western Balkans and codification of a positive deviance of Western Balkans Alumni Association, Academia Diffusion Roadmap and methodology for open innovation and open collaboration and a Tornado blueprint for global disruptive co-creation. And last, but not least, as book editors, we devised the strategic foresight on human co-creation and purpose, via multi/trans/cross/interdisciplinary collaboration and the pheromone trail process for co-creative writing and reviewing in open collaboration in science to contribute to applied science generation, publication, and dissemination.

There are substantial challenges when it comes to multidisciplinarity as a design decision, coupled with openness in the collaboration, science, and innovation and even more so with global, regional, and local voluntary effort. On one side, there was always the impact domain, the main focus of the co-creation efforts. But, and especially visible in the Part II chapters, the disciplines on the side of the solutions have not necessarily derived from the impact domain, but we sourced our inspiration from nature, physics, society, poetry, and so on, to be able to emerge with appropriate artifacts.

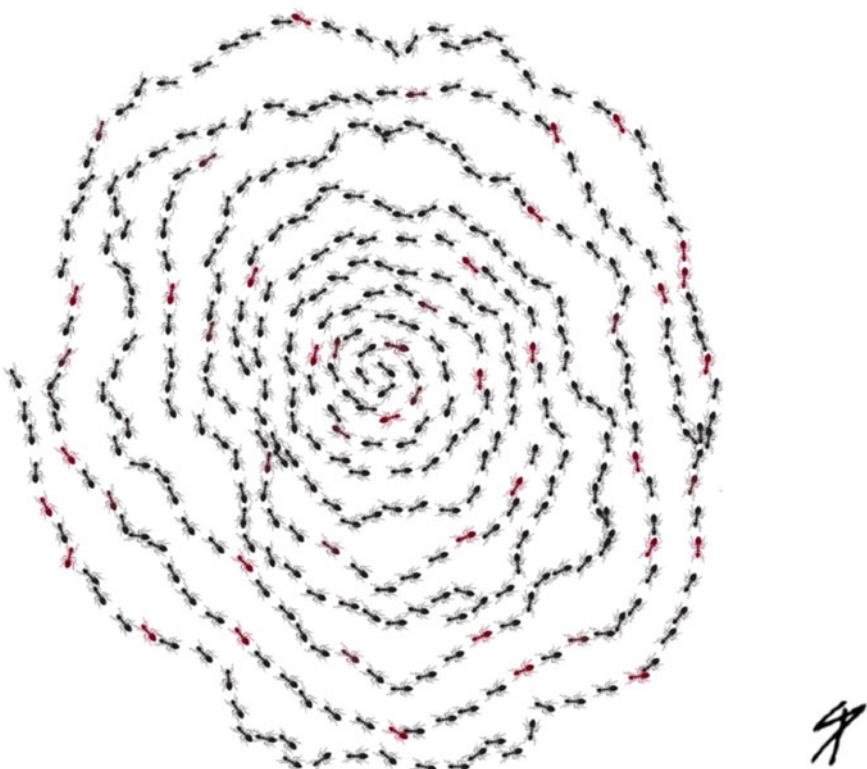


**Fig. 2** Main disciplines used and addressed in the book chapters, and inter/cross/transdisciplinary bridges

Figure 2 visualizes the main pillars of sciences and only a few of the multiple intertwinings used in the works in this book, as paths to be followed, but also as approach to be extended further on.

## The PHEROMONE TRAIL: Co-creative Writing and Reviewing in Open Collaboration in Science

With this book, we are also introducing a rather new co-creation process for generating the research, writing the chapters, and reviewing them, when practicing open collaboration in science. Like the ant colonies, as complex adaptive systems,



**Fig. 3** The pheromone trail for co-creative writing and reviewing in open collaboration in science

use pheromone trail as a communication system to inform other members about resources, sources of food or dangers, so have our co-authors and reviewers followed the pheromone trail of the work underlying the chapters and their actual writing. Figure 3 (designed by our Siska Poels) visualizes an ant colony, where different colored ants denote different roles they have in their collective life, as the spiral of the trail reaches its summit.

Namely, especially in the chapters in Part II of this book, the co-creation process has used open collaboration in science and open innovation approach, as defined in the UNESCO Recommendation on Open Science<sup>3</sup>. During the chapter co-creation, there have been **co-creators (with diverse backgrounds from academia and practice)** who have been *authors* (1) *directly involved in the topic of interest*; combined with (2) others who have been *acquainted* with the work/phenomenon but not directly involved in its generation to provide semi-external perspective;

<sup>3</sup><https://unesdoc.unesco.org/ark:/48223/pf0000379949?4=null&queryId=3db9e61e-2bd6-402f-9da1-896a3d328868>

(3) third profile of ones who *haven't had idea about the work*, but were willing to dive in, due to common interests, passions, or prospects acting as *internal reviewers and aligners* of the chapter texts; and finally (4) *external reviewers* who have been accessing the chapter text in their draft version (with conceptual outline, written ideas and content, but still in formation stage), to be able to provide input on the main construction, idea of the chapter and co-create with their constructive feedback the final 30% of the chapters. The reviewers had a lot of sensemaking needed, a lot of in-depth understanding and conceptual comprehension, so it was harder work than usual, but it did provide timely guidance even in the construction stages. The onboarding, sensemaking, and the alignment around the purpose, on individual and collective level have been also challenging for all the co-authors, especially the ones from the third profile. That “dance” of many seemingly unrelated people going through the text at different times all adding and reconfiguring to make it more true is an amazing dynamic to be witnessed. Hence, our pheromone trail which has been produced by co-creation in doing/writing/reviewing helps sustain the pheromone trail for humanity to follow.

## **STRATEGIC FORESIGHT: Exploiting and Addressing Complexity in Organizing the Works and the Book**

Our quest to trailblaze humanity’s migration from co-destruction toward co-evolution, via multidisciplinary approaches which help facilitate co-creation, co-dreaming, and emergence, has led us to the following distinctive trait of this manuscript—using strategic foresight to situate the motivation, ambition, and work in the chapters.

Strategic Foresight is one of the most appropriate techniques for complexity. “In times of increasingly rapid change, growing complexity, and critical uncertainty, responsible governance requires preparing for the unexpected. Strategic Foresight is required whenever there is a high degree of uncertainty surrounding changes to the relevant future context. Strategic foresight does not attempt to offer definitive answers about what the future will hold. Foresight understands the future as an emerging entity that’s only partially visible in the present, not a predetermined destiny that can be fully known in advance (predicted). There are no hard facts about the future and the evidence base is always incomplete. The objective is not to ‘get the future right,’ but to expand and reframe the range of plausible developments that need to be taken into consideration.”<sup>4</sup> It incorporates consideration of the global megatrends, trends, contextual trends, change drivers in the specific domains/regions of interest and it requires in-depth big picture understanding, capabilities to maneuver the strategic altitude to helicopter view to ground view and vice versa. Also, other factors need to be considered, including weak signals and contextual

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<sup>4</sup> <https://www.oecd.org/strategic-foresight/whatisforesight/>

developments to be able to contemplate, in our case two continuums—horizontal and vertical axis that help devise four scenarios—as some authors suggest: possible, probable, plausible, preferable also called futures, to be used by all relevant stakeholders when taking affirmative action, including portrayal of what happens when being inactive or doing damaging activities.

In turbulent times, as we are today, but also half a century ago, these following aspects have been taken into account, to establish nation-wide actions (Brown, 1968):

1. Efficient management of operations
2. Choice of tactical alternatives
3. Systems engineering, design, and research—e.g. finding better measures for evaluating the performance of alternative systems
4. Determining major policy alternatives—e.g. analysis of alternative means for implementing basic strategies; analysis of the impact of force posture; strategic alternatives on ability to achieve foreign policy objectives

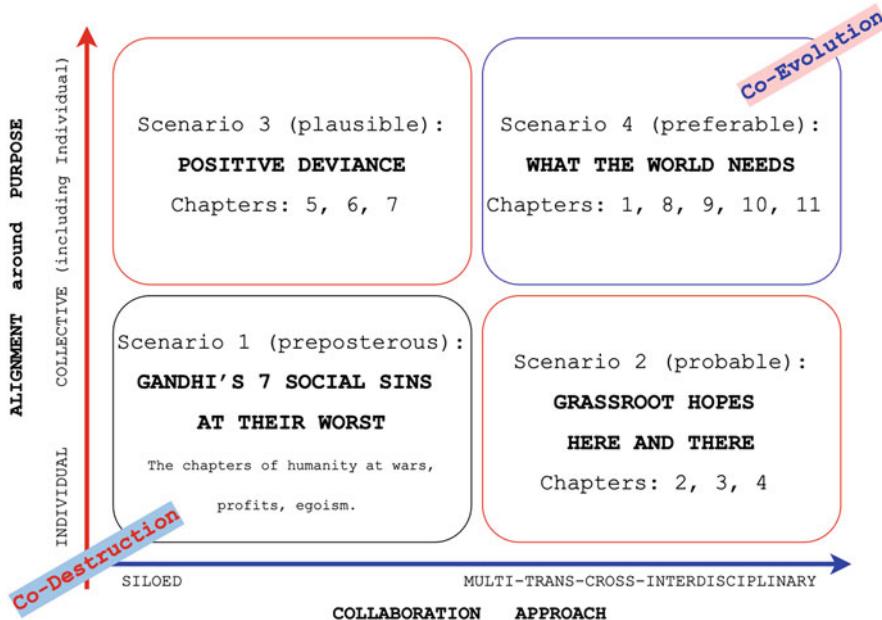
We have considered the megatrends from the past several years, such as and some with a tendency to exacerbate exclusion, disruption, and discontent, and positive connotation toward “healing fractures, building bridges” (PMI, 2021) on “how a new ecosystem of change-makers is finding business opportunities with positive social impact” enlisting: COVID-19; Climate Crisis; Civil, Civic, and Equality Movements; Shifting Globalization Dynamics and Mainstream Artificial Intelligence, as well as multipliers such as: Making Social Impact Projects a Strategic Priority, Fostering Open and Innovative Partnership Ecosystems, Rethinking Relationships with Customers and Wider Stakeholders. European Commission (EC, 2021) recognizes the global megatrends of Climate change and other environmental challenges; Digital hyperconnectivity and technological transformations; Pressure on democracy and values; Shifts in the global order and demography.

In various groupings and categories, the ones for 2022, are as follows, including, but not limited to (PMI, 2022):

1. Digital Disruption
2. Climate Crisis
3. Demographic Shifts
4. Economic Shifts
5. Labor Shortages
6. Civil, Civic, and Equality Movements

When considering megatrends, to be able to produce futures and scenarios, we have dived into human nature, not just considering the megatrends of the time and space dimension. Our scenarios, thus, apply the thread of human nature as individuals and humanity as a whole, in order to capture that third dimension of content and incorporate it into important insight for our readers but also for the future, to be the judge.

For the purpose of situating this book, as well as deploying strategic foresight for the complex context it addresses, we have identified two continuums (axes):



**Fig. 4** Strategic foresight for facilitating co-creation: Multidisciplinary approaches to complexity

Horizontal axis about the Collaboration approach and Vertical axis about Alignment around purpose. Within these axes, we have generated four scenarios (Fig. 4).

The continuums denote the possible planes where the futures can develop, and if we analyze them in their extremes, it would be as follows:

- **X-axis: Collaboration approaches** can range from *siloed* (not very strong in terms of bridges), which is not such a favorable situation, to *multi-trans-cross-interdisciplinary* collaboration, where bridges and matchmaking are the norm, value co-creation is the common intention and goal.
- **Y-axis: Alignment around purpose** can range from pursuit of *individual* goals, rather egoistic behavior, to the other extreme of alignment around *collective purpose*, which includes (does not dismiss) the individual goals, denoting more ideal situation where humanity does see its strength as a whole, and aims to co-create and co-evolve together.

The four scenarios possible within this plane of futures are to be described as follows:

- Scenario 1 (**preposterous**): “**GANDHI’S 7 SOCIAL SINS AT THEIR WORST**” (denoting siloed collaboration, individual purpose pursuit). This is where the world and humanity is at now. Gandhi’s servant leadership and selflessness directed into common purpose points out seven behavioral dangers which when exhibited drag the world in a bad place. They are: “Wealth without work, pleasure

without conscience, knowledge without character, commerce (business) without morality (ethics), science without humanity, religion without sacrifice, politics without principle.” Here belong the chapters written by humanity, when in wars, profits, egoism, homelessness, hopelessness. This is what our open, co-creative, co-evolutionary applied science and practice is trying to improve.

- Scenario 2 (**probable**): “GRASSROOT HOPES HERE AND THERE” (denoting some multi-trans-cross-interdisciplinary collaboration, but still individual purpose pursuit, to achieve own needs). This is a scenario of developments driven by the same motivation—profit, growth, own progress, but via the route of collaboration. These are chapters “DENICA 2.0 and Tactical Management Information System (TMIS)”, “Key Directions for the New Project Manager: Project Management Tactics (PMT)”, and “The Gig Economy in the Post-COVID Era”.
- Scenario 3 (**plausible**): “POSITIVE DEVIANCET” (denoting siloed collaboration transcending borders, collective and individual alignment around purpose). This is where individuals aggregated around purpose (usually volunteers) have the heart and mind in the right place and dedicate their work into selfless co-evolution, to showcase a roadmap of what can be done to co-evolve. These are chapters “Circular Production Chains: A Micro and Meso Approach”, “Simulating Collaborative Innovation: A PLS—Agent Based Model”, and “Conceptualisation of Decentralised Blockchain-Based, Open-Source ERP Coopetition Marketplace”.
- Scenario 4 (**preferable**): “WHAT THE WORLD NEEDS” (denoting multi-trans-cross-interdisciplinary collaboration, collective (including individual) alignment around purpose(s)). This is where we co-dream to be. People see the greater purpose of humanity co-evolving and co-creating, while of course, the individual purposes align within the mutual direction, slowly but surely. We have the strongest ripples set within our position in chapter “The Three MuskEuteers: Pushing and Pursuing a ‘One for All, All for One’ Triple Transition: Social, Green and Digital” and the blueprints in chapters “MultiCREATION: Multi-stakeholder Problem-Driven Approach”, “PDIA in the Balkans: The Western Balkans Alumni Association (WBAA) as Positive Deviance”, “Academia Diffusion Experiment: Trailblazing the Emergence from Co-creation”, and “Multi-vortex Tornado Blueprint for Disruptive Global co-creation (Inspired by the EUvsVirus Phenomenon)” where academic citizenship, voluntary engagements allow us to write about firsthand experiences in co-dreaming while co-creating to co-evolve.

To summarize, all book chapters bring a positive and hopeful story. They describe plausible, probable, and preferable futures. The chapters in Part I, except for chapter “The Three MuskEuteers: Pushing and Pursuing a ‘One for All, All for One’ Triple Transition: Social, Green and Digital”, convey a message of “grassroot hopes here and there” or showcase “positive deviance.” Chapter “The Three MuskEuteers: Pushing and Pursuing a ‘One for All, All for One’ Triple Transition: Social, Green and Digital” as a position and the chapters of Part II go one step further in their ambition to tell us “what the world needs.” All chapters and the book as a

whole express our hope that you as a reader will co-dream with us, to co-create and co-evolve as a responsible person in a society and world that is daily challenged, and in which human creativity and action, together, all of us, and helped by the lessons of this book, will be the trusted source for finding solutions.

Renata Petrevska Nechkoska  
Geert Poels  
Gjorgji Manceski

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## Part I The Main Ingredients and Positions

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