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EXECUTIVE SUMMARY OF THE THESIS

Design-Driven Policy Innovation and Subsystem Dynamics: the Case of the Digital Civilian Service

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1 Introduction

The concept of innovation is both intricate and multifaceted. While most innovation definitions predominantly centre on business innovation, the significance of innovation in the realm of public policy is often underestimated. However, in our interconnected and ever-evolving global landscape, public policies must evolve to tackle urgent issues such as climate change, public health, urbanization, and digital transformation.

Hence, the primary objective of this thesis is to enhance our comprehension of the dynamics of policy innovation using Punctuated Equilibrium Theory (PET) [1] as the reference framework. PET occupies a prominent position in the policy change literature as it challenges the conventional idea that change is typically incremental. Instead, it posits that policy evolution is marked by alternating periods of stability and phases of rapid transformation, frequently catalysed by external events or shifts in public opinion. This theory presents a macro-level view of policy change,

emphasizing the pivotal role of the subsystem, which is the network of all actors interested in a specific issue. However, PET does not delve into the micro-level dynamics within the subsystem that influence the policy change process.

To address this limitation, the aim of this thesis is to explore the applicability of the Design-Driven innovation theory [2], which was originally developed in the realm of product and service, to the field of public policies. The selection of this theory is founded upon its prominence in academic literature and its alignment with PET's notion that a shift in meaning instigates change. The empirical case study selected for testing this hypothesis is the Italian Digital Civilian Service (SCD), a policy designed to address digital inequalities through “eFacilitation” and digital education activities. This choice was driven by three key factors: the SCD's well-defined and easily observable characteristics, which facilitate the empirical analysis, and its categorization as a social policy that prioritizes human capital over physical assets. Furthermore, contrary to PET's findings, this policy challenges the notion that punctuation leads to substantial budget variations.

2 Literature Review

The sources for the literature review were gathered following the PRISMA protocol and adopting a mixed approach consisting of three main steps:

1. Initially, given the central emphasis on the topic of policy change and innovation, a deliberate choice was made to employ a snowball approach starting from the seminal paper of PET: "*Agenda Dynamics and Policy Subsystem*" [1].
2. Recognizing the limitations of PET, the search extended beyond policy studies to investigate innovation models from various scientific disciplines. Design-Driven innovation theory emerged as a promising candidate for further exploration, due to its relevance and points of contact with PET. A key reference paper, "*Design, Meanings, and Radical Innovation: A Metamodel and a Research Agenda*" [2], underwent a comprehensive snowball approach to unearth related literature. Additionally, the research identified papers that examined factors promoting change and innovation within organisations, thereby contributing to the extension of Design-Driven theory to the context of policy innovation.
3. To enhance comprehension of the chosen case study, an exhaustive search was performed to identify policies and initiatives that address digital inequality, similar to the SCD, via a targeted query in the Scopus database.

2.1 Punctuated Equilibrium Theory

Punctuated Equilibrium Theory (PET) posits that policies go through extended periods of stability interrupted by sudden, dramatic changes referred to as *punctuations*. This theory is rooted in pluralism, which is the idea that policy change is influenced by various competing and often conflicting interests and actors. This pluralistic environment gives rise to the presence of multiple policy subsystems. Each subsystem represents specific issue areas within the political system, and it is composed of different stakeholders sharing concerns about the same issue.

Furthermore, PET's core idea revolves around the interaction between policy image (how policies are portrayed and discussed in the public domain) and

policy venue (institutional settings for decision-making), which can lead to periods of stability or rapid change. Within stable subsystems, there is control over both policy images and venues, resulting in policy stability (*negative feedback*). Conversely, when critical events or strategic actions weaken the existing policy image, alternative images can attract new policy venues, fostering radical policy changes (*positive feedback*).

2.2 Design-Driven innovation

Design-Driven innovation embodies a pioneering paradigm in product and service innovation, prioritizing the novelty of message and design language over the traditional focus on functionality. This approach endeavors to unearth latent user desires, infusing products with new and transformative meanings. In this context, meaning can be defined as the emotional and symbolic value attributed to a product through the use of design language. In this theory, design assumes a central role as the primary driver of the innovation process, with the potential to reshape markets, enabling organisations to take a leadership position. This is particularly pronounced when design and technology-driven innovation converge, resulting in transformative "technology epiphanies". Furthermore, these radical Design-Driven innovations are designed and developed following a process, known as the Metamodel, which involves collaborating with key interpreters, who engage in a "design discourse", providing insights into evolving socio-cultural models. [2]

2.3 Digital inequalities

Digital divide refers to the gap between individuals who can access and use digital media and those who do not [3]. Some scholars prefer the term digital inequalities to emphasize the social, cultural, political, and economic disparities within the digital realm. Regardless of the terminology, the literature generally distinguishes between three levels of divide. The first level pertains to the lack of access to or motivation to access digital technologies, the second level involves the absence of essential digital competences required for effective ICT usage, and the third level encompasses the inability to fully realize the social and economic benefits of Internet use. Focusing on policies designed to address the second-level divide, similar to SCD, the primary focus is on

marginalized individuals. These individuals find themselves in a disadvantaged socially and economically excluded position compared to the broader societal majority. This marginalization can be attributed to various factors, including age, gender, ethnicity, educational background, or economic status.

3 Knowledge Gaps and Research Questions

PET often falls short in providing insights into the micro-level dynamics within subsystems and the unique characteristics of stakeholders that shape policy change. Acknowledging this inherent limitation, this thesis constructs a more comprehensive model, with the aim of enhancing our understanding and providing a more detailed description of policy innovation. To achieve this objective, the central hypothesis to be empirically examined concerns the application of Design-Driven innovation theory in elucidating the intricacies of policy innovation. Both PET and Design-Driven innovation theory emphasize the critical role of shifts in meaning, termed "policy image" in PET, as catalysts for change, and they both recognize the existence of periods of incremental or radical change. In particular, the research questions guiding this investigation are as follows:

- **RQ1:** *Can Verganti's (2008) Design-Driven innovation theory be applied to the context of public policy innovation?*
- **RQ2:** *What adaptations are necessary to make Design-Driven theory relevant and applicable to the domain of public policy innovation?*
- **RQ3:** *Does the application of Design-Driven theory to public policy provide an alternative or complementary explanation of policy innovation compared to Punctuated Equilibrium Theory?*

4 Methodology and Data

This thesis employs a qualitative approach methodology based on a single case study: the Italian Digital Civilian Service (SCD). The choice of SCD was driven by its distinct nature as a well-defined subsystem, its classification as a social policy, and its history of punctuation that challenges PET's assumptions about budget

allocations in policy innovation. More precisely, this thesis centres its attention on the organisational stakeholders involved in the design and execution of the SCD. These stakeholders encompass the Digital Transformation Department (DTD), the Department for Youth Policies (DYP), and organisations and municipalities involved in the implementation of the SCD. Moreover, data for the study were collected from a wide range of sources, including academic literature, organisational and institutional websites, on-site observations, and an extensive series of 34 interviews. These interviews involved a diverse array of participants, encompassing representatives from organisations, employees, Local Project Operators (OLPs), and volunteers, as well as one interview with the policymaker, represented by the DTD. The data analysis employed an abductive coding approach, allowing for an iterative process where empirical observations and theory development influenced each other to refine theories. The interview coding process followed the Gioia methodology, involving a first-order analysis to identify important elements and a second-order analysis to group and categorize labels into aggregate dimensions.

5 Results

The analysis of the policymaker's interview and the examination of the SCD Framework Program confirm that the innovation proposed by DTD was radical, involving significant changes in both meaning (policy image) and functionality (policy instruments) [1] [4]. Additionally, the examination of the SCD design process aligns with the Metamodel [2]. However, upon closer scrutiny of the subsystem, it becomes apparent that the application of the Design-Driven theory as-is is insufficient for explaining policy innovation. Unlike the domain of products and services, not all stakeholders uniformly endorse the changes designed by the policymaker. Consequently, the innovation envisioned by the policymaker does not universally materialize as a radical transformation. Hence, an expansion of the Design-Driven theory is necessary to encompass and elucidate the role of subsystem's stakeholders in the policy innovation process. These considerations are summarized in Proposition 1.

Proposition 1: *Design-Driven innovation theory is incomplete when applied in the public policy domain to explain radical policy innovations.*

Subsequently, Propositions 2 and 3 aim to refine and enhance the Design-Driven theory by elucidating factors, derived from empirical analysis, that influence stakeholders' alignment with the new meaning and functionality proposed by the policymaker.

Proposition 2: *The higher the level of stakeholders' political autonomy, the scale of their network, and their level of experience, the lower their propensity to implement radical changes in meaning.*

Proposition 3: *Insufficient resources, encompassing infrastructure, technology, time, human resources, and financial means, reduce a stakeholder's propensity to implement radical changes in functionality.*

Lastly, the organisational nature of the stakeholders under scrutiny leads to the emergence of codes related to organisational dynamics. This, coupled with an extensive literature review exploring the organisational and cultural characteristics influencing a positive and innovative organisational response to change, highlights the importance of introducing an additional dimension to the model, as outlined in Proposition 4.

Proposition 4: *To fully explain policy innovation, it is necessary to consider also organisational dynamics within the subsystem. Depending on their organisational and cultural characteristics, stakeholders can have either a transformative or a passive reaction to changes.*

6 Discussion

6.1 Theoretical contributions

The application of Design-Driven theory in the sphere of public policy requires a redefinition of meaning as policy image, aligning with the PET, and functionality as policy instruments. Within the context of this thesis, policy instruments refer specifically to the techniques and tools devised by policymakers to attain specific policy outcomes [4] with a particular emphasis on technological and regulatory changes. Nonetheless, as emphasized in Proposition 1, PET is not directly applicable to public policy innovation. This limitation stems from its failure to adequately account for the

influence of stakeholders on the innovation's outcome. While the theory was originally developed in the context of products and services, where the innovation process is unidirectional, guided by the designer, and organisational stakeholders primarily act as intermediaries, the analysis of public policy reveals a different pattern of stakeholder behavior. In this arena, the process is bidirectional, with stakeholders actively shaping innovation through their participation in policy design and implementation [5]. This prompted an investigation into the factors influencing stakeholders' alignment with the policymakers' proposed radical changes in meaning. In particular, the empirical analysis revealed three critical factors (*Proposition 2*):

- *Political autonomy:* highly autonomous stakeholders can resist changes to protect their own political priorities, whereas those with less autonomy are more tied to the policymaker's political agenda.
- *Network's scale:* stakeholders representing a broader network, with diverse internal interests and bureaucratic structures, face difficulties in aligning with new meanings. In contrast, smaller networks, characterized by direct communication and fewer hierarchies, are more flexible and tend to embrace changes proposed by policymakers more readily.
- *Experience in the policy domain:* stakeholders with extensive experience may resist change due to adherence to traditional practices, whereas those with limited experience tend to be more receptive to adopting new approaches.

Furthermore, it is worth noting that the availability of resources significantly influences the stakeholder's capacity to implement radical changes in functionality (*Proposition 3*). In practice, an organisation equipped with the requisite resources for adopting new technologies or complying with regulation is better positioned to undertake such changes compared to an organisation lacking them. Specifically, four critical resource categories have been identified. Firstly, *financial resources* are imperative for covering the costs associated with the adoption of new technologies and regulatory compliance. Secondly, *human resources* are fundamental for the effective execution of changes in functionality. Thirdly, *infrastructure and technologies* are pivotal

for facilitating the efficient implementation of technological and regulatory alterations. Lastly, having sufficient *time* for planning and executing these changes is paramount.

Furthermore, a comprehensive analysis of the interviews, together with the literature review, underscores the profound impact of stakeholders' organisational dynamics on the extent of radical innovation achieved. These organisational dynamics give rise to two distinct reactions to change: transformative and passive. In the case of a transformative response, organisations actively embrace change; they implement substantial internal adjustments to adapt to new conditions and allocate resources to drive innovation. Conversely, a passive response involves resistance to change, with organisations preferring minimal adjustments to maintain existing practices.

Empirical analysis has identified specific factors associated with a transformative reaction, which are consistent with literature findings. These factors encompass empowerment of human resources, collaboration with external stakeholders, an experimentation culture, a supportive and collaborative environment, and effective leadership. Conversely, a transformative reaction is associated with companies characterized by a low level of human resources empowerment, rigid and bureaucratic organisation, insufficient collaboration of external stakeholders, lack of internal collaboration, and lack of effective leadership. Therefore, it is necessary to consider an additional dimension related to organisational dynamics for a comprehensive understanding of the outcome of policy innovation (*Proposition 4*).

6.2 Comprehensive framework

These theoretical contributions converge in the creation of a three-dimensional model (Figure 6.1). This model extends the scope of the Design-Driven theory, which typically focuses on change in terms of meaning and functionality, by introducing a thorough analysis of the factors and stakeholders' attributes that impact change. Additionally, it introduces a third dimension, "organisational dynamics", which takes into account the cultural and organisational characteristics of stakeholders. Each axis is further divided into two stages radical and incremental, based on the degree of change.

This model enhances the understanding of micro-level dynamics within a subsystem when a policymaker aims to implement a radical innovation. Indeed, not all stakeholders readily embrace the proposed radical change, leading to tensions along the three dimensions. This results in eight distinct scenarios, each representing a different type of innovation resulting from the policymaker's radical Design-Driven innovation.

Furthermore, the empirical analysis has pinpointed stakeholder characteristics and factors associated with each scenario, serving as the foundational drivers of tensions either in favour or against radical change.

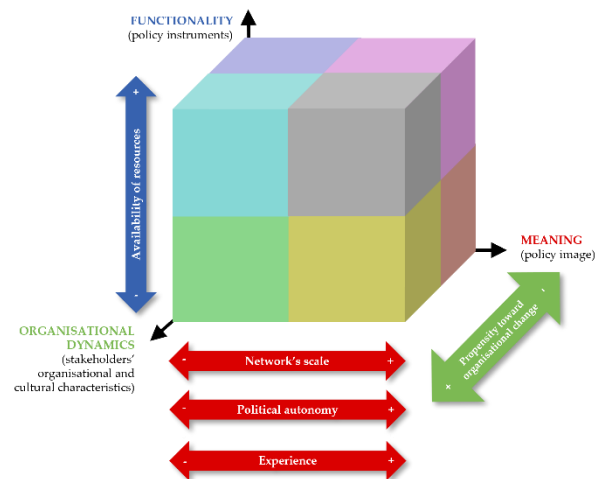


Figure 6.1: Comprehensive framework

6.3 Policy implications

The proposed model offers valuable insights for policymakers striving to develop radical policy innovations. In contrast to the product and service realm, where designers primarily determine the radicality of innovation, public policy must consider the influence of organisational stakeholders on the extent of change. In the context of public policy design, achieving radical policy innovation demands stakeholders' alignment with new meanings, the implementation of innovative policy instruments, and the presence of transformative organisational dynamics. Policymakers wield greater influence over radical changes in functionality due to their regulatory authority and resource allocation capabilities. However, influencing the change in meaning is more challenging as it involves stakeholders' deeply ingrained principles and values. Effective

communication and stakeholder engagement are required to shape their perception. Lastly, in the realm of organisational dynamics, the policymaker has minimal to no influence, as organisational resistance to change often stems from well-established internal factors and cultural elements that are solely controlled by the organisation itself. Therefore, incorporating the analysis of subsystem dynamics into the Metamodel is essential. This phase assesses subsystem characteristics and network dynamics that could hinder or foster policy innovation, ultimately leading to more informed and effective decision-making in the policy design and implementation process.

6.4 Managerial implications

Managers should strive to adapt their organisation's culture and characteristics to cultivate innovation and embrace organisational change. Essential elements for fostering a transformative organisational culture encompass empowering human resources, fostering collaboration with external stakeholders, developing organic organisational structure, nurturing a culture of experimentation, creating a supportive and collaborative work environment, and the presence of an effective leader. An organisation that values these characteristics positions itself as more innovative and agile, ensuring continued competitiveness in a rapidly evolving and dynamic business landscape.

7 Conclusion

The study highlights the pivotal role of subsystems, with a particular focus on stakeholders, in shaping the outcome of policy innovation. Stakeholders' characteristics, including their scale, experience, political autonomy, and resource availability, had a significant impact on how they respond to policymakers' proposed innovations. Moreover, while the application of Design-Driven theory holds promise in the public policy realm, it requires some adjustments. Specifically, to provide a more comprehensive analysis of policy innovation, a new dimension, "organisational dynamics", needs to be introduced. This dimension encompasses both transformative and passive reactions to innovation.

These considerations lead to the development of a three-dimensional model that offers a more nuanced understanding of policy innovation. This model considers meaning, functionality, and organisational dynamics, breaking them down further into incremental and radical phases. The resulting framework is divided into eight distinct areas, each representing a different outcome of Design-Driven innovation depending on stakeholder characteristics. This approach complements PET by providing valuable insights into the micro-level dynamics influencing punctuation in policy innovation.

Finally, the study has some limitations, such as potential interviewee biases and constraints on the generalizability of the results to other policies and contexts. Future research opportunities include using both qualitative and quantitative methods for developing a more reliable model, applying it to different contexts and policies to improve generalizability, examining a wider range of stakeholders, and conducting a more in-depth analysis of factors influencing changes in functionality.

8 Bibliography

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