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**Article**

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# Managing the economic sustainability of the Belt and Road Initiative by applying Pragmatic Identity Matching PrIM

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This paper presents the information-structuring integration model of Pragmatic Identity Matching (PrIM) as applied to the management of economic sustainability of the Belt and Road Initiative (BRI) as a study case. This paper was inspired by the author's presentation on the same topic at the 6th Global Congress of the Knowledge Economy in Qingdao, China, in September 2019 (GCKE, 2019). It is not to be mistaken as an advocacy for or against any political position or as an analysis of belief systems. Applying PrIM promotes a global culture of respectful cross-cultural learning and better understanding.

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## Abstract

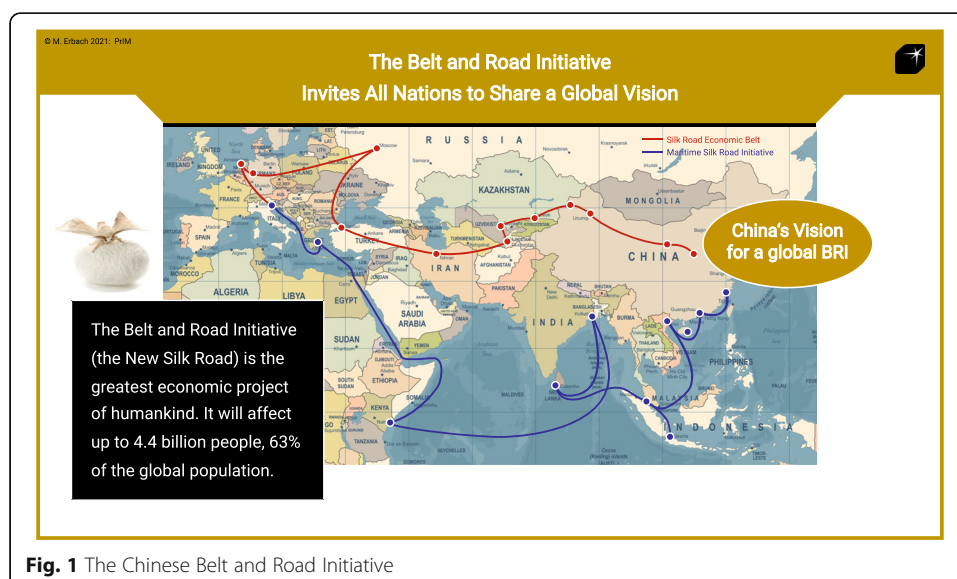
Achieving and managing economic sustainability is one of the crucial tasks for our globalized world. One of the most ambitious economic projects known to humankind claims to stand for long-term global economic sustainability including ecological, social, and cultural aspects: the Belt and Road Initiative (BRI), in which China invites the world to join its vision of a “peaceful cooperation for the wealth and cultural exchange of all nations” (Xi Jinping 2013 in his famous speech Promote People-to-People Friendship and Create a Better Future). This invitation led to a wide range of responses, from fundamental rejection to supportive participation. Matching the participants in this megaproject—their contributions, particular prerequisites, and development interests—requires a holistic participative planning approach with solutions tailored specifically to the participating partners. This article shows how Pragmatic Identity Matching (PrIM), a scalable integration framework, can be used to meet this requirement. PrIM provides an identity-oriented infrastructure for aligned planning, implementation and communications, acknowledging, and embracing participants from different cultural backgrounds such as Asian, Arabian, African, Russian, and European cultures. As a structural-scientific approach that synthesizes elemental semiotic thinking and research in psychology and the neurosciences, PrIM provides a meta-planning structure beyond any value-driven positions and perspectives, one that imparts equivalence to information. PrIM can help the BRI avoid a spiral of non-coordinated activities, thereby preventing loss of investment. The formation of a transdisciplinary BRI Management Academy that uses PrIM would help create the necessary infrastructure for a successful and transparent implementation of the BRI.

**Keywords:** Economic sustainability, Belt and Road Initiative, Multi-stakeholder integration, Global governance, Knowledge transfer, Targeted open innovation, Intercultural communication, Communication model, Peirce

## Introduction

Industrialization and a growing world population inevitably entail exploitation of natural resources and environmental pollution. In the context of China's economic growth and its emerging new global leadership role, environmental protection is becoming an

increasingly pressing issue. The Belt and Road Initiative (BRI), the contemporary reinterpretation of China's 5000-year-old Silk Road, aims to build a trading infrastructure and network for international cooperation and inclusive globalization, with shared benefits for all co-developing partners. In general, developing countries seeking access to global markets through investment and infrastructure are more open to China's new strategy than economically leading countries that fear losing their position in the global marketplace. Matching the various prerequisites and interests of the international development partners in this megaproject implies a wide range of challenges to achieve economic sustainability including the related social, environmental, and cultural aspects. At a functional level, it is necessary to develop appropriate legal conditions and frameworks for cooperation. On a cultural level, participants need to improve intercultural sensitivity and communication skills in order to better understand one another, learn from each other, and overcome prejudice and unconscious bias. This article aims to explain Pragmatic Identity Matching (PrIM) as a planning system for managing economic sustainability with an appropriate framework and tools for coordinated interaction that is transparent to all BRI participants. PrIM is a structural-scientific approach that helps to overcome unilateral self-referential mindsets and the limited suitability of planning methods in political and economic communications. PrIM's process design significantly minimizes loss of investment. It reduces or removes existing barriers and increases the ability to develop innovative sustainable solutions. The PrIM-BRI case study demonstrates the integration, alignment, and matching of multidisciplinary content, and how the BRI vision can be accomplished long-term. The author suggests establishing a *BRI Management Academy for Economic Sustainability* with interdisciplinary experts and governmental representatives to serve as a global steering committee. The final comparison of the PrIM model with linear and circular communication models highlights its integrative properties for implementing the BRI. PrIM purposefully takes a holistic view to incorporate and meet environmental, cultural, and social requirements for managing global economic sustainability. The interdisciplinary research is based on literature in the fields of philosophy, semiotics, social sciences, communication sciences, and economics. The case study refers to research on China and the BRI (Fig. 1).



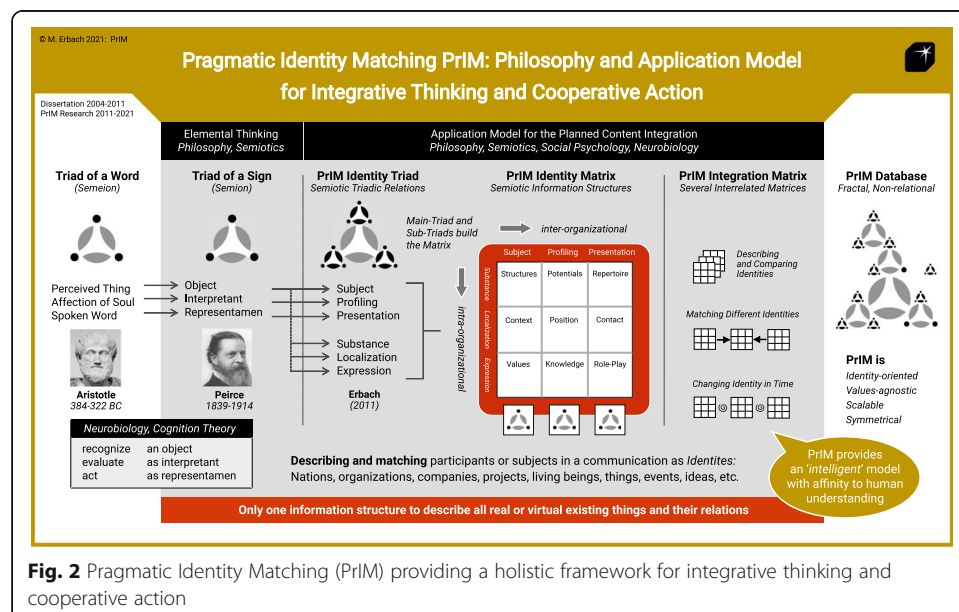
**Aim and method: PRIM as a framework for managing economic sustainability****Challenges and aims**

There are a wide range of challenges to accomplishing economic sustainability. Planning the BRI must take into account the various prerequisites and development interests of the international development partners in Asia, Africa, Arabia, Russia, and Europe. To minimize loss of investment, an integrative and effective cross-level BRI management requires the political, institutional, and professional support of each co-developing BRI partner. Another challenge lies in defining appropriate legal conditions and developing suitable contracts and frameworks of cooperation (Lingliang, 2016). At an individual level, discrepancies between the participants' repertoire and modes of expression need to be bridged through training and instruction, to reduce misinterpretations while striving to understand and accomplish the BRI tasks (Akhtar et al., 2019). Boosting the participants' intercultural sensitivity is vital for accepting, adapting, and integrating different cultures (Bennett, 1993). The term "intercultural communication competences" (Chen, 2014) refers to an individual's self-awareness, ability for social adjustment, and mode of interaction. This also applies to institutional and entrepreneurial competencies for adapting political as well as economic communication and interaction. Given the complex global value creation networks of production and trade, including their impact on societies and the environment that the BRI involves, there are no alternatives to global cooperation. Since China is changing its role from the "work-bench of the world" to the "smart factory of the world" (Bertelsmann Stiftung, 2015). Chinese initiatives require alignment to Western technologies and experience. Existing knowledge should be used to support China in developing solutions to cover gaps related to environmental sustainability, resource management, urbanization, manufacturing, innovation, research, and internalization. Merging the knowledge, experience, and expertise of BRI partners can revolutionize social, economic, cultural development, and innovation in the West and lead China to solutions that are globally sustainable in terms of the economy and environment (Benintendi et al., 2020). Another issue to discuss is the international perception of China and its rapid development in relation to current, reality-based facts. The invitation to join the global project and share the powerful vision of the Chinese BRI challenges Western nations to reduce and overcome the prejudice and fear that often result from incomplete, missing, or wrong information in the media (von Senger, 2018). Managing economic sustainability requires—all differing political positions, cultures, and existing resentments aside—a careful analysis and critical reflection on China's official commitments and substantial contributions to the World Health Organization (WHO), World Trade Organization (WTO), and the Paris Agreement. Many nations that have become involved in the BRI report positive experiences in their cooperation with China (Bertelsmann Stiftung, 2019). In globally interwoven political, intercultural, and economic relations, one-sided thinking by nations or companies will not lead to economic sustainability that encompasses cultural, social, and ecological aspects at both the local and global level. The economic sustainability of the BRI can only be achieved if it results from reciprocal understanding between the parties involved, based on multilateral communications. Every nation, organization, or company in the BRI has a unique identity with specific history and culture, its own developmental goals, and associated perceptions of reality. In order to avoid

misunderstandings in contributing to and benefiting from the BRI, it is crucial for participants to learn from one other through multilateral knowledge sharing at all levels of the project. To accomplish these tasks, this article aims to provide a suitable framework for coordinated interaction and a planned matching process that is transparent for all participants. PrIM as the applied method will be explained in the ensuing essentials and in the case study for managing the economic sustainability of the BRI.

### Instruments and methods

Pragmatic Identity Matching (PrIM) is a structural-scientific approach (Erbach, 2011) that provides the framework and tools to overcome unilateral self-referential mindsets and the limited suitability of planning methods in political and economic communications that goes along with them. PrIM integrates “the other viewpoint” in a given communication, and provides the benefit of a *systematic impartial comparison* of different needs, making them comprehensive and negotiable with an information model, the *PrIM Identity Matrix* (Fig. 2). It enables the full description and planned matching of different preconditions and interests between participants and subjects in a communication. For the global implementation of the BRI, for example, with multiple local partners, the scientific preparation of data with PrIM provides a framework of interaction that enables and inspires integrative thinking and aims at cooperative action: Existing barriers are eliminated or reduced, the ability to act increased, and solutions created. These features characterize PrIM as a structural-scientific approach as well as a heuristic process for developing new synergetic thinking. The PrIM philosophy, its application models, and its flexible methods result from interdisciplinary research. In conceptualizing PrIM as a holistic approach, insights from semiotics, cognition theory, systems theory, developmental psychology, and heuristics were included to validate PrIM for planning content integration in multilateral communications for economic sustainability management, as in the BRI. The notion of PrIM combines two theories:



**Fig. 2** Pragmatic Identity Matching (PrIM) providing a holistic framework for integrative thinking and cooperative action

an information model based on “pragmatism” as defined by Charles Peirce (the founder of semiotics), and a social-psychological understanding of identity development as “identity matching.” The following comments on Fig. 2 will be explicated in depth in the “Creative and structural dimensions of the PrIM Identity Matrix and its potential for the BRI” section.

The PrIM approach to information structuring relies on elemental thinking in philosophy (Aristotle 384–322 BC), later updated by Peirce (1839–1914) for the Modern Age. His *Triad of a Sign* corresponds to findings in neurobiology (Fig. 2, left). Translating the “sign” as “identity,”<sup>1</sup> the PrIM Identity Triad and its transformation into the PrIM Identity Matrix (Fig. 2, center) provide a customizable application structure for the detailed description of every “thing,” may it be real or virtual. The expansion and detailing of information using the fractionalization process inherent to the system is suitable for implementation with information technology (IT) and artificial intelligence (AI) (Fig. 2, right). When applied to all sides of a given communication, the matrix impartially compares each piece of content it contains, and matches individual content components with one another in a planned manner according to the analogous information modules of the same scheme. There are numerous possible uses: describing, comparing, distinguishing, evaluating, and matching identities; changing identities as a long-term goal, etc. The universal applicability of PrIM derives from Peirce’s assumption that all real or virtual things are “signs” (Wirth, 2000). With the PrIM Identity Matrix, nations, organizations, companies, projects, living beings, things, events, ideas, etc. can be interrelated and matched *with a single information structure*. This makes PrIM an instantly applicable, transparent, and efficient management tool for managing complexity and diversity. The participants of the BRI, for example, can integrate, store, and match every contribution including any content related to it in the dynamic PrIM interaction framework and database. A web-based multi-user application simplifies the management and integration of multilateral content, and provides worldwide access for any specific purpose at any time.

The content of a customized PrIM Identity Matrix is generated from questionnaires with closed and open questions (with or without scoring), which are answered by participating parties for each information module. Further information can be added in based on research, collected inputs, and databases, in any degree of detail, as needed. The matrix structure allows for implementing targets (i.e., improvement targets from previous analyses, specific targets to accomplish a goal, or an overarching vision) and for defining purposes (i.e., sustainability, quality management, innovation; or functions and roles in a cooperation). Guided by the underlying semiotic information structures, these tools and their flexible usability turn the PrIM Identity Matrix into an “intelligent model” analogous to human understanding. In economic, scientific, and political contexts, PrIM can bridge the gap between different cultures, perceptions, and goals. The PrIM Identity Matrix is in essence

- *identity-oriented* (can describe each co-developer precisely),
- *values-agnostic* (neutrally compares and matches different preconditions and interests),

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<sup>1</sup>The notion of identity and its translation with the semiotic triad to the PrIM application model will be explained in [Creative and structural dimensions of the PrIM Identity Matrix and its potential for the BRI](#) section.



- *scalable* (suitable for virtually any size project, no matter how large or how small), and
- *symmetrical* (negotiates the various participants' interests while always maintaining mutual respect).

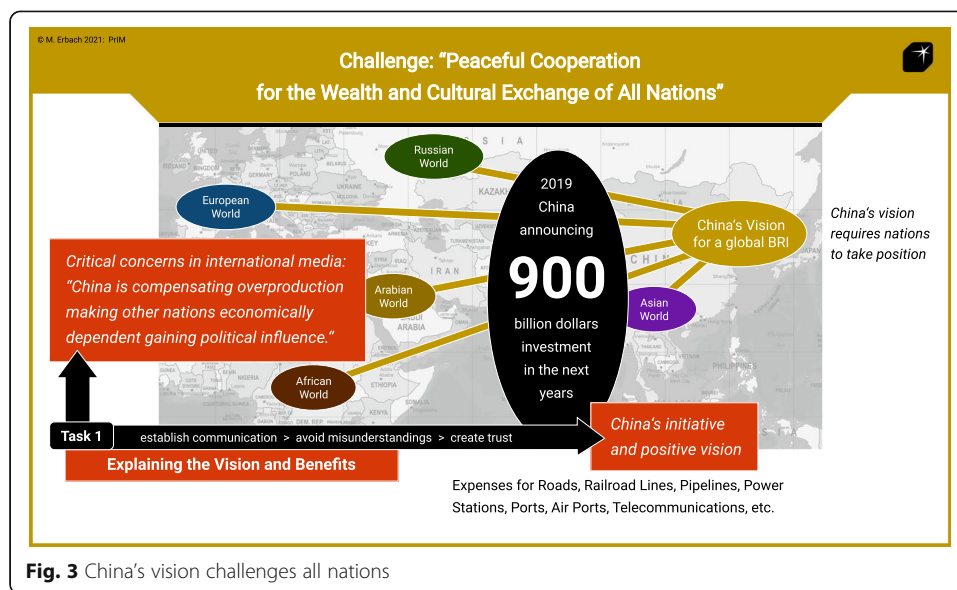
The PrIM instruments and methods have been developed and proven in innovative applications.<sup>2</sup> Under the guidance of well-trained moderators, PrIM becomes a participative framework to co-orient the parties involved in any type of cooperation: from small projects with “merely” bilateral relations to large collaborations in multilateral communication settings. The formal integration process within the dialog-oriented PrIM framework can directly involve representatives of the BRI stakeholders on each level from local to regional to national and international (governments, institutions, companies, universities, research institutes, etc.). Previous experiences with PrIM have shown that its application does not require the participants to have particular prerequisites or communicative training other than their individual skills and project-related functions. PrIM helps to evolve and improve intercultural sensitivity and communication competences during a project. PrIM helps to overcome participants' unconscious bias in cross-cultural relationships. However, the success of a PrIM process depends on the participants' willingness to dedicate themselves to the project, to share their knowledge with others, and to learn from one another in the PrIM integration system.

The application of PrIM to the management of the economic sustainability of the BRI is the purpose of this article. After outlining the intention and perceptions of China's global BRI vision, and after discussing the global challenge of economic sustainability, we recommend PrIM as an integrative planning system for global economic sustainability of the BRI. Deepening the PrIM dimensions and its potentials to support the BRI leads to the case study, the process design for managing economic sustainability with PrIM, ideally supported by a BRI Management Academy. The results highlight the integrative properties and limitations of PrIM. The conclusions emphasize the bridge-building nature of PrIM as a philosophy and an application model.

### **The Belt and Road Initiative: intention, vision, and international perception**

In 2013, Xi Jinping proposed the BRI as a contemporary reinterpretation of China's 5000-year-old Silk Road, the planet's oldest global trade route. It is essentially a strategic concept for interconnecting numerous trade partners around the world using land and sea routes (Fig. 1) (Jinping, 2013). The Chinese initiative aims to build a trading infrastructure and network for international cooperation and inclusive globalization, with shared benefits for all participating nations. China has signed cooperation contracts with more than 126 countries and cooperation documents with 29 international organizations in connection with this global initiative (Xinghua.com, 2019). The BRI covers more than 68 countries, 4.4 billion people, and up to 40% of global GDP (CNN.com,

<sup>2</sup>Pragmatic Identity Matching applications in Germany since PrIM was developed in a dissertation (Erbach, 2011): developing organizational identity in companies in various industries; innovating church congregations of the Protestant Church; preparing a legislative proposal for the re-schooling of youth who are considered untrainable; managing customer-oriented quality for a company in the medical sector including the preparation for ISO certification (ISO 9001:2015); developing an entire MBA program including the curriculum; developing a management concept to implement the structural change of the lignite region Lusatia 2020-2050. PrIM is published internationally. Since 2015, the *PrIM Academy* educates on demand members of institutions, companies and organizations to qualify as *PrIM Moderator*.



2017), and is growing constantly. With planned investments of \$900 billion for transport and communications infrastructures, China is launching the largest investment by a single country in the history of humankind (Time.com, 2017). Financial experts estimate that implementing the BRI project in depth will involve a much higher investment of \$4 trillion to \$8 trillion. Xi Jinping's BRI vision is for a *peaceful cooperation for the wealth and cultural exchange of all nations*, and requires all countries to take a position. By explaining the BRI vision based on the fundamental and idealistic concept of a *community of shared future for humankind* (Zhang, 2018), Xi Jinping is evolving the theoretical and practical guidelines for Chinese diplomacy. The importance of this unifying concept and its global value as a point of orientation was confirmed in a United Nations Security Council resolution (UN, 2017).<sup>3</sup> The Party Constitution of the Communist Party in China (CPC) enshrined this vision into the constitution of the People's Republic of China (PRC) in March 2018 (Chinadaily.com.cn, 2018). *China sees itself not as a rising, but as a returning power*, argued Henry Kissinger (Kissinger, 2012). As a fast-growing economic power, China is seeking a new pattern of power relations that avoids mistakes made in the past (Bush, 2013). The new principles of Chinese policy seek to build dialog mechanisms that consider the key national interests of its international partners while realizing China's objectives. China wants to achieve its economic goals through "*peaceful cooperation in friendly competition*," and explicitly not with colonialism or weapons. The Chinese government sees the definition of mutual goals as an expression of respect for nations and their history and their respective economic and political systems (Hartmann et al., 2018). One important task China faces is "Explaining the BRI Vision and its Benefits" (Fig. 3) to establish communication, avoid misunderstandings, and build trust. Xi continues to support the opening of China, in

<sup>3</sup>China has been promoting its proposal to create a *community of shared future for mankind* (Jinping, 2018) since 2012. It was adopted in the UN Security Council resolution 2344 on 17 March 2017, "... to promote security, stability and economic and social development in Afghanistan and the region to create a community of shared future for mankind." It is expected that this claim will be further used in other resolutions.



line with the 30-year plan to make the People's Republic the wealthiest nation in the world by 2049.

To achieve these goals, Xi is fighting corruption and striving for undisputed power for his presidency and the Communist Party as a steering committee in the multicultural and multi-ethnic nation of China. It is evident that Chinese leaders take a very long view in their planning and actions (von Senger, 2018). In brief, the five cooperation priorities of the BRI are (1) *policy coordination*, i.e., intergovernmental international cooperation; (2) *connectivity between facilities*, i.e., cross-border transport and infrastructures; (3) *unimpeded free trade*, i.e., the elimination of barriers to investment and business; (4) *financial integration*, i.e., institutionalized systems for currency stability and credit; and (5) *people-to-people bonds (interpersonal ties)*, i.e., friendly relations, partnerships, and collaboration. The BRI has not yet been conceptualized from a legal point of view regarding degrees of partnership and forms of relationship with the nations involved. The BRI is prototype model for developing the fundamentals of Global Governance with new inspiration and energy for world peace and development (Lingliang, 2016).

The BRI is such a new and dynamic project that there is no overview of its perception by other nations yet. In general, developing countries seeking access to global markets through investment and infrastructure are more open to China's new strategy than economically leading countries that fear losing their position in the global marketplace. Critics are concerned about the following issues: China would invest mainly in countries with rich natural resources and questionable governments, and hire its own Chinese workers and experts instead of training and employing local populations. Moreover, China's development assistance would mainly follow Chinese goals and not align with international development goals and programs (Brautigam, 2009). China would not take into account the ability of developing countries to repay their debt, which increases the risk of new debt traps for low-performing economies (Noesselt, 2019). While China bases its concept of human rights on the prosperity of the entire population (i.e., making sure everyone lives above the poverty line), Western voices argue that this would impair individual freedoms (von Senger, 2018). More differentiated voices depict the rise of China and its expanding influence as a historical reflection on Western neoliberalism. China is following a process of integration into existing international institutions and structures in order to achieve a multipolar transition (Chin, 2010). If one views China as a *learning autocracy capable of adapting to changes by selecting best practices from other nations*, China is developing toward a *hybrid system between democracy and autocracy* (Noesselt, 2019). The critical perception of the BRI does not reflect the many positive experiences of well-functioning cooperation with BRI participants on local, national, and international level. Evaluating Chinese and Western investments in the BRI, a recent study by the Bertelsmann Stiftung foundation reveals that Chinese BRI investments have encouraged other countries to collectively invest at least as much as China in local infrastructures. So in general, international economies will benefit from the BRI (Bertelsmann Stiftung, 2019).

### **Discussing the global challenge of managing economic sustainability**

Industrialization and a growing world population inevitably entail exploitation of natural resources and environmental pollution (Benintendi et al., 2020). In the context of

China's economic growth and its emerging new global leadership role, environmental protection is becoming an increasingly pressing issue for China's BRI. The Communist Party now realizes the importance of sustainability in terms of not just economic, but also political, cultural, and social development. The growing purchasing power of the Chinese people has changed their awareness of ecological challenges and development policies. China's burgeoning middle class demands consumer goods and services commensurate with the lifestyles of Western countries, which has significantly increased global greenhouse gas emissions. Defining a sustainable lifestyle has become a major challenge in China, and the government is tackling it with policies and laws. It appears that only a combination of education, social incentives, and authority can help to meet the environmental protection performance targets. Achieving the goals of the UN Agenda 2030 (UN, 2015) is a big challenge for China's government (Hägele, 2019). In 2007, China launched the concept of *Ecological Civilization* as a domestic strategy and policy to govern interactions between all citizens and nature. The concept was enshrined in the Chinese constitution in 2012 and led to the Environmental Protection Acts of 2014 and 2015. China signed the Paris Agreement on climate action in 2015, and global efforts to achieve green growth, green finance, and sustainable solutions along the New Silk Road became official goals of the Communist Party (Noesselt, 2019). Regarding environmental sustainability, resource management, urban planning, production, innovation, and research, the BRI offers multiple options for capitalizing on merging the knowledge and experience of China and its Western partners (Benintendi et al., 2020).

Regarding the long-term goals of Western countries, it seems—in a nutshell—that the neo-liberal model of capitalism based on competition is neither suitable for accomplishing common long-term goals on an international level, nor for stable balanced societies on a national level (Piketty, 2014). In many Western economies, the shift from stakeholder value (the value created benefits a variety of parties) toward shareholder value (the owners receive all the benefits) has undermined and destroyed the inherent bonds that hold a society together (Walker, 2019), and is thus incompatible with the goal of sustainability. Another reason for failing long-term goals in Western democracies is the frequent change of government due to short election periods and opposing political parties. In addition, many Western governments are dependent on their business community, so that lobbyism influences law and regulations. The inability to purposefully deploy economic resources and capabilities as a coordinated economic force makes it difficult for neo-liberal markets to name overarching goals such as the BRI vision. The economic principles of maximizing profit by increasing production, expanding markets and sales, as well as exploiting natural and human resources do not consider “sustainability” in their bottom-line calculation: environmental and societal impact are simply not included on the “bill” or in the repertoire of classic business practices. In business planning (Becker, 2009), which always seeks a “calculable profit,” there is no “cost position” for sustainability that would be legitimized by a “measurable return on investment.” In contrast to communism, capitalism does not explicitly include social implications in its value system. “The public” represents a “segmented marketplace” in which various “target groups” are addressed with advertising “campaigns” in order to create “images” that promote the consumption of goods. “Meeting needs” refers to “selling products,” not addressing societal requirements. Negative

impacts on the natural and social environment are merely dismissed as “external costs” (Göpel, 2016). Following economic logic, investing in sustainability is “*negative for the bill*” or a one-sided “*waste of money*,” because “*sustainability does not pay and puts companies at a disadvantage*,” as Donald Trump justified in 2017 (Klare, 2017) the US withdrawal from the Paris Agreement in 2019 (Harrabin, 2019).

Regarding alternative long-term economic concepts that integrate social and environmental goals, a purely economic view with its mathematical equations and monetized numbers does not explain the trade-offs behind the cost–benefit weighting in the quantification process.

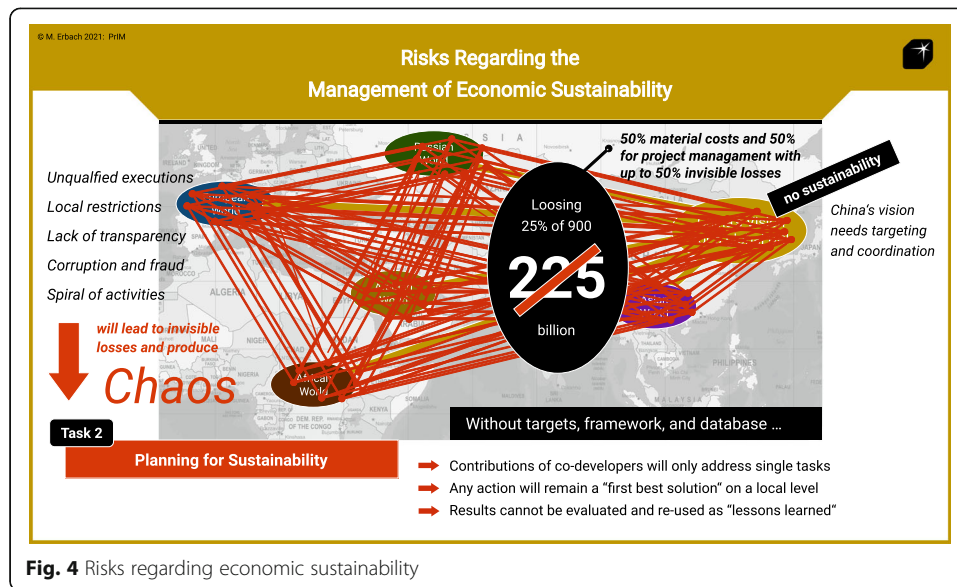
The models running predictions of growth, employment, productivity, and competitiveness are equally intransparent and based on the assumptions that nature and humans can be freely substituted and should move around in the correct amounts needed for efficient markets. This is very unhelpful for informed decision-making. For democratic decision-making, it is a real problem. It means one can present computational graphs and numbers instead of having to make serious ethical and moral judgments explicit because they might be politically risky or detrimental for the justification of one’s privileges. (Göpel, 2016, 163).

### **Proposing PRIM as an integrative planning system for global economic sustainability**

The sustainable implementation of China’s BRI is associated with numerous challenges and risks. *A transparent planning system for economic sustainability is required* to safeguard China’s own \$900 billion investment as well as the investments of its international partners. It is well known that in non-coordinated international projects, unqualified executions, unforeseen local restrictions, and corruption can devour up to 50% of the local on-site management budget as “invisible losses,” caused by corruption, illegal cartel agreements, theft, fraud, etc. Assuming that BRI allocates 50% of expenses for material costs and 50% for on-site realization, one can expect “invisible losses” of 25% of \$900 billion in total—i.e., as much as \$225 billion—with no progress made toward sustainability. Invisible losses of 25% of the BRI investments can be considered a conservative estimate,<sup>4</sup> especially as this only takes into account the investments announced by China. According to the study cited above (Bertelsmann Stiftung, 2019), the countries participating in the BRI will invest at least an equal amount. If these investments and all the invisible losses they entail are added to the total, these losses could easily double. The goals can only be achieved by means of integrative “*Planning for Sustainability*” (Fig. 4). Unless all participants in the project are addressed and coordinated, the BRI is likely to end up being an uncoordinated spiral of activities and interactions, where the contributions of co-developers will address single tasks with actions

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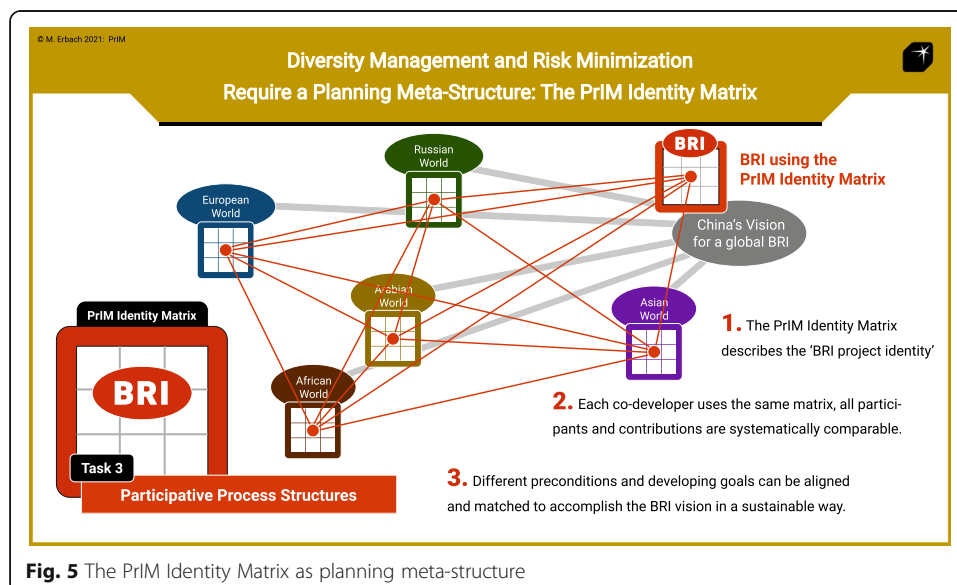
<sup>4</sup>Important sectors of the German economy lost around 18 percent of their legal annual sales revenue in 2017 to corruption, illegal cartel agreements, and undeclared work (Enste, 2019). Germany ranks 11<sup>th</sup> out of 180 countries in the International Corruption Index 2018 (Transparency International, 2018). Considering the rating of China (rank 87) and the average rating of the countries involved in the Belt and Road Initiative, which almost all perform worse than Germany or China on this corruption index, 25% of the ‘invisible losses’ of BRI investments can be considered a conservative estimate.



**Fig. 4** Risks regarding economic sustainability

that will remain “the first best solutions,” and where results cannot be evaluated and “re-used” as “lessons learned.”

To ensure the economic sustainability of the BRI requires matching economic, social, cultural, environmental, and institutional dimensions for their best possible synergy at a global level. This is a highly complex task (Spangenberg, 2005), and PRIM provides a novel proposition for an efficient solution (Fig. 5). In a first step, the customizable information structure of the PRIM Identity Matrix is used to describe the BRI as the “project identity,” which leads to a “*BRI Identity Matrix*” (Fig. 5(1)). Similarly, in a second step, the PRIM Identity Matrix is used to describe each co-developing partner of the BRI as an “identity” (Fig. 5(2)). This makes all participants and their contributions systematically comparable. The matrix also helps to promote consensus for the entire BRI project by allowing the BRI vision to be implemented as a guideline for each developing



**Fig. 5** The PRIM Identity Matrix as planning meta-structure

partner. In a third step (Fig. 5(3)), the modular information structures of the various PrIM Identity Matrices of the co-development partners enable a systematic comparison, alignment, and matching of the various prerequisites and development goals so that the BRI vision can be implemented in a nuanced and thus sustainable manner. The structural-scientific PrIM Identity Matrix can be customized either as a top-down or bottom-up planning tool for all integration issues. It offers differentiated ways to implement sustainable solutions on the spot as needed. PrIM represents an integration infrastructure, not an ideology. It focuses on the identity of the BRI participants in their environment, and their contribution to the global project. PrIM stands above any particular, subjective perception of reality. Its “position” is the meta-level, it does not “have” or “prefer” any one opinion. Nevertheless, a given “content item” can of course describe a BRI-developing partner’s specific interest or position as a subject for further negotiation. The PrIM Identity Matrix integrates any content relating to a BRI participant’s identity or to the project and presents it in a transparently structured, impartial manner. By matching the related potentials of participating partners, PrIM can identify options for solutions that were previously literally “inconceivable.”

### **Creative and structural dimensions of the PrIM Identity Matrix and its potential for the BRI**

As outlined in “[Introduction](#)” section, PrIM provides a framework for integrative thinking and cooperative action for the global implementation of the BRI with multiple local partners. This section substantiates the universal applicability of PrIM as an information-structuring approach with a truly transdisciplinary concept that comprises semiotic, cognition-theoretical, systems-theoretical, psychological, and heuristic dimensions.

**The semiotic PrIM dimension** builds on the concept of the semiotic triad. Aristotle (384–322 BC) described the relationship between the *spoken word* (as the *semeion*), that stands for a *thing of perception* and its personal interpretation with an *affection of the soul* of the speaker. In extension of this elementary model, Charles Peirce (1839–1914) declared that not only words but *everything* represents a “sign,” including objects, living beings, events, organizations, ideas, etc. His update of the person-related “triad of a spoken word” to the general “triad of a sign” replaced the “affection of the soul of the speaker” with the neutral term “interpretant” (Fig. 6, left). The semiotic “Sign” as defined by Peirce interrelates the terms

- Object: a real or virtual thing that is perceivable.
- Interpretant: interpretation of a perceived thing according to its effects, purposes or possible uses.
- Representamen: representation to the mind of an interpreted thing with an effect or identified use.

Peirce’s triad implies the fundamental semiotic postulate “that ‘semeiosis, or [the] action of a sign’ (CP 5.473, 1907) is indispensably triadic: ‘Indeed, representation necessarily involves a genuine triad. For it involves a sign, or representamen, of some kind, outward or inward, mediating between an object and an interpreting thought.’” (Nöth, 2011 pp. 448, referring to CP 5.473, 1907 and CP 1.480, 1896). With his triad of a sign, Peirce 1878 postulated the “Pragmatic Maxim” in *How to Make Our Ideas Clear*: “Consider what effects



that might conceivably have practical bearings we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object.” (Oehler, 2000, p. 14, referring to CP 5.402). The Pragmatic Maxim directly corresponds with Aristotle’s linguistic view about meaning: “Spoken words are symbols of affection in the soul, and written letters are symbols of spoken words. And just as written letters are not the same for all humankind, neither are spoken words. But what these are in the first place signs of—the affections (*pathemata*) of the soul—are the same for all, and what these affections are likenesses of (*homoiomata*)—actual things (*pragmata*) are also the same.” (Aristotle, in: *De Interpretatione*; Chapman & Routledge, 2005, p. 4). By transferring Aristotle’s explanations into the Pragmatic Maxim, Peirce brought the powerful ancient linguistic concept into the consciousness of Modern Age. It conceptualizes the insight that the perception of reality is based on individual interpretation in a universal model. “A sign is a representation to the mind” (Nöth, 2011).

**The cognition-theoretical PrIM dimension** builds on findings from neurobiology (Roth, 2019) and psychology of action (Neyer & Asendorpf, 2018) that reveal the logical coherence and effectiveness of the semiotic triadic model (Fig. 6, left). Humans *recognize or search for an object* as a perceived thing (consciously or subconsciously). As *interpretant*, they *evaluate* its meaning (anticipating, expecting, or experiencing an effect, use, or a gratification). They *act as a representamen* of their (conscious or subconscious) decisions and behavior by selecting and using it (Erbach, 2011). They re-evaluate the *object* according to their experience or satisfaction as *interpretant* in a process of re-coupling and learning. Identities or subjects in a communication can be very differently perceived. Peirce explained, “The term ‘representation’ is here to be understood in a very extended sense, which can be explained by instances better than by a definition. In this sense, a word represents a thing to the conception in the mind of the hearer, a portrait represents the person for whom it is intended to the conception of recognition, a weathercock represents the direction of the wind to the conception of him who understands it, a barrister represents his client to the judge and jury whom he influences.” (Peirce, cited in Nöth, 2011, 447; ref. to CP 1.553, 1867). Anything can be a “sign” as long as individual perception associates a meaning to the mind with it.

**The systems-theoretical PrIM dimension** relates to communication sciences and brain research. The assumption “there is no ‘information’ in our environment. (...) Information in the sense of ‘meaning’ happens only in our mind” (Luhmann, 1995; Schmidt, 2000) considers participants in a communication as *separate systems of consciousness* that interpret each other according to their specific given *repertoires of meaning* and their respective prevailing culture, knowledge, and use of codes (language, alphabets, methods, etc.). They cannot submit a “meaning” like a parcel; they only can produce signals such as light waves and sound waves. It is biologically not possible to share reality and consciousness with others, except as shared illusion of minds. A brain has no physical contact to the environment or to other brains (Eckoldt, 2014). The semiotic sense-structuring PrIM Identity Matrix (Fig. 6) can be understood as *interface between communicating consciousness systems*, as a mutual code or convention for self-description based on experienced self-awareness or for the description of a perceived and interpreted counterpart. This qualifies PrIM for interrelating different cultures and their understanding of reality. The instruments, methods, and processes interrelating the PrIM Identity Matrices of the BRI participants (Figs. 7, 8, and 9 in “Case study:



process design for managing the economic sustainability of the BRI with PrIM” section), provide the features of systems theory and cybernetics (Vahs, 2019). PrIM is

- holistic and interdisciplinary (all relevant system elements are interrelated and coordinated)
- environmentally oriented (open system combining internal with external systems and relationships)
- dynamic (updates any information related to systems and processes, the included system can learn)
- self-regulating and self-organizing (keeps the system structures while the systems may interact freely)
- communicating (serves to mediate between scientific theories and practical process design)

**The psychological PrIM dimension** builds on a notion of developmental psychology: (Oerter & Montada, 2002): The development of an individual’s identity is an integration performance of intra-individual development by understanding and learning, and inter-individual development by impulses and mirroring in social feedback. This happens in a dynamic process of *identity matching* with oneself and with the environment in order to achieve a strong self as a whole. Identity strives for cohesion, stability, and recognition, for oneself and in social relationships (Keupp & Höfer, 1998; Keupp et al., 1999). PrIM transfers this principle to organizational identity (government, institution, research facility, company, organization, project, cooperation, etc.). The *semiotic PrIM Identity Triad* translates the inter- and intra-organizational identity development structures with its main- and sub-triads (Fig. 6, center).

**The heuristic PrIM dimension** results from the “intelligent” nature of the PrIM semiotic information structure itself that inspires participants to curiously explore the own identity in relation to others in an open-minded process of exchange and learning. Before his critical analysis of political economy, Karl Marx wrote his doctoral thesis in philosophy about the ancient Greek natural philosophers Democritus and Epicurus. Democritus<sup>5</sup> (459–370 BC) was one of the first thinkers who—intentionally or not—set up systems-theoretical principles. He visited most cultures in the known world of his time, developing a border-crossing treasure of knowledge and an explicit sense of diversity and plurality. He was acknowledged as a humorous and “all-knowing” man. “Truly prolific, he would be judged the first Greek encyclopaedic mind by Marx and Engels.” (Vamvacas, 2009, 210). His observations of nature, his exchange with other cultures, and his intensive multidisciplinary scientific studies led him far beyond the knowledge of his time. He developed an early *theory of atoms* that explains the consistency of matter with invisible very small parts (*atomos*). Democritus declared each thing and individual is a multitude and postulated “*Anthropos mikrós kósmos*,” every human is a micro-cosmos, or tiny universe. Democritus’ thinking influenced Aristotle’s early semiotic *triad of a spoken word*, which emphasized that “the soul is in a certain manner all things. (...) In man, somehow, all the complexity and all innumerable facets of the universe meet.” (Yela, 1987, 246). Democritus scaled his

<sup>5</sup>Latinised form of (*Demokritos*), a Greek name meaning “judge of the people” from the elements (*demos*) meaning “the people” and (*krites*) meaning “the judge, critic.” (<https://www.behindthename.com/name/democritus>).

microcosm theory to the macrocosm and concluded that everything is contained in everything, and humans can learn from everything. Plutarch reported, “Democritus says we are students of [non-human] animals in the greatest things: of the spider in weaving and mending, or the swallow in house-building, and of sweet-voiced [animals], the swan and the nightingale, in song, by imitation.” (Menn, 2015, 18). Democritus claimed that humans and animals receive different impressions of truth according to their different senses. Thus, Democritus set up systems-theoretical principles acknowledging that every individual and every culture has its own unique perception of reality. Learning from other cultures in friendly cooperation is the central message of the BRI’s vision. Sharing China’s vision of *peaceful cooperation for the wealth and cultural exchange of all nations* requires nations to take their positions with a critical self-awareness about their own perception of reality and to open up for intercultural exchange and learning beyond narrow-minded purely economic interests.

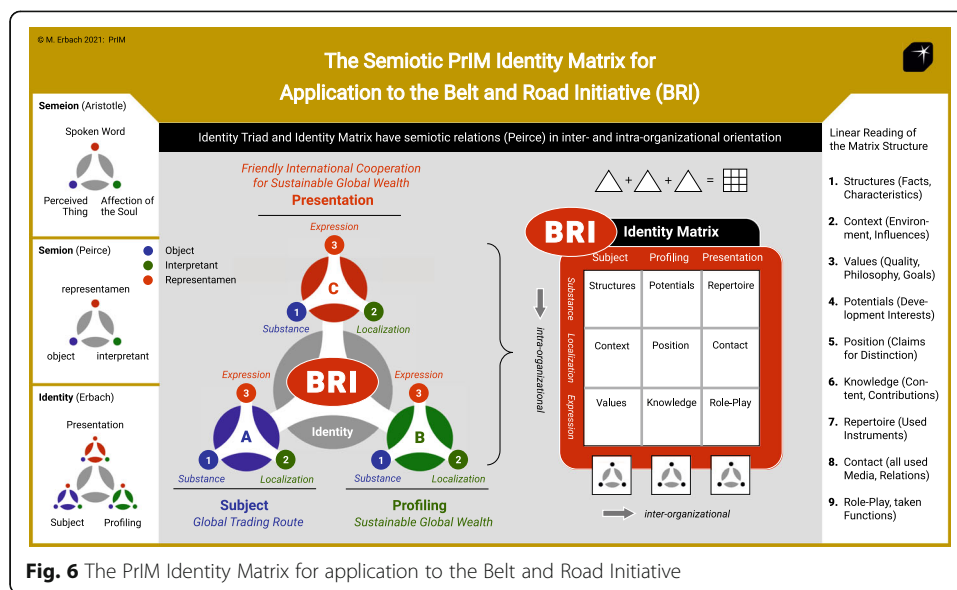
Considering the BRI as a growing and “learning” *Targeted Open Innovation (TOI)*<sup>6</sup> project, PrIM is the heuristic instrument that combines competences and knowledge on the matching matrices to produce new findings, synergies, and innovative solutions. China is the initiating global entrepreneur inviting the nations to share the proposed vision as the “target” for the mutual global implementation. The nations as co-developing partners exchange their knowledge to accelerate internal innovation and expand their markets to arrive at new solutions and advanced technologies (Chesbrough et al., 2006). If the participating nations are regarded as “*lead users, co-developers, and co-creators*” (Carayannis & Rakhmatullin, 2014), the BRI is the framework and driver for innovations to achieve economic sustainability and global prosperity. PrIM offers each participant a way to allocate and reflect their own position to best prepare for cooperation or adaptation as required within the BRI. The PrIM Identity Matrix turns the BRI into a *learning organization* seeking to accomplish the mutual vision efficiently and sustainably during all phases, from construction to development and consolidation.

***The PrIM Identity Triad and the PrIM Identity Matrix bundle these dimensions*** in order to provide transparent customizable instruments for planning integration processes between different participants or subjects in a communication. The PrIM Identity Triad represents individual or organizational identity in a semiotic triadic model that translates the psychological notion by mapping identity as a “sign.” The triad consists of

- Subject (ref. *object*): A participant or subject (individual/organizational characteristics/structures) in a context (environment, influences, market, project) with a conscience (quality, values, vision, philosophy).
- Profiling (ref. *interpretant*): Potential for action (options of use, potential to develop, capabilities, talents) with position (claims, purpose, distinction) and knowledge (contributions, information, messages).

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<sup>6</sup>The term *Closed Innovation* is used for patents for innovations that are developed in companies; the term *Open Innovation* (OI) relates to open source development by different participants; the notion of *Targeted Open Innovation* (TOI) refers to a guided but open innovation process conducted by an initiating entrepreneur to accomplish a (given or developed) mutual goal. For the TOI of the Belt and Road Initiative, the initiating entrepreneur is China and the mutual goal is the shared vision of *global wealth in friendly cooperation between nations*.



**Fig. 6** The PRIM Identity Matrix for application to the Belt and Road Initiative

- Presentation (ref. *representamen*): Repertoire used (resources, instruments), contact areas (media, networks), role-play (functions taken on, responsibilities).

The Identity Triad *Subject > Profiling > Presentation* emphasises the inter-individual (or inter-organizational) orientation (Fig. 6, center). To also depict the intra-individual (or intra-organizational) orientation, the corner points of the Identity Triad are detailed with sub-triads. The terms of the three sub-triads translate and maintain the semiotic triadic relation: “Substance” corresponds with *object*, “Localization” (of the Substance) corresponds with the *interpretant* (of the *object*), and the “Expression” (of the localized Substance) corresponds with the *representamen* (of the *object* and its *interpretant*). By strictly preserving the semiotic triadic relations at each level, the PRIM Identity Triad ensures its sense-structuring quality. Applying the triadic concept to the BRI’s identity, its subject (Peirce: *object*) would be “Global Trading Route,” its profiling (Peirce: *interpretant*) according to the BRI vision aims for “Sustainable Global Wealth” and its presentation (Peirce: *representamen*) is realized in “Friendly International Cooperation for Sustainable Global Wealth.” In a further step, the three sub-triads build the *PrIM Identity Matrix* (Fig. 6, center). The nine information modules derived from the PRIM Identity Triad provide the thematic content structure for including customized information to describe first the BRI as the project identity, and in further steps any participant or subject related to the project in detail as required. The PRIM Identity Matrix<sup>7</sup> provides both a linear A to Z identity development structure (Fig. 6, right) and a non-linear triadic information system consisting of six interlaced horizontal and vertical triads for content development in the required depth and detail. As a whole, a PRIM Identity Matrix represents a computable entity of identity-oriented information (dynamic document). Considering “identity” as “sign” (Erbach, 2011), the PRIM Identity Triad and the

<sup>7</sup>The PRIM Identity Matrix is a *developmental structure of identity* and should not be mistaken for a *personality model* based on a psychological view of man. Beyond that, the PRIM Identity Matrix can describe and compare different personality models for evaluation.

PrIM Identity Matrix can be (according to Peirce's postulate "*everything is a sign*") applied to any entity of information: culture, nation, corporation, organization, individual, group, project, cooperation, concept, event, idea, etc. As each matrix information module can be customized with individual content, *the PrIM Identity Matrix represents a nearly universally applicable information structure for the individually tailored description and development of each participant or subject as an "identity"* (Figs. 2 and 6).

### Case study: process design for managing the economic sustainability of the BRI with PrIM

The PrIM Identity Matrices as described above (see Fig. 5 "*The PrIM Identity Matrix as planning meta-structure*", and Fig. 6 "*The Semiotic PrIM Identity Matrix for Application to the Belt and Road Initiative*") form the basis of the process design for managing the economic sustainability of the BRI. Using these matrices allows for a transparent simultaneous description and comparison of each individual information module of every identity matrix in the entire project (Fig. 7). The left column of the BRI Identity Matrix diagram and of each international partner's matrix makes it possible to compare and align the global structures, global economic context, and mutual vision of the BRI with the structures, economic conditions, and goals of each BRI partner. The middle column allows for comparing global with national potentials, claims, and shared knowledge, including all contributions. The third column compares and aligns the global BRI project resources with the resources of the partners, establishing the global communication network including all relevant contact levels, and defining the respective roles and functions of each BRI partner.

Within the global BRI Matrix, every single topic that addresses development requirements, i.e., specific solutions relating to technology, finance, resources, and local support, can be identified in interrelation to the whole project significantly reducing "invisible losses" (Fig. 4). Needs for action can be identified and addressed immediately in each individual matrix module while ensuring that the consequences for other parts of the project are understood. To gain precise and meaningful information for building

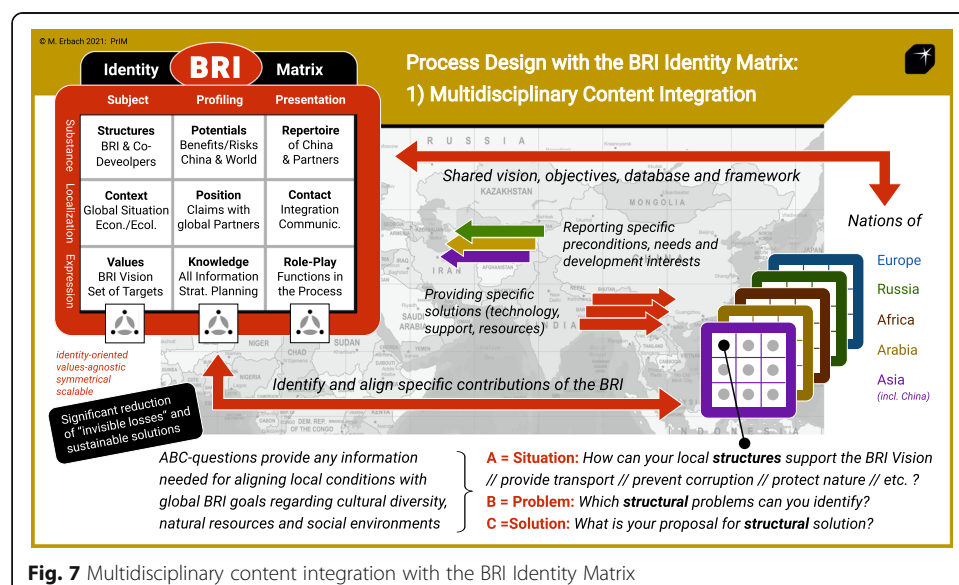


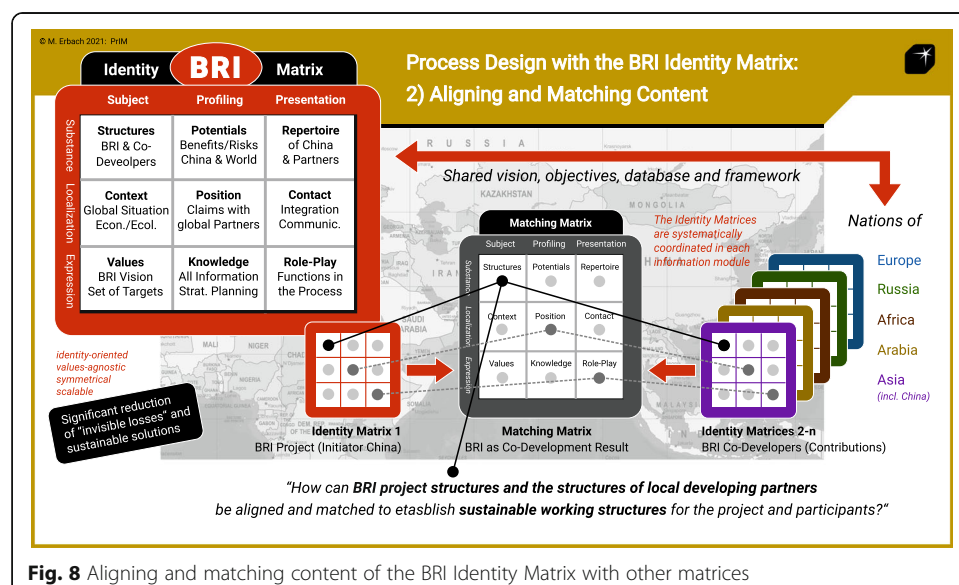
Fig. 7 Multidisciplinary content integration with the BRI Identity Matrix

the *BRI knowledge archive*, the participants in the BRI project answer ABC questions (Fig. 7), thereby providing the information needed for aligning local conditions with global BRI goals regarding cultural diversity, natural resources, and social environments. The A question always aims for a description of the given situation; the B question identifies the problems or tasks relating to this; the C question asks for a proposed solution. So for example, transferring this ABC standard questionnaire to the “structures” module would produce the following questions:

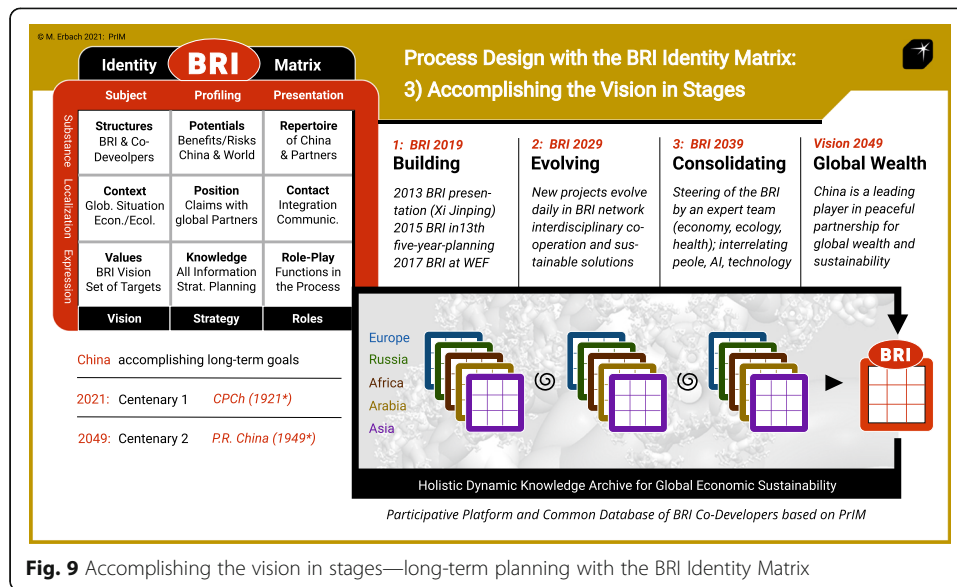
- A Question regarding the situation: “How can your local structures support the BRI Vision//or provide transport (if needed)//or prevent corruption (if known in this region)//or protect nature (if relevant to a production process)”//etc.
- B Question regarding the problem: “Which problems can you identify?”
- C Question aiming at solution: “What is your proposed solution?”

Using a PRIM Identity Matrix as a “*Matching Matrix*” (Fig. 8, middle) systematically interrelates the Identity Matrices of the co-developers to compare, align, and match each information module of every single matrix in order to build the BRI Integration Matrix, which represents the entire project as an identity. Continuing with our example of the “Structures” information module (left column in each matrix), the question for the Matching Matrix would be “*How can the BRI project structures and the structures of local developing partners be aligned and matched to establish sustainable working structures for the project and participants?*” Proceeding in the same way for all other information modules of the matrices will lead to detailed solutions for each identified problem for all project participants and for the BRI as a whole.

For the long-term planning of China’s global BRI (Fig. 9), the BRI Identity Matrix is dynamically updated in iteration loops for achieving an implementation of the BRI vision in realistic development stages. In Xi Jinping’s 30-year goal to achieve wealth for the Chinese people and participating nations by China’s centenary in 2049, China would be the leading global player, cooperating in peaceful partnership with other nations. The BRI Identity Matrix is the transformation model for step-by-step iteration processes and Chinese



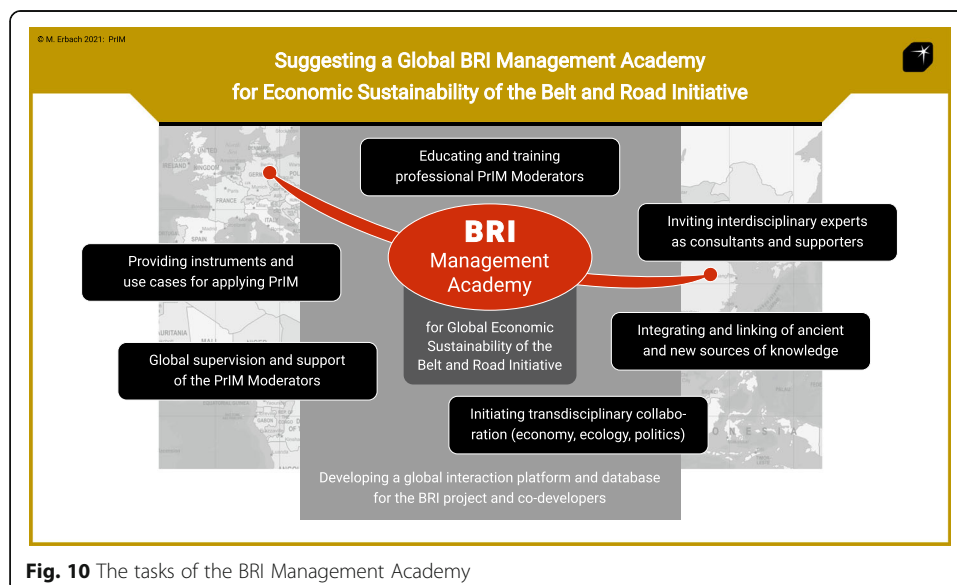
**Fig. 8** Aligning and matching content of the BRI Identity Matrix with other matrices



dialectical long-term planning to accomplish the BRI vision. In stage one (Building), the BRI is planned and set up. This has been ongoing since 2013. In stage two (Evolving), the BRI continues developing with new projects in the growing interdisciplinary BRI network for sustainable solutions. In the third stage (Consolidating), the BRI is steered by a team of economic, ecology, and health experts that interconnects people, technologies, and AI. This process design is based on a holistic dynamic knowledge archive for the Economic Sustainability of the BRI and a participative internet platform and common database with China as the BRI initiator and the co-developing nations as BRI partners.

### Managing economic sustainability of the BRI as a matter of global governance

To ensure an efficient process design with PRIM, the author is suggesting a global “BRI Management Academy for Economic Sustainability” (Fig. 10). The Academy would





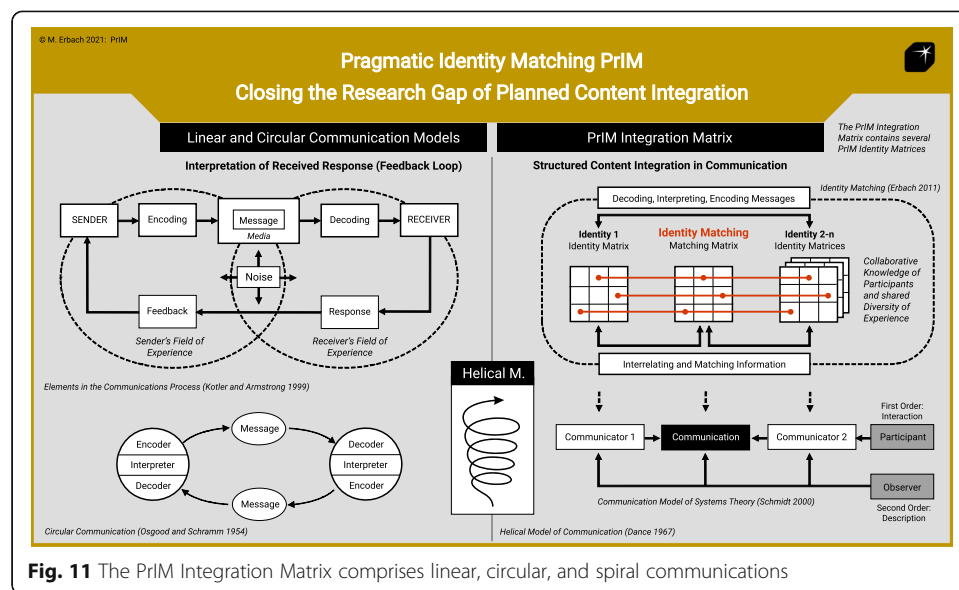
educate and train professional PrIM Moderators, provide instruments and use cases for applying PrIM, and offer supervision and support for the PrIM Moderators. The Academy would furthermore invite interdisciplinary researchers to integrate and link available sources of knowledge. On an institutional level, the Academy initiates transdisciplinary collaboration with representatives and experts. Another central task is the development of a global interaction platform and database to embed and interrelate all areas of the BRI project and the BRI co-developers. Beyond factual information such as the nations' economic preconditions, resources, and existing skillset, the database also includes the cultural, historical, social, and environmental particularities of the participants. The BRI Management Academy would serve as a global steering committee aiming for a better communication, understanding and implementation of the BRI in multicultural contexts, ensuring that the vision for *peaceful cooperation for the wealth and cultural exchange of all nations* materializes in a sustainable way. One of the many far-reaching tasks would be to explore China's claim of establishing a global *community of shared destiny, shared responsibility, and common destiny* related to the BRI. Establishing close relationships between the BRI partners requires reciprocal trust, sharing values, and sharing mutual goals. That goes far beyond just sharing interests (Lingliang, 2016). The Academy facilitates a better understanding between China and "the West," a relationship that is currently fraught with misunderstandings due to lack of information. The BRI is a global innovation- and knowledge-sharing project to increase the national and global innovation of each participating nation for the benefit of the global markets and to accelerate the further development of technologies.

According to the *Quintuple Innovation Helix Model* (Carayannis et al., 2012), the key protagonists of innovation are (1) universities and the higher education system, (2) industry and business, (3) government and policymakers, (4) the media-based and culture-based public, and (5) the social and natural environment. In accordance with this holistic concept, PrIM interrelates all BRI-relevant information deriving from these drivers (Erbach, 2016):

- People, cultures, nations, companies, projects;
- Concepts, theories, philosophies, ideas, values;
- Business, currency, trade, key industries, technologies;
- Politics, legal systems, education systems, norms;
- Resources, natural, and social environments.

## Results and discussion

This article's key contribution to research is to describe PrIM as a transparent holistic planning approach, deploying it to complex dynamic processes such as the BRI. Past planning methods used in political and economic communication based on a unilateral mindset have been described as not powerful enough for "planned content integration," which led to the identification of a research gap (Bruhn, 2009). The integration of formal and temporal issues (planning of instruments and time schedules) has not proven difficult and is part of standard models. The challenge is to integrate the content in such a way (through authentic and credible thematic linkages) that the measures taken are understood and the needs of the actors involved are met. PrIM fulfills these



challenges and closes the research gap (Fig. 11). A comparison with standard linear and circular communication models shows the integrative power of PrIM-driven analysis from the perspective of communication science. Linear SENDER-RECEIVER models evaluate and improve messages with feedback loops (Kotler & Armstrong, 1999; Fig. 11, top left). PrIM aims to concretize the CIRCULAR COMMUNICATION PROCESS (Osgood & Schramm, 1954, in McQuail & Windahl, 1993) between participants as decoders, interpreters, and encoders of messages (Fig. 11, bottom left). The PrIM Integration Matrix systematically interrelates and matches all participants and pieces of information (see Figs. 2 and 11, top right). The formalized representation of the participants corresponds to the system-theoretical understanding of communicators as interacting systems (Fig. 11, bottom right). Targeted iteration of PrIM (see Fig. 2) even allows for dealing with frequently changing influences of communication and increasing complexity, as conceptualized by the spiral HELICAL MODEL (Dance, 1967, in McQuail & Windahl, 1993; Fig. 11, center): Any information in any module of a participant's identity matrix can be updated at any stage of the planning and communication process, according to changing conditions and goals. In this way, the dynamic PrIM framework organizes the collaborative knowledge of participants and the shared diversity of experience to lead to the best possible solutions, e.g., for the global economic sustainability of the BRI.

Formalized PrIM identity structures, under the responsibility of third parties, also make it possible to represent the interests of stakeholders or other subjects who cannot speak for themselves. Children, indigenous minorities, disabled people, threatened animals, plants, and natural environments, e.g., can receive appropriate advocacy if their life and development interests are anticipated with a PrIM Identity Matrix. However, the success of a PrIM process depends on the willingness of the participants to dedicate themselves to the project, to share their knowledge with others, and to learn from each other in the PrIM integration system. The global challenges within the BRI require the partners to overcome one-sided, self-referential positions that use the "cost factor" to argue against economic

sustainability. By providing a holistic view that systematically incorporates all environmental, cultural, and social requirements into economic planning, PrIM can help to conceptualize innovation development in many areas, e.g.:

- Sustainability and quality management in global health and global environmental protection by integrating, aligning and matching knowledge and technologies from multiple disciplines;
- Reality-based crowd intelligence by integrating and targeting the knowledge of many within the cognitive structure of the PrIM model;
- Human-oriented design of artificial intelligence, by embedding AI systems in the cognitive structure of the PrIM Identity Matrix and building dynamic interaction environments with other PrIM Identity Matrices.

PrIM acknowledges diversity and harnesses it. Its integration structures do not de-qualify cultures, ignore given preconditions and facts, or manipulate interests. PrIM interrelates the BRI participants as unique and different '*identities*' with their own particular ideas of reality and different needs, thus rendering them negotiable. The contributions of each BRI developing partner including China are valued according to their support for accomplishing the shared vision. The following tasks can be accomplished by using PrIM in the BRI:

- Explain the BRI vision to accomplish global wealth, global health, and environmental protection; promote a *community of common destiny and shared responsibility* based on respectful and friendly cooperation;
- Plan economic sustainability taking into consideration cultural, social, and environmental aspects, by coordinating all internal and external knowledge flows in a process design structure and database;
- Implement the global BRI conceptually as an intercultural participative *Targeted Open Innovation* project for accomplishing both regional and global innovation targets;
- Render complexity management and risk minimization transparent, efficient, and worthwhile by eliminating significant invisible losses (i.e., up to 25% = 225 US\$ in a 900 US\$ investment; Fig. 4);
- Support the establishment of a transparent and stable global financial system beyond one-sided solely profit-oriented thinking for the benefit of the entire BRI project and each participating nation;
- Support the development of new forms of global governance by building an overarching legal framework that does not encroach on the legal frameworks of participating nations;
- Provide a transparent management tool to neutralize and overcome participants' unconscious bias in the cross-cultural relationships within the BRI and in communications on all levels.

Every challenge implies potential limitations. This also applies to every given stage of the implementation process of the BRI. However, most limitations will dissolve once the BRI Identity Matrix is applied as the interaction interface. Its

dynamic database with all contributions to the project is accessible to all partners involved, including best-practice cases, and lessons learned from negative experiences with BRI implementations. The BRI Identity Matrix represents a *learning organization* on every level from the local, regional, and national to the international. External knowledge and experts, and advice and support from the BRI Management Academy can be provided at any stage as needed, to overcome limitations, such as the following:

- Strategic-political: In case for whatever reason participants are hesitant to contribute or confirm the required information or resources, negotiations on the diplomatic level are required.
- Managerial: impediments on the political, institutional, or corporate level. Unsuitable organizational structures or barriers for an integrative cross-level BRI management may be adjusted.
- Legal: inappropriate legal conditions and contracts of cooperation for the BRI project need to be complemented with appropriate legal frameworks that take existing laws into consideration.
- Financial: Financial experts and decision makers will find solutions on other levels of the BRI management. Direct advice and support from the BRI Management Academy is provided as needed.
- Intercultural: BRI participants can train intercultural sensitivity and communication competences with PrIM Moderators to better understand and work with the partners.
- Individual: discrepancies between participants' repertoire of expressions and skills (language, technology, know-how) can be overcome by selecting appropriate professionals, training, and learning.

## Conclusions

The PrIM Identity Matrix (Figs. 2, 5, and 6) represents a single information structure that can be used to describe all real or virtual existing things and their interrelations. The PrIM approach serves as a bridge-building philosophy and instrument to expand the perception of individuals and interest groups in a planned and structured manner. It makes the world more transparent and accessible for everybody by means of a universally applicable model that corresponds to and reflects the human mind as well as human interactions. Ancient philosophy, modern sciences, and future technologies merge in the matching processes, thus creating a universal knowledge archive and a timeless infrastructure of thinking. This is a prime example of contemporary, targeted open innovation.

## Abbreviations

AI: Artificial intelligence; BRI: Belt and Road Initiative; CPC: Communist Party of China; ISO: International Standards Organization; IT: Information technology; OI: Open innovation; PRC: People's Republic of China; PrIM: Pragmatic Identity Matching; TOI: Targeted open innovation; UN: United Nations; WHO: World Health Organization; WTO: World Trade Organization

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**Author's contributions**

The author declares that no other author's contributed to this article. The author(s) read and approved the final manuscript.

**Authors' information**

PrIM was originally developed in the author's doctoral research and dissertation. The PrIM methodology has successfully been applied to public authorities, private companies, and nonprofit organisations. The author founded the PrIM Academy to qualify PrIM Moderators.

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**Declarations****Competing interests**

The author declares that he has no competing interests.

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