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Bottom-Up-Down Approach

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Bottom-up-down approach

Creating system maps by understanding people's stories

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Working through a wicked problem is a great challenge for public managers all over the world. At Gnova, Brazil 's federal government innovation lab, we decided to develop an approach that brings together design, system thinking and behavioral sciences to approach complex issues such as vicious cycles of extreme poverty in rural areas of Brazil.

The project is still ongoing, but there are few good indications that lead us to think that individual stories can be transformed into systems maps. Our main goal is to evaluate the behavior leverages of these systems to formulate and propose effective public policies that change the lives of the people in those stories. In this article, we explore what is called this the bottom-up-down approach, a way to understand how individual behaviors compose or even emerge in systemic behavior.

Keywords: behavior; storytelling; system map; public policy.

Introduction

Understanding human behavior has been challenging for centuries. With the development of experimental psychology and its implications in behavior economics, observing and intervening in this area has become more and more a practice among policymakers, designers, engineers, publicists and even politicians (OECD, 2017). Its most known applications to the public sector are nudges, little pushes that induce or encourage desired behavior towards a pre-stated goal. The experiments and policies designed with nudges, specially from the Behavioral Insights Team (Halpern & Service, 2019), are well documented and have become an aspiration to many governments around the world.

Although effective, nudges are meant to change very specific behavior related to very specific problems. When working with more complex scenarios, like rural poverty, nudges can fall short on both the scale and the diversity of change needed in people's ways of doing and thinking (Sunstein, 2017). In these settings, behavior science may have better answers for group behavior, complex problems and systemic change.

As a part of the Gnova's team - Brazil's federal government innovation lab, our challenge is to explore and develop an approach that brings together behavior science and systems thinking in public policy design. Our case for experimenting this novel approach is a rural productive inclusion policy from Brazil's Ministry of Citizenship, that aims to encourage and support extreme poor rural producers to achieve a surplus of produce to generate income. As this could be considered a wicked problem (Rittel; Webber, 1973), we decided to work with a systemic approach, seeking to understand how causes and consequences intertwine in this complicated vicious cycle that keeps families in food insecurity for many generations.

Certainly, there are many objective factors that reinforce rural poverty, such as low access to productive land and tools, credit and productive structure. However, the Ministry of Citizenship diagnosis, as most public policies,

does not account for behavioral factors of the people that are suffering from chronic poverty. In that sense, we decided to bring the behavioral science perspective as a tool to map variables in this complex system.

The main goal of this project is to prototype and test a solution that considers behavioral factors and system thinking in the redesign of public policy that aims to reduce the extreme rural poverty in Brazil.

About Gnova

Gnova is a government innovation lab founded in 2016 at the Brazil Federal Government 's National School of Public Administration (ENAP). The lab is focused on creating public value and fostering public innovation by training public administration departments through innovative projects that apply the design approach to transform public policies. To work in such projects, the lab recruits mixed teams of lab innovators and "problem owners", people that oversee the public policy and seek to innovate on it. Therefore, the lab serves a double purpose: innovating in public projects and creating capacity in public servants.

After working in more than 30 projects with design thinking tools, the lab team decided to test new approaches, since frequently the lab's projects work over wicked problems - complex, systemic, multicausal and cyclic issues - and the double diamond approach has shown to be insufficient to deal with such problems. In 2021, to expand the methods and tools of the lab, the team brought two new approaches: systemic design and *behavior*al sciences, applying both on this year's projects, the Inclusive Rural project among them.

Problem context

The Ministry of Citizenship's Social and Productive Inclusion Secretary (SEISP) points out that there are about 3.7 million families living in extreme poverty and social vulnerability in rural areas in Brazil. In general, this population has a low level of education and difficulties to access jobs and generate income.

The social vulnerability and poverty settings are multidimensional and twist together different causes and consequences in a perverse vicious cycle that has been reinforcing itself along decades. According to SEISP analysis, this cycle can be described as: the structural inequality and the excluding modernization of Brazilian agricultural industry resulted in millions of rural families that (i) doesn't access basic rights (sanitation, health, education, habitation and documentation), (ii) have a poor access to productive land, tools, credit and productive structures and (iii) have few opportunities to access jobs and generate income. As a consequence, these families have insufficient food consumption and could be described as living under food and nutritional insecurity, which impacts their health and education, deepening the social vulnerability and diminishing their jobs opportunities, then reinforcing the poverty cycle.

In the last 20 years, some policies have been developed to improve rural families' conditions with relative success. However, there are still 3.7 million families living under poverty lines in rural areas. This number has grown in the last 5 years, posing a challenge to the government to reverse this trend.

Therefore, it is fundamental to deeply understand the different dimensions that caused this vicious cycle to emerge, making the systemic design approach the best fit to map and change the system.

From a telescope to a microscope - identifying behavior as variables

Brazil's government is both centralized and distributed: national strategic policies and most of its financing are set by federal government ministries and agencies, whereas minor policies, most implementation and public services are provided by local governments. This uneven distribution of prerogatives has made Brazil's federal executive public servants very distant from citizen's realities and challenges, but heavily equipped to deal with macroscopic views, abstract thinking and critical inquiry abilities. Understanding, at a bigger level, how systems work, their main features and problems is an important step walking into systemic thinking (Jones, 2020), but realizing these systems' implications in the experience of citizens (Buchanan, 2019) is key to designing better interventions that promote systemic change.

When designing the method for Inclusive Rural project, it was important to bring together design's potential of shaping human interaction with artefacts (Flusser, 2017), behavioral sciences' understanding of how individuals

and groups behave, and systems thinking tools to map and find leverage points that can promote systemic change (Meadows & Wright, 2015). The overlapping of disciplines and practices was translated in a method that alternates between macroscopic and microscopic views, and changes between systemic and behavior lenses.

Our main goal observing these systems through both systemic and behavioral lenses is to understand if different behaviors of individuals that could result in systemic behaviors, through events such as auto-organization and emergence. Identifying the links and leverages between individual, group and system behavior is necessary to civil servants to propose an intervention (public policy) in the system.

Beginning the project Inclusive Rural

The first step to understand this complex system was to analyse the stories, variables and causes of the problem, defined as "a significant portion of rural families cannot produce enough for both consumption and commercialization". This process was approached through system thinking and design tools, such as double-Q-diagrams[1] (Kim, 2016), storytelling and mind mapping. The result was a very intricate and also very dense set of initial variables, relating to structural and conjunctural perspectives. The team also enumerated some behavioral variables, although these variables were highly biased since these public servants had very little experience on the field with poor rural communities and families.

Empathizing on the field: design approaches to understanding human experiences

Since the main challenge for the team was to identify behavioral variables, specially at an individual level, the next step was to find the relationship between individual behavior, group behavior and system behavior. This approach leads us to consider different kinds of behavior variables such as: motivations, self-control, lack of attention and social norms.

These behaviors can be observed through different approaches. In this project, design research[2] (Downton, 2005) approaches were deployed as the main method to understand rural communities and families' experiences. It is important to note that the team also is experimenting with more scientific-based surveys to analyze these behaviors, although COVID-19 severely impairs the application on field with such target audience.

We developed an ethnographic research plan focused on mapping behaviors and stories of both target groups and street-level bureaucrats in the field. The research was focused on mapping out how these communities interacted with rural productive inclusion policies through public agents. The main tool used was in-depth interviews, applied as semi-structured surveys with two subgroups: typical cases (groups that struggled to achieve a goal) and positive deviant cases[3] (Pascale et al., 2010). By comparing these 2 groups, we expected to find some patterns of behaviors and objective conditions that will help us to clarify some variables of this system.

Bottom-up-down: individual stories that make up a system; system intervention that changes stories

The next step is to deploy the ethnographic research plan and build a behavioral systemic map of the poor rural communities. This step is based on two assumptions: first, that it is possible to assemble a system by mapping out subsystems and second, that understanding individuals' stories enables experts to find patterns and map out these subsystems. Of course, this final map isn't limited to individual and group behaviors, as structural and conjunctural factors may also play a part on how these systems behave as a whole. However, by taking a behavioral approach towards systemic design, it is possible to create solutions that leverage already successful behaviors or mitigate prejudicial ones. By bringing together a microscopic and macroscopic approach, we may

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[1] A double-Q-diagram is a framework for mapping quantitative and qualitative variables in a system.

[2] Design research states that design can be used as a way of researching and inquiring.

[3] Positive Deviance occurs when certain individuals or groups find better solutions to problems than their peers, while having access to the same resources and facing similar challenges.

change the system's behavior and, consequently, families' lives. That is what we have called the bottom-up-down approach.

Bottom-Up-Down Approach
Understanding individual stories to identify behaviors that act as leverage points in complex systems

Identify behavioral leverage
points in the system

Transform
trajectories into
a system map

Systemic Methods

Create behavioral
intervention at
systemic level

Identify
individual
trajectories

Bottom-up

Behavioral Methods

Top-Down

Change
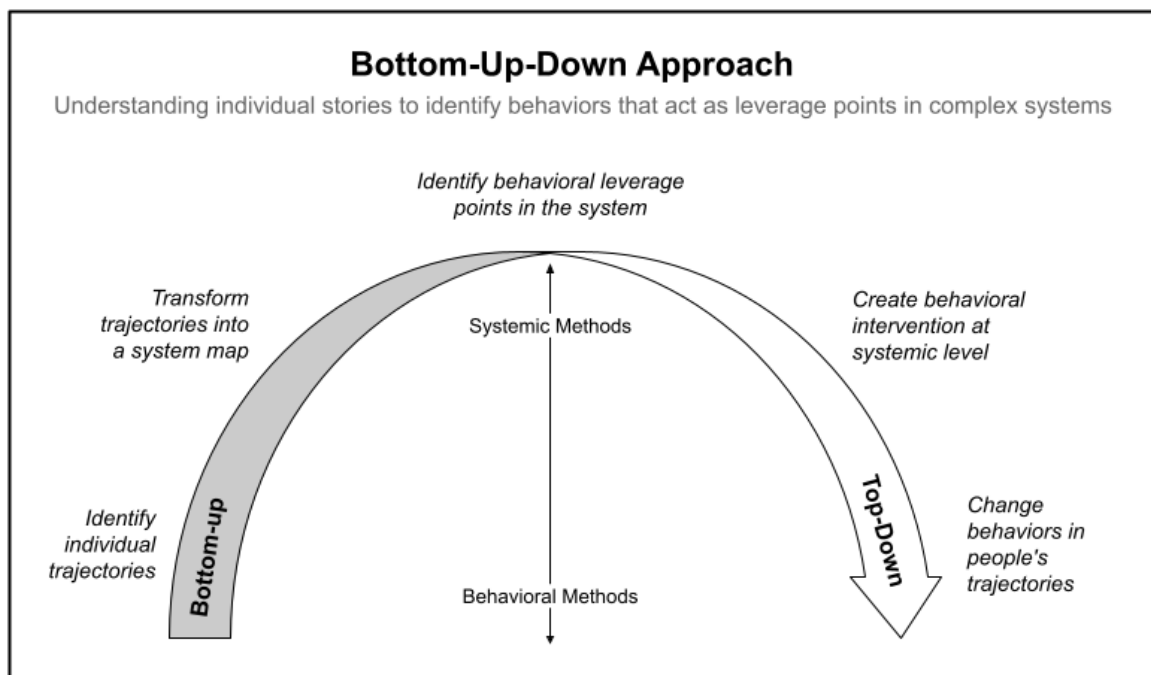behaviors in
people's
trajectories

Figure 1 The bottom-up-down approach as a way to intervene at systemic level by understanding people's stories.

The behavioral and systemic assessments are important to map individual trajectories and to observe general group behaviors. This switch between individual or subsystemic perspective to a group or systemic perspective is important to understand which behaviors can leverage systemic change. Although is not clear at this point of the project, this link between individual behavior, group behavior and system behavior (and the other way around) is a promising way to design and implement effective policies that are both bottom-up-down (changing people's behaviors to create positive impact) and evolutive (by changing certain aspects of human behavior, the systems might adapt towards a more desirable state).

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