





The public sector and co-creation in turbulent times: A systematic literature review on robust governance in the COVID-19 emergency

Fulvio Scognamiglio¹  | Alessandro Sancino^{1,2}  |
Francesca Caló¹  | Carol Jacklin-Jarvis¹  | James Rees³ 

¹The Open University, Milton Keynes, UK

²Università degli Studi di Milano Bicocca, Milano, Italy

³University of Wolverhampton, Wolverhampton, UK

Correspondence

Alessandro Sancino, The Open University, Milton Keynes, UK.

Email: alessandro.sancino@open.ac.uk

Abstract

The capacity of public sector of co-creating with other stakeholders is challenged by the increasing presence of disruptive turbulent events, such as the COVID-19. At this regard, robustness has been identified as a suitable response to deal with this kind of events. Through a systematic literature review, we analyzed how public sector organizations have co-created with other actors during the COVID-19 and what have been the contribution of robust governance strategies. Our findings point firstly to the empirical validity of the robustness concept, providing evidence of the extensive use of robust governance strategies into the co-creation processes. Second, we identified a configurational approach to robustness, with governments co-creating by simultaneously employing several robust strategies. Thirdly, we observed a more active involvement of societal stakeholders, with emergence of proto-institutions and potential threats to the political system.

1 | INTRODUCTION

The COVID-19 pandemic is an event that tested public governance systems at all levels and across all countries, demanding adaptation, agile modification and pragmatic governance solutions, something Ansell et al. (2021) have

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recently defined as robustness. Against this backdrop, one of the most visible adaptive responses (Heifetz et al., 2009; Uhl-Bien & Arena, 2018) has been institutional integration and cooperation between government and non-governmental actors for co-creating public value (Bryson et al., 2017). This has involved—among a range of emergency responses—delivery of meals and health equipment by volunteers, voluntary action to support vaccination program, campaigns for the donation of money and resources, and the sharing of information and co-creating knowledge of public relevance (e.g. Spear et al., 2020; Steen & Brandsen, 2020).

The pandemic provides an opportunity to scholars to study turbulence and assemble evidence about the strategies that the public sector has developed in co-creation with other actors to deal with the turbulence unleashed by the pandemic. In this paper, we address this topic by focusing on what have been the co-creation practices under a turbulent event such as COVID-19 and the role played by robustness as developed by Ansell et al. (2021). This is distilled in a main research question: What robust governance strategies have led/underpinned public value co-creation processes in the COVID-19 emergency and what can we learn in terms of co-creation from what occurred during the COVID-19 emergency?

The aim of our work is to engage with the repertoire of robust governance strategies as developed by Ansell et al. (2021) and analyze the framework from an empirical perspective. We consider co-creation as “a process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences, and ideas that enhance the production of public value in terms of visions, plans, policies, strategies, regulatory frameworks, or services, either through a continuous improvement of outputs or outcomes or through innovative step-changes that transform the understanding of the problem or task at hand and lead to new ways of solving it.” (Torfing et al., 2019, p. 802).

Our paper provides new empirical evidence by conducting a systematic literature review, which is considered to be a rigorous method to collect policy evidence (Chalmers et al., 2002; Donaldson et al., 2002). The point of departure of our work concerns the necessary role that multi-actor co-creation processes have as a governance tool to deal with societal complexity (Torfing et al., 2021). Wicked and complex problems could not be addressed solely by the intervention of the public actor but rather must be dealt with by pooling the resources and the contribution of varied societal stakeholders through public value co-creation processes (Head & Alford, 2015). However, the effectiveness of co-creation is challenged by turbulent problems, namely problems that are complex, chaotic and difficult to predict and respond to, and that constitute a fundamental challenge for the public sector in the next decades. Indeed, we must acknowledge the current limitations of co-creation processes in dealing with volatile contexts, temporal complexity, and unpredictable developments as triggered by turbulent problems (Ansell et al., 2021). Co-creation processes are normally nurtured by a long-term focus and relatively stable contexts, which may not be compatible with conditions characterized by turbulence (Torfing et al., 2019). Assuming a problem-oriented approach, the public actor must recognize the necessity of injecting a degree of robustness in its governance system and deploy specific robust governance strategies to guarantee the co-creation of public value even during turbulent times.

The paper is structured as follows: the next section provides our theoretical backdrop; next, the methodology is described; findings are presented in the fourth section, while the fifth and last section offers some discussion of the findings, concluding remarks, limitations of our research and ideas for future research projects.

2 | THEORETICAL BACKDROP: TURBULENCE & ROBUSTNESS

2.1 | Turbulence as a permanent problem for modern public sector institutions

If VUCA (volatile, uncertain, complex, and ambiguous) contexts and wicked issues have become a structural characteristic of contemporary public governance (Bennett & Lemoine, 2014; Eppel et al., 2021; Head & Alford, 2015), then we are now observing a new pattern of societal issues, increasingly characterized by a turbulent nature (Howlett

et al., 2018). A general description of what a turbulent problem represents is given by Ansell and Trondal (2018, p. 43), which define turbulence as “situations where events, demands, and support interact and change in highly variable, inconsistent, unexpected or unpredictable ways.”

The origin of the turbulence concept could be traced to the physical sciences where it describes chaotic fluid dynamics such as that of smoke (Davidson, 2015). In recent years, several scholars from the Public Administration and Policy fields have been building an autonomous body of knowledge about turbulence and how governance, policy, and politics can deal with it. This academic effort builds on the acknowledgement of the increasing turbulence in our society and the necessity of providing analytical lenses for this new phenomenon (Ansell et al., 2021; Ansell & Trondal, 2018; Howlett et al., 2018; Sørensen & Ansell, 2021). This new literature tries on one hand to outline what are the distinctive characteristics of turbulence and on the other to discuss how the public sector should adapt to continue to realize its agenda, functions, or value in the wake of turbulence (Ansell et al., 2021; Ansell & Trondal, 2018; Capano & Woo, 2017; Sørensen & Ansell, 2021).

What makes turbulence different from other problem conceptualizations, such as wickedness and complexity, is a combination of volatile and complex contexts with unpredictability of consequences and the need to adapt, learn and adjust into a new equilibrium and emerging order. Indeed, as Ansell et al. (2021) explained, the wicked problems conceptualization (e.g., Head & Alford, 2015) and the responses to the societal challenges posed by it, such as co-creation, were assumed to exist in a relatively stable and predictable context (Torfing et al., 2019). Yet, the growth of disruptive events, the changing character of politics towards a pluri-centric and flexible political system, and the increasing organizational and institutional complexity are all evidence of a more turbulent world (Ansell et al., 2017).

Another distinctive characteristic of turbulence is its twofold nature of potentially being a condition or a dysfunction (Ansell & Trondal, 2018) (Trondal, 2022). On one hand, turbulence can be found in particular disruptive events with dynamic cascading effects that seriously undermine the capacity of the public sector to create public value (Ansell et al., 2021). This is the case of the COVID-19 pandemic, a perfect example of a turbulent event starting as a health issue and then spreading to all societal domains (Žižek, 2020). On the other hand, turbulence could be considered as a permanent condition of an institution or an organization. Indeed, in contrast to the concept of crisis, turbulence is not necessarily a threat to the basic values of an organization, but rather a possible reason for its establishment—thus turbulence can be judged a matter of scale and degree. Nevertheless, as we have observed above, turbulent problems are increasingly common and are becoming the “new normal” routine for modern public governance (Ansell et al., 2017). In this respect, a governance perspective acknowledges the possibility for turbulent problems to be both endogenous and exogenous to the public institution (Ansell & Trondal, 2018). Indeed, regardless of being a condition or a dysfunction, the sources of turbulence could be encountered in the environment, or in the organization. In this paper we focus upon turbulence problems as exogenous to the public institution. Indeed, the environment in which the public actor is trying to generate public value could be affected by disruptive events such as natural disasters, wars, or health crises. The financial crisis, climate change, and political instability illustrated by events such as Brexit are other examples of turbulent problems affecting our society that exemplify the importance of looking for solutions and calling for public sector adaptation.

2.2 | Robustness as a problem-oriented response to turbulence

As stated by Mayne et al. (2020, p. 34) “problem-oriented governance is an approach to policy design and implementation that emphasizes the need for organizations to adapt their form and functioning to the nature of the public problems they seek to address. This approach is fundamentally outward-looking in its effort to shape both long-term strategy and day-to-day working arrangements around problems as they manifest themselves.” In this paper, we understand turbulence as a problem for co-creation processes and, following Ansell et al. (2021), we believe that a robust governance system represents a suitable response “where creative and agile public organizations adapt to the

emergence of new disruptive problems by building networks and partnerships with the private sector and civil society” (Ansell et al., 2021, p. 952).

According to a problem-oriented approach, the public actor must adopt turbulence as an analytical lens to evaluate its capabilities in dealing with the turbulent problems' features and demands (Mayne et al., 2020; Termeer et al., 2016). Indeed, the pervasiveness and the increasing presence of turbulence in contemporary society are putting public sector capacity to co-create public value under serious threat (Ansell & Trondal, 2018). A solution to this issue has been proposed by this strand of literature on turbulence within the Public Administration & Policy fields, which consists of the injection of a certain degree of robustness within the governance system by deploying several robust strategies (Ansell et al., 2017). Among the several definitions given to robustness, a broad and comprehensive definition could be as a “complex system's ability to remain functional in the face of shocks or disturbance” (Capano & Woo, 2017, p. 403). Indeed, a system could be considered robust if it is capable of preserving its primary functional characteristics while dealing with a wide range of inputs and stressors, such as might be expected to be produced by turbulence (Capano & Woo, 2017; Sørensen & Ansell, 2021) (Trondal, 2022). For a governance system, this means the creation and implementation of a range of different strategies to deal with turbulence and still be able to generate public value through the “flexible adaptation, agile modification, and pragmatic redirection of governance solutions” (Ansell et al., 2021, p. 952).

What makes robustness a distinct approach is its capability to adapt dynamically in the face of challenges of turbulent events (Ansell & Trondal, 2018) (Howlett & Ramesh, 2022). Indeed, robust co-creating processes should not be afraid of change but rather accommodate transformation in order to maintain the system's functionality instead of uselessly conserving the system's status (Sørensen & Ansell, 2021). This adaptive capacity of governance innovation makes robust co-creation processes different from traditional resilience co-creating approaches, where the aim of strategies employed is to bounce back from disruptive events and restore the old system equilibrium (Labaka et al., 2019). Accordingly, this co-creating resilience perspective is not doable under turbulence, where restoring the old equilibrium is not often possible or even desirable (Ansell et al., 2021). In addition, robust co-creation processes have to incorporate a certain degree of experimentation and a culture of “failure acceptance” as a means to generate public value with other public and private stakeholders under turbulence and provide agile modification of solutions in the face of unexpected challenges (Ansell & Boin, 2019). The pragmatic redirection of governance solutions to which the definition of robustness refers could be framed as the entrepreneurial governance capacity of the public sector of exploiting unexpected developments of turbulent problems to experiment and test new approaches (Sørensen & Ansell, 2021). This experimentation culture has already been pointed out both theoretically and empirically within the co-creation literature. Indeed, the claim made by Torfing et al. (2019) about implementing experimentation as a necessary systemic change for co-creation and the growth of Urban Living Labs for co-creating solutions both point in this direction (Mergel et al., 2021; Nesti, 2018; Tönurist et al., 2017).

2.3 | Co-creation through robust governance strategies to address turbulence

Hereafter we highlight the six robust governance strategies highlighted by Ansell et al. (2021) with reference to COVID-19 as a “game changer” for public administration and leadership under conditions of turbulence. The first robust governance strategy is *scalability*, which is the capacity of the public sector to move resources across different organizations, levels, and sectors to exploit any possibility to scale specific solutions dealing with the volatile context and unpredictable developments. Indeed, a robust governance system should be able to facilitate the integration and the conveying of resources between different societal sectors and/or levels (Conteh & Harding, 2021).

A second robust strategy concerns the capacity of *prototyping* new, adaptive, and agile solutions through several rounds of testing, allowing for the possibility of continuous feedback by accepting the non-linear evolution of innovation (Mergel et al., 2021). This strategy is strictly linked with the above-mentioned necessary experimentation capability of a robust governance system that admits the possibility of failing (Room 2016). Indeed, the public sector

must engage with other actors in an evolutionary learning cycle in which the interactions between prototypes and their reality testing provide the basis for more turbulence-tailored solutions (Ansell, 2011).

A third robust governance strategy concerns the possibility for the public actor of designing solutions unpacked in different modules, allowing for the agile modification of solutions in the face of unpredictable developments whilst preserving the functional stability of the system (Capano & Woo, 2018). This process of *modularization* is fundamental to inject agility within robust co-creation processes, allowing governmental and non-governmental actors to test, combine, and restructure solutions according to the needs of turbulent problems, helping them to explore different approaches and be more responsive to a changing scenario (Bednar, 2016).

Bounded autonomy is another robust governance strategy available to the public sector to continue to co-create public value with societal stakeholders in the face of turbulent events. This strategy builds a “broad-based ownership and strategic commitment to an overall strategy” through the involvement of different stakeholders. Indeed, the volatile context and the unpredictable evolutions of turbulent problems call for the creation of a necessary common goal towards which public actors and other societal stakeholders orient their resources and ideas.

A fifth robust governance strategy is strictly related to the definition of robustness provided above and in particular to the pragmatic redirection of existing governance solutions. *Bricolage* strategies concern the reconfiguration of available resources and ideas to meet new demands, as can be expected under conditions of turbulence. Like prototyping, bricolage stems from the experimental nature of robustness; however, while the former is more focused on the process of experimentation, bricolage is related to the nature of inputs. Bricolage strategies strongly resonate with the “evolutionary tinkering” concept, which is accepted as an existing practice within the co-creation literature (Bason, 2018).

A last possible robust governance strategy, as deployed by Ansell et al. (2021), concerns the notion of *strategic polyvalence*, namely the combination of situational analysis capacities of understanding and anticipating the environmental needs and the deliberate design of solutions orientable to these new directions (Mergel et al., 2018) (Capano & Woo, 2018). This allows a robust governance system to incorporate a certain degree of agility and proactive responsiveness to avoid dangerous path-dependencies or lock-ins, making this strategy a valuable resource for dealing with the volatile context and the unpredictable developments inherent to turbulence (Janssen & van der Voort 2020).

Against this theoretical backdrop, our work provides an empirical basis for robustness by analyzing co-creation experiences during the turbulent times of COVID-19 and the role of robust governance strategies in these processes. Indeed, while this new body of knowledge has promising implications for revitalizing co-creation processes and more generally the governance system in the face of turbulence, we particularly acknowledge the necessity of providing an empirical basis to evaluate the role of robustness in public sector co-creation under turbulence. We do believe, indeed, that robust co-creation could be a promising tool for public actors and societal stakeholders to deal with an increasingly turbulent world.

3 | METHODOLOGY

To address our research questions, a systematic literature review was conducted to collect all published experiences of co-creation during the first year of COVID-19. Systematic reviews are widely used to inform policymakers, practitioners and civil society (Chalmers et al., 2002) and they are a useful vehicle to systematically explore different interventions (Donaldson et al., 2002). Thus, it was selected as the best method to explore a wide range of co-creation strategies developed in different contexts. We considered a definition of co-creation as above provided by Torfing et al. (2019: 802).

3.1 | Data collection and analysis

To be included studies had to meet the following criteria:

- Only records presenting primary or secondary data about co-creation processes as defined above were included;
- Only papers published between March 2020 and February 2021 were included because of our focus of understanding robust governance processes during turbulent times. Indeed, the definition of what constitutes a turbulent time escapes any objective boundary and is dangerously prone to different subjective interpretations (Ansell et al., 2021). However, drawing on the twofold nature of turbulence, we limit our analysis to the first year of COVID-19 identifying the pandemic as an exogenous dysfunction of our society rather than an endemic condition (Ansell & Trondal, 2018) as its evolution seems to suggest now;
- Co-creation processes must address challenges and issues directly connected to COVID-19 because of our focus on turbulent problems, therefore papers that relate their findings to COVID-19 but collected data before pandemic were excluded;
- Only records in the English language were selected.

We developed a two-stage search strategy. First, we developed the following search string: (“Social Innovation” OR “innovation” OR “Public Service Innovation” OR “Social* Innovati*” OR “Innovati*” OR “Coproduction” OR “Co-production” OR “Co-creation” OR “Cocreation”) AND (“COVID-19” OR “COVID” OR “Coronavirus” OR “Corona virus” OR “pandemi*” OR “lockdown”) and used it in the following databases: ASSIA, International Bibliography of social sciences, Scopus, Sociological Abstracts, and Web of Science. The idea behind this search string is that the co-creation is often confused with other similar but different concepts, such as social innovation and co-production (Voorberg et al., 2015). In order to get all the possible co-creation experiences, we preferred to enlarge the scope of the search string by adding these similar concepts.

Secondly, a separate search was conducted within specific categories of Web of Science: Business, Economics, Management, Political Science, Public Management. All the records retrieved were stored in a shared database within Zotero. Additional information about search strategies and inclusion and exclusion criteria are reported in the protocol in the Supporting Information.

A two-stage screening process of all the records retrieved was conducted by Author 1 and 3. First, titles and abstracts were screened against inclusion criteria. Second, relevant studies were retrieved, and their full text screened. Any disagreement about inclusion or exclusion criteria was extensively discussed among the authors. Figure 1 provides a flow diagram description of the screening phases.

A specific framework was used for extracting the data which included title, authors and categories related to the description of the robust governance strategies and their categorization. The first and third authors completed the data extraction and thematic analysis was used to identify themes within the robust governance strategies, following the coding in the Table 1.

A total of 2832 papers were initially identified, of which 167 were screened in full text. After excluding papers on the grounds of them not analyzing co-creation processes, not assessing a reaction to COVID-19, not collecting any types of primary and secondary data, 28 studies were included. 10 papers were published in health journals, eight papers in management journals, seven papers in public management and administration journals, while the remaining in social work journals and psychology journals. Six studies were conducted in Italy, three studies in US, two studies each in China, South Korea, and UK, one each in Australia, Canada, India, Nigeria, South Africa, Syria, Thailand. Six studies involved a comparison of countries in South America, Asia, US and Europe. All were qualitative in nature and they included mainly case studies supported by observation, personal reflections and in some cases qualitative interviews or structured ethnography. Finally, as shown in Table 2, 16 papers included bounded autonomy as one of the robust governance strategies employed, 12 papers include bricolage, nine papers scalability, three papers prototyping, three papers strategic polyvalence, two papers modularization. Lastly, six papers included an additional robust governance strategy labeled “voluntary compliance” (see Appendix S1 for the complete list of full references).

Our findings section explores the robust governance strategies firstly by exploring the governance strategies as developed by Ansell et al. (2021), listing them according to the number of evidence found and then analyzing a new category that emerged during our systematic literature review.

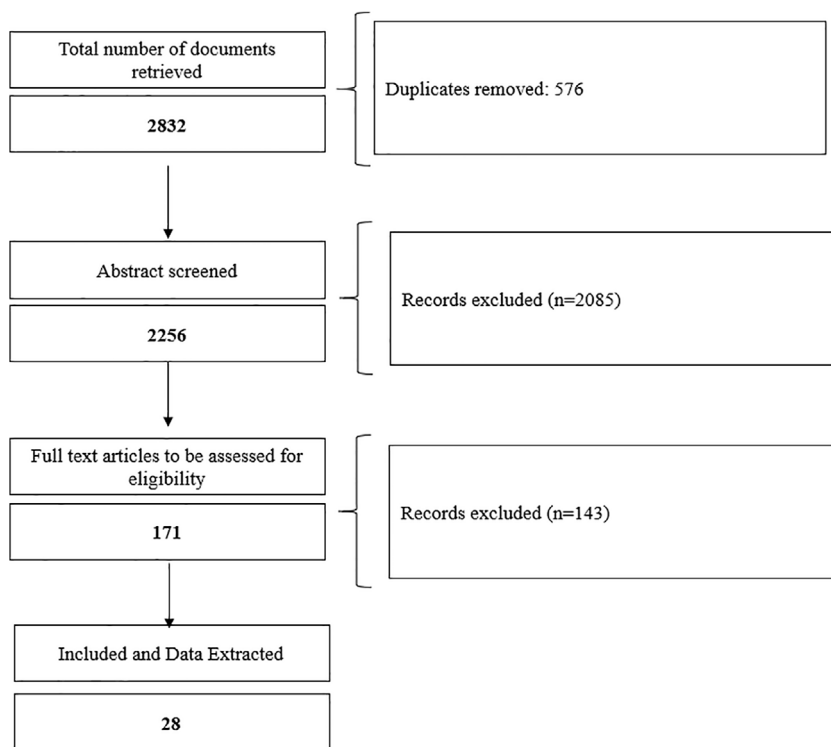


FIGURE 1 Flow diagram of the search strategy

TABLE 1 Robust governance strategies coding

Robust governance strategy	Coding
Bounded autonomy	Cases where public actors support a broad-based ownership and strategic commitment to a common and bounded goal
Bricolage	Cases where there was a focus around the reconfiguration of existing resources and ideas
Scalability	Cases where the public actor moved resources over organizational silos or across different levels and/or sectors to exploit the possibility to scale specific solutions
Prototyping	Cases where different actors experiment new solutions for emerging needs, allowing for failure and/or incorporating feedback mechanisms
Strategic Polyvalence	Cases where there was an understanding and anticipating the environmental needs and the deliberate design of solutions that could address different needs
Modularisation	Cases where solutions were designed in different modules, allowing for the agile modifications
Residual	Cases where co-creation processes showing a certain degree of robustness, namely the capacity of accommodating turbulence demands but they were not one of the strategy above

4 | FINDINGS

4.1 | Bounded autonomy

Bounded autonomy was identified 19 times within 16 papers, representing the largest category of our dataset. Ten studies explored public value co-creation processes where civil society is involved to some degree. An example

TABLE 2 References for robust governance strategies

Robust governance strategies	Papers reference
Bounded Autonomy	Richterich, 2020; Shi et al., 2020; Meijer and Webster, 2020; Brodie et al., 2021; Ramírez de la Cruz et al., 2020; Guan et al., 2021; Racher and Brodie, 2020; Kinsey et al., 2020; Lim et al., 2021; You, 2020; Arslan et al., 2020; Brey et al., 2020; Li, 2020; Turk et al., 2021; Intawong et al., 2021; Garavaglia et al., 2021
Bricolage	Richterich, 2020; Shi et al., 2020; Brodie et al., 2021; Ramírez de la Cruz et al., 2020; Kinsey et al., 2020; Lim et al., 2021; Corsini et al., 2020; Di Guardo et al., 2022; Arslan et al., 2020; Brey et al., 2020; Garavaglia et al., 2021; Cepiku et al., 2021
Scalability	Ekzayez et al., 2020; Meijer and Webster, 2020; Lim et al., 2021; Singh et al., 2020; Arslan et al., 2020; Brey et al., 2020; Turk et al., 2021; Intawong et al., 2021; Garavaglia et al., 2021
Prototyping	Richterich 2020; Corsini et al., 2020; Di Guardo et al., 2022
Strategic Polyvalence	Ekzayez et al., 2020; Brodie et al., 2021; Sarkar, 2021
Modularisation	Ekzayez et al., 2020; Meijer and Webster, 2020
Voluntary Compliance	Yeo and Lee, 2021; Zhao and Wu, 2020; Tallacchini, 2020; Megnin-Viggars et al., 2020; Graffigna et al., 2020; Fenley, 2021

comes from Shi et al. (2020), which described the challenges suffered by a non-profit organization in Dallas after the reduction of its shelter capacity due to social distancing measures. In order to continue the provision of the services despite the pandemic challenges, Dallas' city leaders and the non-profit organization co-created a common solution. The city converted a Conventional Center into a temporary shelter while the NPO offered professional staff to run the operations. Another example comes Arslan et al.'s article (2020). The Nigerian government established a national-level partnership between the Health Sector and several stakeholders from the civil society for the explicit co-creation of a public service campaign of information to de-stigmatize the COVID-19 infection. The involvement of other stakeholders by the public actor served the purpose of creating a shared communication strategy adapted to the various national/local contexts, of which the civil society stakeholders have a better grasp. Turk et al. (2021) described the co-creation of a research consortium between the Nigeria Center for Disease control and other stakeholders from academia. The creation of an organization for moving resources, ideas, and tools across different organizations was propaedeutic to the development of a common strategy to deal with the pandemic emergency and a 4-year planning to face the long-term consequences of the COVID-19.

Four different papers analyzed co-creation processes using bounded autonomy involving private organizations. An illustrative example comes from the Korean government's involvement of private actors in several parts of the pandemic plan. As You (2020) explained, the Korean public actor adopted a public-private partnership approach to work out the creation, production, and distribution of diagnostic tests with four different companies. The public actor acknowledged the importance of involving stakeholders with the necessary knowledge for co-creating a fundamental public value, such as diagnostic capability during a pandemic. Similarly, Intawong et al. (2021) describe the creation of an information platform of data about potential and confirmed cases of infection between 51 public and private actors. The creation of this jointly owned platform has been deemed as a fundamental element of the successful approach from the Chiang Mai Provincial Health authorities in efficiently exploiting their hospital's capacities. A similar case is described by Lim et al. (2020), in which the Taiwanese Ministry of Health and Welfare created a Control Center with the purpose of involving private stakeholders to co-create a shared plan to tackle the turbulent events caused by the pandemic.

An interesting finding has been that Bounded Autonomy strategies have rarely been employed alone. Indeed, 16 of the 19 items, in which bounded strategies was identified, presented this strategy coupled with another of the remaining six categories. Ten cases presented the Bounded Autonomy strategy associated with the Bricolage strategy. An example comes from the article of Garavaglia et al. (2021), in which the authors described the strategy of local mayors to create a

shared commitment and a resource integration with the Catholic Church in order to ensure the provision of summer schools for children. Indeed, the public and the civil society actor shared the commitment of guaranteeing a fundamental service for children and their families by combining their resources, respectively, helping the enforcement of safety measures and the provision of facilities for summer camps. Brey et al. (2020) depicted another example of this combination. The Cape Town public actor involved several local community actors in the creative co-creation of a medication home delivery system. In particular, The Metropolitan Health Services, small private businesses, Google, Uber drivers, pharmacies, NPOs, and individual volunteers elaborated a joint strategy by combining resources to guarantee the delivery of medications in the face of the stay-at-home and social distancing policies imposed by the pandemic.

4.2 | Bricolage

According to our findings, the bricolage strategy has been one of the most employed to co-create public value under the COVID-19. 12 papers presented 15 items in which the actors involved in the co-creation processes have combined the resources at their disposal to cope with COVID-19.

In one example, Kinsey et al. (2020), underlined the opportunities exploited by a network of public and private actors after the forced closure of schools to innovate a system for meal delivery. Indeed, schools were able to use several temporarily closed sites located in central locations such as community centres, libraries, apartment complexes, and churches to process, cook and organize a new system. Public sector districts, through an innovative combination of their resources such as school buses and also supply by private industry, provided home delivery in rural areas. Di Guardo et al. (2022) analyzed a co-creation process by bricolage between academics and public sector research institutions. Through the creative combination of their specialized knowledge, the researchers rapidly designed and developed a new ventilator to deal with gas handling and complex control system issues. Arslan et al. (2020) analyzed a case of a massive implementation of a bricolage strategy in Pakistan. Several public and private actors leveraged their existing resources to create information sharing platforms, such as an open-access database for sharing scientific research data and results and a “tele-medicine” information platform more oriented towards spreading knowledge to the public. Ramírez de la Cruz et al. (2020) described a case of co-creation between an Argentinian municipality and local businesses to overcome the closure of school cafeteria. Indeed, the beneficiaries of meals to these closed facilities were provided with a checkbook usable in the businesses adhering to the campaign.

In 10 cases out of the total 15, the combination of available resources from the involved stakeholders have been done in combination with bounded autonomy, three cases in combination with a prototyping strategy, and in two cases with scalability.

4.3 | Scalability

Nine papers showed the public actor involving other stakeholders into processes of co-creation by employing a scalability robust governance strategy, to mobilize resources and expand or adapt their output to better match the turbulence caused by COVID-19. Six papers in this category showed a common pattern about the involvement of civil society actors in the co-creation processes. Networks of formal and informal local actors and nonprofit organizations were mobilized in disseminating health voluntary campaigns (Ekzayez et al., 2020), building and informing an online platform to share worldwide best practices and experiences (Singh et al., 2020), widening the health and food distribution system (Arslan et al., 2020; Brey et al., 2020), sharing digital services for smart working, e-learning and reading (Meijer and Webster, 2020), and proposing innovative services, products or technologies to prevent, diagnose and control the pandemic (Garavaglia et al., 2021; Meijer and Webster, 2020).

Two papers can be identified as clear examples of scalability strategies, using collaboration among different actors through the use of online platforms. Meijer and Webster (2020) described the creation of online platforms (Digital Solidarity and Innovation for Italy) by the Italian Central Government as instruments to include non-profit organizations, firms, universities and foundations to widely share materials for addressing the digital divide at national, regional and local level (the first) and propose solutions to address health and social emergency (the second). Civil society actors tested at local level processes, activities and strategies and through the online platforms expanded their output by sharing the knowledge acquired and the activities undertaken. A similar scalability process was described by Singh et al. (2020) which explored the development and functionality of an online platform (www.covid19humanitarian.com) that allows civil society and public sector organizations to learn from one another about programme responses, adaptations and innovations. The scalability process in this case was initiated by civil society organizations and specifically three universities that facilitated the involvement of non-profit organizations, in particular humanitarian agencies, and public sector organizations in sharing their knowledge, practices and innovations. Interestingly Singh et al., (2020) discussed that the last step that would allow scaling at global level did not occur, at least at the time of the paper, because of the difficulties in informing regional and global COVID-19 humanitarian guidance.

Another evident common pattern within the scalability category has been its coupling with bounded autonomy strategies. Indeed, five papers out of the nine analyzed how public actors combined the scalability of intervention with the flexible mobilization of resources between public sector and other societal stakeholders.

4.4 | Prototyping

Three papers described processes of prototyping as a potential solution to health equipment scarcity. Richterich (2020) analyzed the role of “Do it yourself” communities in supporting healthcare professionals by creating, testing and developing PPE equipment. These civil society communities were defined as critical in exposing the healthcare equipment shortages while they used prototyping strategies through the mobilization of volunteers and open design approaches to collect feedback from the health care sector and adapt solutions. Di Guardo et al. (2022) analyzed a similar process which involved more formal civil society organizations such as universities and research institutions alongside the healthcare sector. Thus, new ventilators were developed through an open lean process which included “iterative experimentation and feedback” (p.10). Similarly, Corsini et al. (2020) described a process of co-creation between an Italian prototyping start-up and the local health system. Indeed, to deal with the shortage of medical supplies, the private and the public actor engaged in several creative and rapid rounds of prototyping and testing of innovative valves for ventilators and CPAP masks. An important detail emerging from these robust co-creation processes regards the time span in which they happened. While these processes usually require months or years to be designed, tested, and implemented, the temporal complexity imposed by the pandemic required a rapid response from stakeholders involved in prototyping, showing the importance of agility for a robust governance system.

A common pattern of these three cases has been the combination of prototyping with the bricolage governance strategy. Indeed, in all three cases, the actors involved in the prototyping co-creation processes have combined different existing resources to deal with the challenges posed by the pandemic. Thus, bricolage appears to be fundamental to establishing the process of prototyping.

4.5 | Strategic polyvalence

Strategic polyvalence was identified as a potential strategy to address turbulent problems in two papers. Sarkar (2021) analyzed the responses of the Kerala public and civil society actors to the health emergency. Among all the policies enacted to improve transparency, two different open-source tools were created by public sector and civil

society organizations to better inform health care professionals and policy actors. The first tool, a new search engine for collecting all Indian-specific virus research and findings was developed by a University. The tool aimed to empower medical researchers but at the same time it was deliberately designed as an agile instrument, modifiable for any future need. The second tool was a citizens' initiative using publicly available and verified data on outbreaks in Kerala, aiming to provide real-time analysis. Interestingly, the dashboard was inspired by a Japanese crowd-sourced platform; the public sector organization team which supported the citizen group adapted the Japanese code to the Kerala context, activating a strategic polyvalence process.

Ekzayez et al. (2020) also described a strategic polyvalence process in Syria. Before the pandemic all the disease surveillance in all territories outside the control of Syrian government were covered by the Early Warning and Response Network (EWARN) established by a Syrian NGO in 2013. During the pandemic, thanks to funding from the Gates Foundation, the EWARN acquired a basic capacity to use PCR testing, contact tracing and risk mapping, showing clearly a process of adaptation to the new needs and demands.

4.6 | Modularisation

Two papers described processes of modularization in addressing the COVID-19 emergency. In Ekzayez et al., (2020) the development of a website by a Syrian NGO, aiming at collecting information on users' medical status and categorizing them in five categories, was described. The project could be identified as a modularization strategy because of the possibility to use it flexibly in response to changes in pressures on the health system, varying for example the algorithm behind the categorization. Meijer and Webster (2020) explored the strategies developed by an inter-federal interdisciplinary working group in Belgium, aiming at developing a track and trace “app.” The collaboration between public sector and civil society organizations generated a protocol and a privacy-friendly solution for tracing contacts, representing a clear example of modularization strategy.

4.7 | Voluntary compliance

In addition to the robust governance strategies elaborated by Ansell et al. (2021), our analysis showed the existence of a seventh robust strategy. Seven papers described a process of co-creation between public actors and individual citizens through mechanisms of voluntary compliance for the implementation of exceptional safety measures, such as stay-at-home, self-quarantine, or social distancing, dictated by the pandemic. At first glance, some of these processes could be identified as simply top-down measures implemented through legal mechanisms and observed by individual citizens due to the fear of sanctions. However, these papers pointed out several reasons to look at the observance of these measures through the lens of co-creation. Indeed, through the analysis of these papers, we could see how citizens deployed voluntary compliance as a fundamental resource for the success of these unique measures, whose implementation is the consequence of a turbulent pandemic.

Yeo and Lee (2021) described a process of co-creation between the Korean Government and individual citizens for the production of public value. In this instance the social distancing campaign promoted by the Korean Government involving effective leadership by public actors has been combined with the voluntary compliance of individual citizens acting as “incident commanders of their life”, based in the traditional conformity to authority typical of Korean culture. Through the combination of these resources, the process of co-creation between the public actor and the individual citizens has been successful in managing the spread of contagion. In contrast, Tallacchini (2020) provided evidence of how a trusted relationship between citizens and institutions has not been sufficient for compliance with safety measures. Indeed, spreading knowledge to implement these new measures must be coupled with the necessary acquisition, understanding, and implementation of scientific facts by the citizens. In this way, the authors highlight how the success of specific measures to deal with turbulence passes through the voluntary

compliance of citizens. Zhao and Wu (2020) analyzed the citizen-state relationships in China during the first phases of the pandemic. The authors underlined how a government that could not rely on the voluntary compliance of citizens in following behavioral rules such as social distancing or the self-quarantine could only go down the road of deploying expensive and time-consuming top-down enforcement of prevention measures, which often prove to be less effective. Brodie et al. (2021) reinforce this through their description of the failure of the Australian Government to implement effective contact tracing measures. Despite huge financial investments in the creation of several digital applications and a transparency commitment in the sharing of information and knowledge, the implementation of contact tracing has been unsuccessful due to low adoption. This case demonstrates how, without the voluntary compliance of citizens, the implementation of extreme measures such as contact tracing can fail.

5 | DISCUSSION & CONCLUSIONS

The aim of our paper was to provide empirical evidence for the concepts of robustness under turbulent times by exploring the co-creation experiences during COVID-19 and to ask what the role of robustness in these processes has been. More specifically, we referred to the robust governance strategies developed by Ansell et al. (2021) and focused on how co-creation processes between the public sector and other societal stakeholders can benefit from employing robustness to deal with the volatile context and the unpredictable developments of turbulence. This work builds on the emerging literature in the Public Administration and Policy fields on concepts of turbulence and robust governance system (Ansell et al., 2017; Ansell & Trondal, 2018; Ansell et al., 2021; Capano & Woo, 2017, 2018; Howlett et al., 2018; Sørensen & Torfing, 2019b; Sørensen & Ansell, 2021). In particular, this literature strand underlines the necessity of moving beyond the traditional crisis management and its resilience “bouncing back” strategies, considered not adequate and potentially dangerous when we deal with turbulent events due to their aim of reinstating a precedent equilibrium (Carstensen et al., 2022).

However, due to the novelty of this body of knowledge, it lacks empirical evidence, which is the gap that we began to fill. Building on these findings, we discuss specific issues of co-creation of public value during periods of turbulence, such as emerged during the COVID-19 emergency. However, we first acknowledge the limitations of this work. We are aware that our decision of not including policy reports and gray literature and their immediacy about practical and empirical experience might have potentially affected the range of empirical cases and strategies. However, we decided to rely on data constituted by the scientific production on co-creation, co-production, and social innovation which undertook a peer review process as an assurance of higher reliability. Second the choice of the time frame in the inclusion criteria might have affected the exclusion of papers that collected data during March 2020 and February 2021 but for which the publication process has lasted longer of that time frame. However, our SLR rests on papers that were written as immediate responses to the challenges posed by the COVID-19, with all the acknowledged limitations provided by the provisional nature of these insights.

Being aware of these limits, our article proposes the following insights.

5.1 | Robust governance strategies: Empirical validity and configurational approach

Firstly, the taxonomy of the robust governance strategies elaborated by Ansell et al. (2021) was revealed to be empirically valid. Indeed, even if with different frequencies, all six governance strategies have been confirmed as having been employed by the public sector to implement co-creation processes during the COVID-19 emergency. In addition, a seventh robust governance strategy emerged from our findings. Indeed, six papers have underlined the fundamental contribution of individual citizens in co-creating health as a public value (Bozeman, 2007) by their voluntary compliance with non-pharmaceutical interventions implemented by governments. At first sight, measures such as contact tracing, self-quarantine, or stay-at-home orders could be classified as being either top-down enforcements or simple recommendations from the government to the individual citizen. However, according to our findings, the implementation of these

measures has been possible only through a specific process of co-creation with a constructive exchange of resources between the public actor and individual citizens. On the one hand, governments around the world were conscious of not being able to rely on citizens' spontaneous compliance, deciding to contribute to these co-creation processes by a deliberate action of openness and transparency and several actions of robust communication (Zhong et al., 2022). Indeed, through active communication to the public about the reasons behind these measures and constant updating about the pandemic's evolution, governments have been able to gain a trust surplus from citizens and mobilize society as a whole (Janssen & van der Voort 2020; Moon, 2020). On the other hand, the contribution and involvement of individual citizens in complying with these exceptional measures went above and beyond mere acceptance or the fear of being sanctioned. These measures have often concerned the curtailment of some fundamental civil and political rights, such as privacy (e.g. contact tracing), or freedom of movement (self-quarantine and stay-at-home orders). In a democratic context, compliance with these measures is not passive but should be framed as a deliberate contribution through a sacrifice of some fundamental rights with the clear intent of producing public value to temporarily deal with a turbulent pandemic. In addition, individual citizens have also expressed their voluntary compliance and contribution to the co-creation processes of health as a public value by acquiring and understanding the necessary scientific information to appreciate the usefulness of these emergency measures. Adopting the co-creation ladder approach as developed by Torfing et al. (2019), we could consider the voluntary compliance of citizens to sit on the second rung. Indeed, citizens have voluntarily engaged with the public sector through the contribution of fundamental resources to co-create public value not only for themselves but also for the community. Secondly, the results of our systematic literature review showed a clear pattern about how the public sector deployed a combination of robust governance strategies to co-create with other societal stakeholders. In this respect, our study highlights that robustness should not be framed as an out-out choice between different strategies but rather as an open toolbox from which the public sector and the stakeholders involved in the co-creation processes could recur to different compatible combinations of strategies. For example, we have observed interesting combinations, such as between the bounded autonomy strategy employment and the usage of bricolage; between prototyping and bricolage; between scalability through bounded autonomy and through platform governance (Ansell & Miura, 2020).

5.2 | Stakeholders' involvement in the public value co-creation during turbulent times

Third, we have surprisingly observed that a significant difference in the scope, size and level of engagement and integration of State and non-State actors may exist between co-creation in normal times (Sørensen & Torfing, 2019a; Torfing et al., 2012) and in turbulent times (Ansell & Trondal, 2018). Specifically, regardless of the exact robust governance strategies employed, the role covered by non-profits, private actors, academics, and citizens has not been just marginal or dictated by window-dressing reasons but rather has been significant, often participating into institutional arenas to define all the stages of specific policy solutions. This is at odds with what the literature says about the degree of involvement of stakeholders in processes of co-creation with the public sector. Indeed, the quality of the participation often stops at the lowest rungs of the co-creation ladder, with stakeholders rarely making any substantial decision about the design and the orientation of the co-created solutions (Torfing et al., 2019) due to a variety of reasons, including high institutional and operational costs in dealing with a wide variety of stakeholders (Nabatchi & Leighninger, 2015; Klijn & Koppenjan, 2015) and risk-aversion to sharing power with lay-actors (Hartley et al., 2013; Pestoff et al., 2012). However, it might be that the deeper stakeholders' involvement in the robust co-creation processes is a reaction to the intercurrency and temporal complexity characteristics of turbulence, as they have occurred during the pandemic (Ansell & Trondal, 2018). Indeed, the new and unusual institutional arrangements and the necessity of developing rapid solutions might have played a fundamental role in overcoming the above-mentioned barriers to the co-creation processes, opening up more meaningful participation.

5.3 | Future research directions

It seems that a higher degree of involvement of societal stakeholders in co-creation for a robust system is a necessity, which confirms the importance of flexibly adapting the “normal times” institutions during turbulent times through the agile modification of existing norms and routines to possibly unpredictable developments (Carstensen et al., 2022). In this respect, our study has shown that the combination of different robust governance strategies might result in the creation of proto-institutions, which are “new practices, technologies, and rules in the making” (Lawrence et al., 2002, p. 283) and “embryonic institutional forms legitimated because of their creative and productive ways to respond to emerging human needs” (Cappelletti, 2017, p. 59) that “have the potential to become full-fledged institutions if social processes develop that entrench them and they are diffused throughout an institutional field” (Lawrence et al., 2002, p. 283). In this respect, we offer to future research, policy, and debate the proposition that turbulence may require ad hoc turbulent institutions. However, as found by Edelenbos (2005) in studying interactive governance in normal times, these (proto-)institutions can conflict with existing decision-making institutions in representative democracies, with potentially dangerous trade-offs between participation, democracy, and co-creation, and centralization, authority, and technocracy. Therefore, a holistic view on robustness should not overlook the political aspects of governance. Building a robust political system, capable of authoritatively allocating values and of dealing with the conflicts of power and influence is fundamental in liberal democracies even in the face of turbulence demands (Sørensen & Ansell, 2021) (Capano & Toth, 2022).

In addition, we underline the necessity for future research to adopt a policy-oriented perspective towards public value co-creation experiences that happen during turbulent times. Indeed, our analysis highlighted how the necessity of a rapid response and immediate solution due to the temporal complexity restraints imposed by the turbulence of COVID-19 has caused both overlapping and acceleration of the different phases of the policy cycle. We encourage scholars to explore if turbulent events systematically cause the disruption of the “ordinary” course of co-creation processes and of their policy cycle. Moreover, we suggest to analyze the existence of potential difference between co-creation processes in different policy domains during turbulent times. Further studies may also consider adopting a configurational approach to explore the interplay among the different robust governance strategies and their effects on the robustness of the public sector institutions enabling those combinations. Finally, due to the peculiar nature of a pandemic, voluntary compliance of citizens was one of the strategies enhanced to address the health emergency, as underline by our findings. We do believe that future research should focus on discovering what kind of mechanisms support the replication of voluntary compliance (and engagement in co-creation) in different sectors or to address different turbulent problems.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article.

ORCID

Fulvio Scognamiglio  <https://orcid.org/0000-0002-2376-5503>

Alessandro Sancino  <https://orcid.org/0000-0002-1892-9622>

Francesca Caló  <https://orcid.org/0000-0003-4755-3959>

Carol Jacklin-Jarvis  <https://orcid.org/0000-0002-8542-0914>

James Rees  <https://orcid.org/0000-0003-0545-782X>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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