Let's Play with Trash:
How Gamification Contributed to the Bottom-Up Institutionalization of Zero Waste Practices

Abstract

The microfoundational turn in institutional theory has focused on how mechanisms of institutionalization at different levels of analysis are intertwined. However, how social actors can more specifically incentivize and motivate individuals to engage in a new practice, ultimately triggering institutionalization, remains to be studied. From individual engagement to institutionalization, trickling-up mechanisms from micro- to macrolevels of practice engagement are not fully understood. To empirically address those questions, we investigate, across eight local communities, how authorities convinced households to adopt innovative waste management practices using gamification—the application of game principles to nongaming contexts. We draw on rich longitudinal qualitative material including interviews, observation, and secondary data, to give voices to multiple stakeholders. Our empirical design includes a variety of stakeholders: from those who promote the practice, to those who engage with it. We inductively build a multilevel model explaining how gamification can lead, from the bottom up, to the institutionalization of new practices. We flesh out the role of game mechanics in pushing individuals to adopt and spread the practice through their groups and communities and become themselves advocates of the emerging institution.

Keywords: Microfoundations of institution; Institutionalization; Gamification.

1. INTRODUCTION

The institutionalization of new practices is necessarily a multilevel process (Schneiberg & Soule, 2005; Aguilera et al. 2018). Understanding how practices are institutionalized through individual engagement and trickling-up processes—from micro- to macrolevel of analysis—has been at the center of the microfoundations debate in institutional theory (Powell & Colyvas, 2008). The "microfoundational approach to institutions seeks to explain the recursive relationships between macrolevel phenomena—wider acceptance of values and beliefs—through some lower level of analysis" of engagement at the individual level (Harmon, Haack, & Roulet, 2018: 465). At this stage, however, we have only a limited understanding of those trickling-up mechanisms, meaning how individual engagement will aggregate at more macrolevel to foster the institutionalization of a practice. That is, actors can push for individual-level engagement with a practice (Lawrence, Suddaby & Leca, 2011), but what remains to be explored is how such engagement can trigger institutionalization. The understanding of such mechanisms is crucial to comprehending how social actors can push for the diffusion of innovative practices from the ground up, making them into norms (van Wijk, et al. 2018). In this study, we thus ask how social actors can trigger the institutionalization of a new practice from the bottom up.

A specific means of triggering microlevel institutionalization processes is through gamification, or what Woodcock & Johnson (2018: 542) call "the capture of play." Gamification is the idea of setting up a system of principles and interactions based on game mechanics to encourage engagement on the basis of intrinsic or extrinsic rewards (Deterding, 2018). Gamification triggers engagement because it generates positive and negative reinforcement and, thus, repetition of desired behavior and elimination of nondesired behavior (Robson et al., 2015). As a consequence, the encouraged behaviors become habits (Duhigg, 2012). Organizations, communities, and authorities can rely on gamification to align individual practices with environmental preservation, for example, when utilities ask their clients to reduce their energy consumption and make them compete on social media to encourage related practices (Wingfield, 2012).

We aim to unpack the processes through which stakeholders can trigger an institutionalization process from the bottom up through gamification mechanisms. To empirically explore this question, we offer an inductive longitudinal study of the institutionalization of innovative waste management practices: waste sorting, recovery, and reduction. More precisely, we explore how eight French local authorities pushed this practice onto their community and encouraged individual engagement, through a gamification

mechanism called the "Zero Waste Challenges." We relied on participant observation, interviews, and secondary data to depict the interaction of a wide range of stakeholders: from the local communities promoting and organizing the challenge to the participants who adopted the zero waste practices. We observed how a game design helped trigger sustained engagement with a socially innovative practice and how this engagement influenced and was influenced by groups and social relations. Our case shows how the Zero Waste Challenge participants not only maintained their engagement in the socially innovative practice but became advocates for those practices and triggered further diffusion. Our study contributes to the microfoundation of institutional theory, the processes of gamification in organizing, and the practical understanding of innovative practices can be promoted and diffused. We inductively created a model of how to practice engagement at the microlevel can trickle up and foster institutionalization, and the role of gamification mechanisms in triggering those processes. We also review and document the mechanisms of gamification through which we can comprehend organizing through noninstrumental interactions. Bringing together institutional theory and gamification informs the motivational aspects of bottom-up institutionalization. Our work also has clear practical implications. Understanding the institutionalization of a socially innovative practice is key to fostering those innovations and spreading their benefits to society (Rothenberg, 2007).

2. A BOTTOM-UP APPROACH TO INSTITUTIONALIZATION

Institutional change agents need to diffuse beneficial practices by convincing other actors to adopt them (Micelotta et al., 2017; Vijay & Monin, 2018). In fact, institutions set up the conditions for social, cultural and political motivations of economic conditions (Teschke & Wenten, 2016; Butzbach et al. 2019). Even socially beneficial initiatives are commonly rationalized (Hwang & Powell, 2009), by bringing different systems of beliefs, values and motivations together (Westley & Antadze, 2010). In this case, unveiling the interdependence between actors at different levels of analysis is essential (van Wijk, et al. 2018: 2) because social topics feature substantial interdependencies among multiple systems and actors, and have "redistributive implications for entrenched interests" (Rayner, 2006: 2).

To understand the institutionalization of innovative practices, we focus on the processes at the microlevel (i.e., individual interactions) and how they aggregate at a more macrolevel (i.e., at the group, community, field or society level) to trigger institutionalization (Harmon, et al. 2019). Social actors have various means to push new practices on a broad range of relevant individuals (Tracey & Stott, 2017), but very little is known regarding how they concretely

motivate them to participate in those practices. Our study focuses on gamification, and we ask how gamification can trigger institutionalization from the bottom up.

2.1 How microinstitutionalization processes trickle up

We approach the diffusion of socially innovative practices by drawing from the microfoundational approach to institutional theory (Powell & Rerup, 2016). This approach relies on the ideas that practices are institutionalized through rituals and microlevel interactions (Dacin, et al. 2010; Cardinale, 2018). Although institutional theory has often focused on the structural level, the institutionalization of new practices is a multilevel process (Schneiberg & Soule, 2005). Institutionalization of socially beneficial practices necessarily impacts the life of individuals (Zilber, 2017; Dacin, Dacin & Tracey, 2011), especially when they deviate from the norms, sometimes before it can change and benefit society as a whole (van Wijk et al. 2018). Microfinance (Bornstein, 1996), the birth control pill (Eig, 2014), or even local solutions to broader problems such as poverty (Martin de Holan et al., 2017) all started from the ground up before becoming institutionalized practices. In particular, at the individual level, actors can engage in "experimental enactment" (Dalpiaz, et al. 2016: 369) in which they try new ways of doing things on the basis of their social interactions, thus triggering a path for change (Emirbayer & Bische, 1998; Micelotta et al., 2017). Expertise is then progressively built in the individuals' repertoire of actions (Smith & Besharov, 2019).

Notably, the microfoundation approach has recently acknowledged the importance of trickling-up mechanisms, proceeding from the individual to the structural levels, that institutionalization would imply (Harmon, et al. 2019). Behaviors aggregate at different levels (Jepperson & Meyer, 2011) and trickling-up mechanisms of institutionalization may involve multiple intermediary stages from the micro to the macro and including mesostages. This phenomenon is often called the "bathtub" metaphor (Coleman, 1986) because of what we see on the surface (individuals engaging with a practice) has deeper structural roots under the surface. Such multilevel approaches to institutionalization enable institutional theorists to go beyond the structure–agency dichotomy (Emirbayer & Mische, 1998; Aguilera et al,. 2018).

Trickling-up mechanisms thus directly involve social actors in spreading the practices addressing key social concerns (Lawrence, 2017) but aggregate behaviors at different levels: individual, social—organizational, and institutional (Jepperson & Meyer, 2011). Specifically, these authors detail how four intermediary sub-processes support the trickle up within the individual level—strictly psychological, social-psychological, elementary social behavior, and rudimentary exchange relations through the mediation of organizations (Ibid.: 61). Institutionalization is a recursive process in which structural elements influence individual behaviors, and individual behaviors inversely aggregate to the organizational and field levels to finally change the macroinstitutional level (Clemente et al., 2017). Unveiling "the complexities and interrelationships across multiple levels of analysis" […] "provides a more direct explanation to how macrolevel institutional meanings persist or change or time" (Harmon, et al., 2019: 5). In this sense, multilevel analysis of the institutionalization of socially innovative

practices is likely to yield relevant insights into the diffusion and the adoption of such practices for wider social benefits.

From an institutional perspective, institutionalization relies on interactions at multiple levels, resulting in the emergence of new practices (Schneiberg & Soule, 2005). Three levels are usually acknowledged: the microlevel (including the engagement of individuals with a practice), the mesolevel (group and community levels), and the macrolevel (when the practice becomes a norm at a structural level) (van Wijk, et al. 2018). Practices are enacted at an individual level, but they only become institutionalized if behaviors start becoming habits and norms (Clemente & Roulet, 2015). Further work is required to understand this transition between a phase when individuals are engaging with a new practice and a phase in which wider audiences consider those practices as taken for granted.

Bottom-up processes of institutionalization or "accretion" have indeed received scarce attention, both empirically and theoretically (Micelotta et al., 2017: 19), despite a growing body of evidence that micro-level interactions are crucial to new practice emergence (Ansari & Phillips, 2011; Smets et al., 2012; Reay et al., 2013). The transition from micro-level engagement to durable institutional change remains to be fully understood, in particular the recursive mechanisms through which macro- and micro-level changes reinforce each other (Clemente et al., 2017; Harmon et al., 2019).

2.2 Gamification and the motivation to adopt new practices

To understand this transition from the micro- to the macrolevel and the institutionalization of innovative practices, we examine a specific means through which a practice can be rationalized (Hwang & Powell, 2009; Teschke & Wenten, 2016), diffused (Cajaiba-Santana, 2014) and systemized (van Wijk, et al. 2018). Gamification mechanics – the idea of applying game principles to nongaming contexts (Deterding et al., 2011) is a set of specific principles and objects that target specific populations and practices to trigger action and individual engagement (Robson, et al. 2015). Liu et al (2017: 1011) are more specific regarding the goal of gamification: "making everyday tasks more engaging." Early gamification initiatives imported technics and mechanics from the computer game industry, and the omnipresence of social media has modified how individuals and organizations apprehend social experience and influence (Robson et al., 2015). Gamification has the power to generate new habits through the reinforcement of desired practices and the deterrence of nondesired practices (Duhigg, 2012). Positive and negative reinforcement relies on a set of extrinsic and intrinsic rewards and punishments. Intrinsic rewards rely on social comparisons and quantified competition (Woodcock & Johnson, 2018).

Gamification mechanics have been commonly studied in marketing as a means to engage consumers (Huotari & Hamari, 2017; Robson et al., 2016; Thorpe & Roper, 2017). They have also been touched upon in information systems (Liu, Santhanam & Weber, 2017) but have been studied more broadly in social sciences to explain the commitment to prosocial behaviors (Morganti, et al. 2017). More recently, organization theorists have started to investigate how gamification was used within organizations or fields. Morschheuser & Hamari (forthcoming) investigate gamification as a driver of

coordination at work. Because the core of institutional theory is to understand how practices, values, and beliefs become taken for granted (Scott, 2007), gamification mechanics are key tools for institutional work because reinforcement processes can lead to this taken-for-grantedness.

Beyond any prize or any monetary incentives, gamification induces change through social dynamics. Two types of interactions are essential. The participants in system interactions describe how participants obtain the objective and game components appropriated. The participants in participants' interactions include how participants offer mutual support to each other to the point of taking parallel initiatives departing from the gamified system. Such relational and agentic mechanisms encourage the exchange and the diffusion of practices, potentially resulting in structural and macrolevel change (van Wijk, et al. 2018).

In this study, we attempt to understand how a socially beneficial practice become institutionalized from the bottom up. To answer this research question, we more specifically investigate the trickling-up mechanisms made possible by gamification processes.

3. METHODS

3.1 Research setting

The last decade included the advent of the circular economy at the European Community and Members State levels. This phenomenon notably resulted in a surge of municipal waste management regulation to increase selective collections and recycling rates while striving to decrease overall volumes. In France, the 2015 Energy Transition for Green Growth Act was adopted to decrease the quantity of municipal waste by 10% between 2010 and 2020. This legal text also reaffirmed the hierarchy of management practices set out in the 2008 European Directive on waste (2008/98/EC). Waste prevention, reuse, recycling, and recovery were to be privileged over waste disposal, which had been prevalent hitherto. In 2018, the European Parliament Circular Economy Package (EU/2018/851) amended these legislative provisions, stipulating that "by 2035, the reuse and the recycling of municipal waste shall be increased to a minimum of 65% by weight" in every Member State.

Going further than targets and priority rules, European waste directives preconized a systemic approach in the implementation of municipal waste management policies: "the management of municipal waste requires a highly complex system including an efficient collection scheme, an effective sorting system and a proper tracing of waste streams, the active engagement of citizens and businesses, an infrastructure adjusted to the specific waste composition, and an elaborate financing system." (EU/2018/851). Pursuantly, in France, the national legislation provided a series of governance requirements intended for local authorities. In 2015, the Ministry of Ecology launched a 3-year national program for volunteering municipalities. These were notably selected for their aptitude to involve "all the stakeholders (citizens, public actors, economic players, associations, local and neighboring communities) of the territory […] which partake in the decision-making process" (Official bid for projects/Specifications: 7)". In addition to methodological and financial support, this program provided

a platform to centralize and disseminate successful local initiatives, particularly the gamification initiatives we investigate in this study.

At a local level, subsequent objectives assigned to public authorities conferred crucial importance to waste sorting and reduction practices in households. In this respect, economic incentives were initiated by some local communities to promote waste sorting, comprising invoicing collection services proportionally to both the sorting quality and overall amount of waste produced by each household. Although this device led to positive results, its implementation still encountered political and technical problems while being exposed to the risk of undetected error and fraud. Besides, traditional communication campaigns proved themselves ineffective in getting households to engage in waste sorting.

In this context, the so-called Zero Waste Challenges emerged as a notable complement to these initiatives (Cristofini, 2019). Zero Waste Challenges are initiatives launched by local authorities to promote waste reduction in communities through the organization of gatherings and competitions. They were expected to depend on a social dynamic to make waste reduction and sorting a habit among participants while contributing to broader communication campaigns aimed at a wider public. After the first successful edition held in Roubaix in 2014, Zero Waste Challenges started diffusing throughout local communities in France. This diffusion was relayed by local press coverage addressing the general public and by the platform of initiative exchanges addressing the local authorities selected by the Ministry of Ecology.

Zero Waste Challenges cover all the dimensions of a gamified system referred to in the literature (Deterding, Dixon, Khaled, & Nacke, 2011; Liu, Santhanam, & Webster, 2017; Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2015). These challenges have an instrumental objective of waste sorting and reduction but in the meantime offer experiential rewards to the participants: fun and pleasure. Zero Waste Challenges respond to gamified principles because the participants establish their own goals, decide on their degree of self-involvement, and receive personalized information from both organizers and other participants. During the challenge, they benefit from timely feedback on their performance and are frequently given social support. An opening ceremony marks the start of the challenge, presents the gamification devices, for example, “coaches,” activities, and quantifying and monitoring tools for waste production. During this ceremony, the gamification mechanics is also set by the organizers: teams are formed, and a general state of mind favoring mutual help is instilled. At the end of the challenge, an award ceremony distinguishes both the team and the single household with the lowest waste quantity produced over the period, and/or the largest decrease compared with a reference phase.

To monitor their progress, the participants were asked to regularly report the quantity of waste they produce in an online application centralized at a national level. The dedicated equipment was basic: a portable weighing scale and composter. To progress, the participants had to attend a series of collective events wherein they were expected to interact with each other, share difficulties and experience exchanges, and customize standard solutions to fit their personal situations. Workshops were the

occasion to collectively build and exchange tips for and solutions to specific themes connected to their everyday life, for example, reducing waste in the bathroom, or making a zero waste meal. Visits are arranged in waste management infrastructures such as landfills or recycling centers so that they discover the waste management value chain downstream. Convivial moments are also planified such as zero waste dinners or picnics, where the participants gather and socialize in a relaxed atmosphere.

Zero Waste Challenges thus offer a promising field of observation to better understand how individual interactions occurring within a gamified system lead to the adoption of a socially beneficial practice and, in turn, trigger institutionalization processes from the bottom-up. For this reason, we investigated how this type of challenge has proceeded in eight local communities throughout France: Avon-Fontainebleau, Durance-Provence, Lorient, Mauges, Nantes, Paris, Rennes, and Roubaix. These eight communities constitute a sample that reflect the respective varieties of the territorial characteristics: urban, rural and mixed areas, big and small cities, implementation of interrelated incentives (e.g. waste volume based-invoicing). Our design acknowledges a variety of voices: from the local communities and sponsors promoting the Zero Waste Challenges to the participants and workshop organizers.

3.2 Data collection

We collected data to gather rich longitudinal material from a variety of stakeholders involved in the institutionalization of waste management practices through Zero Waste Challenges. We collected three types of data: (i) secondary archival data comprising surveys, workshop materials, and press excerpts; (ii) naturalistic observations because the first author attended two opening ceremonies to capture reactions and deepen interviewees insights; and (iii) 62 interviews with informants in the different stakeholder groups. This set of interviews included the actors promoting the practice; local communities; the Zero Waste Challenges organizers; and participants in the following categories: single household, roommate, couple of young workers, families, and couples. Table 1 lists all the data sources used as part of this project.

3.3 Data analysis

As we collected our data, we simultaneously started a preliminary analysis to align our data collection effort with our emerging understanding of the institutionalization processes at stake. Our collection and analysis followed a three-step process: first, we wanted to understand the ex-ante situation of participants; second, we wanted to capture the whole of levers of change and interactions activated during the challenge; third, we wanted to examine the ex post participants' situation regarding zero waste and the outcomes of this on their social environment. The Zero Waste Challenges in the eight communities we studied overlapped; thus, we were involved in collecting data on the pregamification phase for some challenges while we were examining post-gamification consequences in other cases. Thus, we could easily compare the different cases (Glaser & Strauss, 1967) and observe how processes unfolded in different contexts. Besides, we were able to systematically triangulate data across different types of informants.

Table 1. Description of Data

Date types (dates)	Amount or location	Use in analysis
Primary data		
Interviews		
8 exploratory interviews with a duration between 40 and 200 minutes. All were audio recorded and transcribed.	Approximately 162 single-spaced transcript pages	Provide insights from regulatory actors into the expected impacts and limits of the circular economy related regulation within the field of municipal waste management.
22 exploratory interviews with a duration between 33 and 108 minutes. All but one was audio recorded and transcribed. In this case, the interviewee authorized notes.	Approximately 402 single-spaced transcript pages	Provide insights into how local authorities and operators theorize new practices triggered by the circular economy related regulation within the field of municipal waste management. Gamification and Zero Waste Challenges appeared as leverage to engage families in these new practices.
5 semi-structured interviews with a duration between 33 and 58 minutes. All were audio recorded and transcribed.	Approximately 35 single-spaced transcript pages	Provide insights from game designers into how gamified mechanisms can produce social impacts.
10 semi-structured interviews with a duration between 32 and 69 minutes. All were audio recorded and transcribed.	Approximately 135 single-spaced transcript pages	Provide insights from challenge organizers into zero waste gamified systems.
17 semi-structured interviews with a duration between 18 and 108 minutes. All were audio recorded and transcribed.	Approximately 221 single-spaced transcript pages	Provided insights into how participants are motivated by Zero Waste Challenges and into how they perceived it and got it appropriated with what outcomes.
Naturalistic observation		
Challenge activities	Opening and Closing ceremonies of Zero Waste Challenges in Avon-Fontainebleau	Enrich the understanding of how participants behaved individually and collectively at the end of the challenge, compared with the very beginning
Secondary data		
Post-challenge surveys	50 participants' observations	Enrich the understanding of how the challenge was perceived and whether practices were maintained.
Social medias, press, and internet	411 press excerpts, and social media and website pages	Enrich the understanding of how challenges were leveraged for wider communication and further diffusion of zero waste practices.

We adopted a process perspective for this study (Langley, 1999) by considering the importance of temporality and relational dynamics (Langley, 2009) in how gamification triggers institutionalization from the bottom up. We divided our data analysis into three phases, through which each of the eight communities went through: pregamification, gamification, and post gamification. For each phase, we engaged in descriptive coding and then progressively aggregated those codes at a more abstract level through axial coding (Corbin & Strauss, 1990). Considering our question on the bottom-up aspects, a coding across levels of analysis quickly appeared as the most obvious analytical choice. Thus, we used a matrix grid with levels of analysis and phases of the gamification process. We relied comprehensively

on interviews and secondary and observational data by using those three sources to triangulate our emerging codes. Figures 2.1, 2.2, and 2.3 summarize our coding structure.

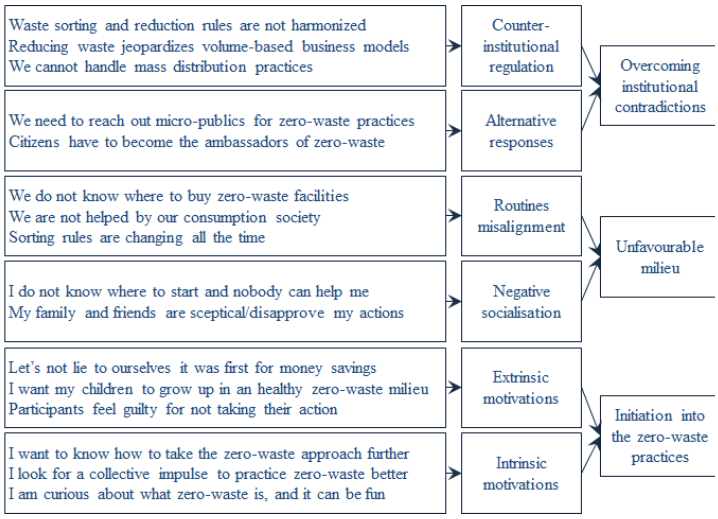


Figure 2.1 – Pre-gamification phase

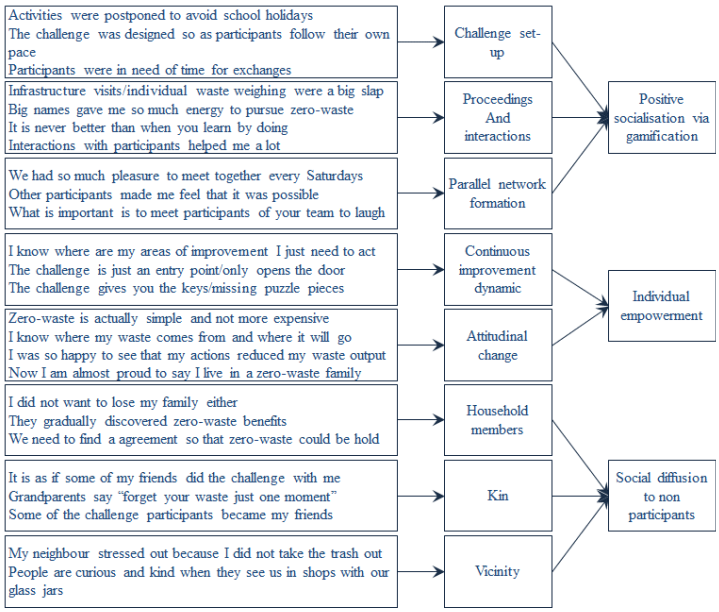


Figure 2.2 – Gamification phase

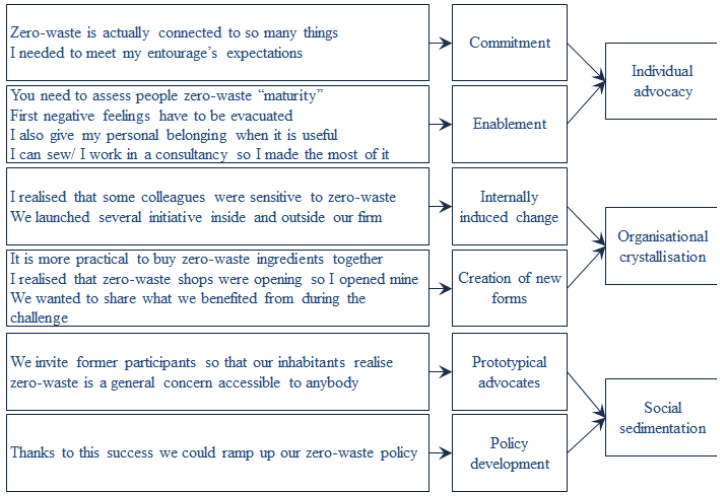


Figure 2.3 – Post-gamification phase

4. GAMIFICATION AND THE INSTITUTIONALIZATION OF NEW WASTE MANAGEMENT PRACTICES

Our findings consist of three phases: pregamification, during gamification, and post gamification, and each is distributed over three levels of actions: individual, group, and societal. In the first phase, we aim to understand why and how the Zero Waste Challenges emerged, how individuals willingly participated and built new relations. In the gamification phase, we unveil how the gamification mechanics diffuse through individual participants to their social environment. In the post-gamification phase, we detail how individuals kept engaging in the practice, enabled others to do the same, and started advocating it through new organizational forms. Table 2 presents representative data for each of the themes we coded.

Exemplary Evidence for Codes

Concept	Representative Quotations
	Responses to new institutional pressures
Regulatory objectives & Alternative responses	"Today we often have issues due to the contradiction between waste reduction and waste management. Waste reduction pressures are very strong and come from the State, whereas waste management contracts are focusing on volume" (Regulatory actor) "As local authorities, we sometime have difficulties to put the message across about behavior change. In terms of communication, changing behaviors is not something easy. So, we found that the zero-waste challenge might offer concrete solutions and mobilize households over time." (Rennes – Local authority actor)
	Unfavourable milieu
Routines misalignment & Negative socialisation	"And the difficulty of zero waste is, is the everyday management. How to try to have a normal life and tend towards zero waste." (Rennes – Participant) "When you go on zero waste forums the problem is that you immediately fall on experts, completely into it, who actually, have their own language. And it's immediately like "ah you do it like that", and then they laugh at you." (Lorient – Participant)
	Initiation into the Zero Waste practices
Extrinsic motivations & intrinsic motivations	"There are many people who said to us: 'We have realized that we are not a model for our children and we want it to change too, we want our children to grow up with this zero waste spirit.'" (Lorient – Organiser) "The idea was also to find a community with whom to exchange, to get good tips, tricks, to find mutual support, to motivate each other." (Rennes – Participant)
	Positive socialisation through gamification
Challenge set-up & proceedings	"We tried to juggle, we did not organise anything during the school holidays, we tried to balance so that it is not too frequent, at least not too concentrated […] there was at least one highlight per month or more. If there was school holidays in-between, it was postponed" (Durance-Provence – Organiser) "The big slap was, during the challenge, was the visit of the recycling centre, and the treatment of waste [...] it is true that from that moment on, it's an awakening [...] yes, the most striking memory of the challenge, the visit of the recycling centre and to realise the size of these plastic mountains, it is impressive!" (Lorient – Participant)
Parallel networks formation	"We did really have this nice group cohesion, and then we really enjoyed meeting each other on Saturdays when there were workshops, when we organized zero waste stuff together. And then it also allowed us not to stay alone in our corner. Because it is true that the way we are perceived is not necessarily easy to manage, and it allows us to discuss, far from all those mocking us, all these remarks sometimes unpleasant that we receive from our entourage including family and friends." (Mauges – Participant)
	Individual empowerment
Attitudinal change & Continuous improvement	"Yes, quantifying [our own waste output] really allows us to take ourselves as our own case study, so that you know afterwards how you can improve yourself." (Nantes – Participant) "There is a 'ratchet effect' . For example, my girlfriend and I, we recently talked about the fact that we now buy organic vegetables. I cannot see myself stopping this. Also, when I make my household products or my homemade deodorant. These are things I do not think I'll go back to." (Rennes – Participant)
	Social diffusion to non-participants
Household members, Acquaintances & Vicinity	"Well, initially I was the one more sensitive to the subject. And now my girlfriend and I are as much involved in zero-waste in our everyday life" (Rennes – Participant) "We are preparing our first zero-waste Christmas. So, we began to explain to grandparents about that." (Rennes – Participant) "At the bakery down the street, every time I come she [the baker] knows very well that I do not want paper and she knows very well that it is useless!" (Lorient – Participant)
	Advocating of the Zero Waste practices
Commitment & Enablement	"It's our life and for us it's obvious because we feel good inside. And when people see that you feel good about something, well it's obvious for them too. And anyway now, with everything you hear about the climate and everything, I think it really becomes obvious for everyone." (Lorient – Participant) "First you must find attentive ears. Because you can talk about it in your family, in your environment and you will realize that people are either too far, there is a wall between you and them, or you will feel that it is just a small woody hedge that just takes a little time to jump over." (Rennes – Participant)
	Organizational crystallization
Internal change & ad hoc organizations	"There are some who have made practices change at work" (Avon-Fontainebleau – Organiser) "[the zero-waste association was created to] try to convert other families, other people. When I say "convert" the term is strong, but to try to explain to them small things so that they can in turn try to reduce. That was really our goal." (Mauges – Participant)

Wider social system sedimentation	
Prototypical advocates use & Policy development	"We can communicate to the public about what happened during a year." (Lorient – Organiser) "They [the local authorities] try to revitalize their city through the associations, the school, and by initiating people into zero waste, permaculture and all kinds of things" (Lorient – Organiser)

4.1. Pregamification Phase: Challenges for Circumventing an Unfavorable Context

The study of the ex-ante situation provides a basis to understand the initial motivation of the different actors involved in our findings and describes how local authorities established challenges to diffuse zero waste practices through initially adverse conditions for individuals. The study also shows what sort of participants selected themselves into Zero Waste Challenges—a population already sensitive to the zero waste approach—and are willing to make it part of their lifestyle, despite an unfavorable social environment.

4.1.1. How authorities came to organize Zero Waste Challenges

Our informants stressed how the new regulatory pressures around waste management were one of the main drivers for local authorities to attempt to change the mindset of their inhabitants. Household waste produced by households had to be reduced and sorted for recycling. In parallel, regulatory changes were imposed to gradually end-up undifferentiated waste collection to the profit of proper waste sorting. In addition, regulatory actors' interviews stressed the uncertainty around the change in waste sorting and reduction practices. First, many elements escaped local authorities' control. For example, a Paris City Hall manager said that the (over)packaging of products was a key driver over which local authorities had only "limited power compared to industries". At the household level, local authorities had little influence on waste sorting behavior and were confronted with heterogeneous regulations from one local area to the other.

In this context, local authorities had to find alternative solutions to diffuse the practice of reducing and sorting waste. Informants reported how economic incentives and traditional communication campaigns directed at citizens had produced limited results. For instance, opportunistic behaviors could still occur to avoid waste collection costs such as unauthorized landfills. Proper and personalized information was still not provided for households to understand and make sense of zero waste practices. As a consequence, local authorities turned to alternative solutions. In this perspective, Zero Waste Challenges were addressed to households and had a threefold instrumental objective: to better understand situated difficulties and levers of change encountered by participants along their transition to zero waste, to communicate zero waste principles to the wider public inhabiting the territory, and to train "*ambassadors*" who could then convert their social environment.

4.1.2. Individuals engaging in zero waste practices

Subsequently, recruitment campaigns were launched through local channels of communication. They mostly found themselves convincing a population already sensitive to environmental concerns, although they also attracted other curious individuals. Some individuals already had an interest and some engagement with zero waste related practices, for example, cooking with raw products, purchasing

second-hand products, and composting. This initial engagement was often triggered by a life-changing event, for example, birth or retirement. In addition to environmental concerns, various reasons were provided to justify this first step toward zero waste, for example, children's education, health, or saving money.

Referring to local authorities' interviews, numerous participants mentioned that they did not have the practical knowledge and zero waste facilities in their surroundings. Zero waste collided with their routines, and they reported that practicing zero waste was too costly in energy and effort. Additionally, participants were affected by the negative socialization they had experienced around zero waste before entering the challenge. According to an organizer in Lorient, "*People [felt] isolated*" and a "*little bizarre*" because of the insufficient amount of support from family members and social acquaintances. Online, zero waste communities sometimes mocked requests for support because beginners did not have the appropriate vocabulary and had poor performance in terms of waste reduction.

4.1.3. Motivations for joining Zero Waste Challenges

From this departing point, both extrinsic and intrinsic motivations were identified to explain why the participants entered the challenge. Extrinsic motivations included economic factors, (children's) health and education, and a search for social links. Numerous informants declared that they wanted to use challenges to get members of their household involved in zero waste. Interviews with challenge organizers also showed that guilt played an essential role in explaining the participation in the challenge. Several challengers had introjected the discourse on environment degradation and felt "*guilty of not doing enough*" and a "*discrepancy between their theoretical idea and what they do in practice*," as explained by an organizer in Rennes. From an instrumental perspective, participants who were familiar with zero waste said they enrolled to obtain tips and solutions from the challenge, workshops, and teaching, to continue to reduce their waste output. Equally important, they expected to share experiences, find social support, and participate in a collective movement shared by similarly minded people. From an experiential perspective, curiosity, the pleasure of challenging oneself, and seeking an enjoyable and mind-expanding experience were other reasons to register for challenges; this latter motivation bridged all types of participants, with levels of experience from novice to expert.

Given these first insights, the organization of Zero Waste Challenges plays a crucial role in kicking off the institutionalization process: first, it builds on the selection and inclusion of individuals already sympathetic to the practice and likely to engage with the process, and second, it connects individuals in a common social space with properties specially designed to allow a durable change of habits.

4.2. Gamification Phase: from Positive to Nonpurposive Socialization

We found the gamification phase to be articulated through three mechanisms. First, positive socialization with other participants was encouraged through the challenges' gamified mechanics and resulted in the formation of ad hoc groups that survived after the challenges. Second, at an individual

level, the challenge experience and the affiliation with a wider group provoked a durable change in attitudes. Ultimately, the participants' involvement left them empowered to continue to reduce their waste. In turn, participants started their own diffusion of zero waste practices to their social environment during and after challenges.

4.2.1. Positive socialization through gamification

Challenges acted as temporary social spaces building on gamification mechanics. Their objective was to frame zero waste as a source of enjoyment and not a constraint. Within those spaces, challengers developed skills to produce zero waste through participation in activities and interactions. In the end, this individual and collective experience generated new ad hoc groups that could autonomously develop new approaches to zero waste practices.

Our informants on the organizing side first emphasized how challenges were designed to change participants' perception on zero waste. Activities needed to fit effortlessly into participants' daily life. The challenges' activities had to be scheduled with respect to participants' pre-existing time constraints—working timetables and school calendars. The venues for the challenges had to be close where participants lived, to achieve higher participation rates.

Challenges relied on gamified principles, mechanics, and objects. Participants' self-fixed goals were pursued by means of a facultative, gradual, and reversible involvement. As explained by an organizer in Rennes: "*That is essential to free them [the participants] from their guilt, and then to put something positive in that [the challenge]. […] We really invited everyone to go at their own pace.*" A participant in Mauges mentioned being reassured, '*No, there is nothing mandatory, that is really for you, so that you become aware of what can do at home.*'" Likewise, the content of workshops and events was adjusted to specific profiles or needs. Along with these activities, organizers and experienced participants delivered personal coaching: unsuccessful attempts were mentioned, discussed, and relativized; guilt was evacuated, and participants were encouraged to persevere. Overall, activities were described as taking place in a positive and relaxed atmosphere that facilitated the circulation of ideas, within organizers—or participants—to participants' interactions.

The challenges' gamification mechanics and objects regulated a steady and thus encouraging progression. Participants had to go through the routine of regularly reporting their waste output. Later, charts were created so that the participants could assess their own progress compared with the average of other participants. Likewise, the planning of workshops and events set a pace for the challenges. Our informants explained how those events maintained curiosity by revealing new zero waste approaches. Additionally, both the organizers and participant informants expressed the importance of teams in creating positive traction, supported by a regular push from the organizer.

Challenges thus relied on a collective impulse with an individually agreed upon level of intensity. As a result, the participants' fear of failure or abandonment was minimal. They were able to focus on the essential features of the challenges. Moreover, the—gamified—step-by-step approach favored excitement and cognitive absorption. Participants advanced at their own pace and could optimally

challenge themselves depending on their own constraints and aspirations. From there onward, the task difficulty could be increased similarly to "*a video game.*" In the end, each performed activity led to an immediate reward under the form of observable progress.

Organizers' observations cross-checked with participants' accounts revealed three experience-based levers bringing zero waste into practice. The first lever relied on visualization and measurement. Through visits of waste management infrastructures, and by weighing their own-waste production, participants became aware of waste quantities produced at the societal and individual levels. The second lever comprised offering participants direct contact with "inspiring" zero waste icons. Organized conferences with big names such as Bea Johnson[1] allowed a glimpse into an ultimately accomplished zero waste lifestyle. The third lever was related to the direct experimentation of concrete zero waste practices. Workshops and events offered the appropriate time and space in which knowledge and skills could be gained. Beyond mere information transmission or the borrowing of equipment (e.g. washable diapers), there was also the discovery of zero waste facilities (e.g., bulk product shops). Additionally, performing zero waste practices by oneself permitted an appropriation that enabled participants to perform independently after challenges.

Individual experiences with challenges should not mask the essential role played by participant-to-participant interactions in zero waste practice adoption and persistence. As organizers emphasized, workshops were also meant to encourage discussions and debates. As expected by organizers, participant-to-participant interactions occurred at the end of every workshop or within relaxed activities, for example, picnics and dinners. On these occasions, participants could negotiate and fine-tune standard solutions, fitting their daily life. The pitfalls participants encountered were shared with other participants. Zero waste equipment and material were borrowed or lent. Participant interactions provided a supplement for motivation. Collective thinking and encouragement led to individual solutions.

Equally important, informants observed that autonomous groups emerged as challenges unfolded. Participants gathered by affinity and similar degree of zero waste practices adoption, thereby obtaining accessible examples and points of reference. As a consequence, while progressing within challenges, participants reported making new acquaintances to the point of organizing activities outside of the challenge context. These activities led to the development of a parallel supportive network that helped participants continue to improve their zero waste practices and make them immune to negative social pressures outside the challenges, namely, reservations from social and family acquaintances. Additionally, these nascent networks resulted in collective initiatives in the post-gamification phase.

In conclusion, challenges spurred positive socialization, comprising repeated individual cognitive, practical, and sensory experiences mingled with regular and positive social interactions. As

[1] Bea Johnson is a Californian blogger and speaker on the "zero waste" lifestyle. She is particularly well known in France because of her French origins. She is the author of several international best sellers such as Zero Waste Home, the Ultimate Guide to Simplifying Your Life.

participants became more experienced, zero waste goals and means were internalized and skills throve, leading to profound and perennial changes in individual behaviors.

4.2.2. Individual outcomes: Empowerment in zero waste

Most participants declared that new zero waste practices were maintained throughout and after the challenges. Participants affirmed that the challenges were not only a matter of punctual acquisition of technical skills but an opportunity for permanent self-improvement. First, interviews unveiled an *ex post* ability to identify their own areas of progress and to set realistic objectives for themselves. In due course, participants also appeared to be able to make compromises with themselves, to avoid being overwhelmed and giving-up. Second, interviews showed that a permanent curiosity and vigilance toward zero waste remained deeply ingrained after the challenges. This finding was amplified by the appropriate vocabulary inherited from challenges, which permitted the participants to obtain (online) information and ask for external help without fear of mockery. Third, progress could be tangibly perceived by assessing decreases in supplementary individual waste output. Experiential benefits, that is, the pleasure of achieving progress in reducing waste, occurred and increased feelings of self-confidence in achieving a transition to zero waste. As a result, participants were empowered to individually practice and improve their zero waste lifestyle.

The interviews also provided insights into how the challenges led to changes among participants along all attitudinal dimensions: cognitive, affective, and conative. On a cognitive level, before the challenge, there was no knowledge concerning personal and collective zero waste actions, and not sorting waste was the behavioral norm. The challenges increased the participants' attention regarding zero waste practices and their importance. Stereotypes about the cost and difficulty associated with zero waste vanished. The belief of being able to produce positive impacts—individually and collectively—emerged. Buying mass—packaged—consumption goods was replaced by a revulsion for packaging—particularly plastic. As one participant stated in Mauges, "*We realized that, when we buy a product, there is too much packaging for nothing, and in fact, we buy plastic. We do not buy food we buy plastic and that's just not possible*!" Additionally, feelings like "*frustration,"* "*guilt*," or "*shame*" associated with waste production were transformed to those of "*lightness*" and "*pleasure*" when the participants devoted themselves to zero waste. They voiced how the Zero Waste Challenges gave them control over their life. They progressively radicalized their position, from accepting of nonzero-waste practices before to explicit refusals of waste generative practices.

To summarize, at an individual level, post-challenge practice maintenance was underpinned by the perception that zero waste was a "*sum of simple things*" easy and pleasing to implement. Participants were able to keep improving, thereby attaining congruence between values and actions that resulted in the enduring engagement with zero waste practices. These new abilities and attitudes, forged during challenges, were provoked and reinforced by the nonpurposive socialization that ensued.

4.2.3. Social diffusion to nonparticipants

Social diffusion to nonparticipants was a key factor of the institutionalization of zero waste practices. As individuals became empowered, they became agents for change within their social environments outside the Zero Waste Challenges. Our data analysis led us to identify three types of groups directly impacted during challenges: households, relatives, and local acquaintances. Each group was characterized by specific individual bounds, and the modalities of diffusion varied.

Within households, disbanding was not considered an option; members were bound to live together and thus forced to engage collectively in zero waste practices because one family member was involved in the challenges. The challenges provided common objectives, frames, and tools that supported the evolution of the members' roles and the coordination within the group. Through some participants' impulses, household members not initially involved even joined challenges, punctually or during the process. Benefits of zero waste practices were experienced by the whole household, for example, healthy food, saving money, and quality family moments. Introduced practices were subject to negotiations and trades-off. New roles and coordination patterns progressively stabilized within households. When successful, first practice adoptions led to other adoptions, feeding a self–re-enforcing dynamic. Relatives and friends were also affected. Challenges provided occasions for participants to talk about zero waste with their relatives, and this aroused curiosity and led to the participation of those relatives in later challenges. Harsh debates could occur during family and friend events, for example, when exchanging presents at Christmas and during weekends with friends. Occasionally, there was even drifting apart and exclusion to varying degrees vis-à-vis the ones considered noncompatible with a zero waste lifestyle. Additionally, participants attracted new friends and acquaintances sensitive to the zero waste ideology; notably, some were other former participants.

Links between participants and their neighborhood acquaintances were essentially described as forming fortuitously. When attending to their daily activities, participants made zero waste tangible, disturbed prevailing practices around them, and arose curiosity. For example, neighbors wondered how the trash could be taken out so rarely. As for purchasing, queuing with glass jars to avoid packaging opened up alternative options for sellers and other customers. Participants could share the pleasure they had in practicing zero waste in emerging conversations; they realized that they could be considered models and discovered the opportunity to advocate zero waste. When individually adopted, zero waste practices thus first affected the participants' acquaintances and then affected social groups in other contexts such as work or community events.

4.3. Post-Gamification Phase: Multilevel Advocacy Leading to Institutionalization

The examination of the *ex post* situation focuses on how individual commitment developed and how it trickled up throughout the creation of ad hoc organizations and diffusion through a wider social system. As a result, institutionalization unfolded from the bottom-up, changing the organizational and societal landscape, which in turn affected individual practices thus creating the conditions for a recursive form of institutional change.

4.3.1. Individual advocacy of the zero waste practices

Commitment to and enablement of zero waste practices resulted from the conjunction of individual empowerment and subsequent change in participants' new social environment. Many participants expressed their commitment to zero waste diffusion after the challenges. Internally, participants believed in their own ability to cause change at a collective level. Additionally, zero waste had become the only proper way to act from their perspective. Externally, participants became role model for others, making the new practices and values visible.

Advocates carried on with the gamified principles they were taught during challenges. Interviewees reported how they adjusted their pitch once they assessed their targeted audience's "*maturity*." They applied a step-by-step approach that started by promoting "*simple things*." Personal coaching implicitly appeared in interviewees' words. In particular, they avoided shaming their counterparts when advocating for zero waste, whereas personal interests and benefits were emphasized. Second, advocates went as far as leveraging their own personal resources, material or immaterial. Gifts bags were made to help promote zero waste, for example, including cloth bags and seeds. Technical skills retrieved from challenges were enriched with the skills developed outside the challenges and promoted to outsiders, for example, sewing, project management, and relational capital.

4.3.2. Organizational crystallization

Organizational crystallization refers to the emergence of zero waste initiatives intervening within organizational structures, and outside of challenges. Two types of crystallization were empirically identified. The first type included organizational change induced by former participants inside their own organizations (e.g., where they work, their church, associations they worked with). The second type was about the creation of ad hoc organizations, fully dedicated to zero waste.

Along the transition from microlevel to macrolevel, zero waste practices percolated throughout organizations in which participants interacted outside of the challenges. Participants started identifying colleagues with common values and an interest in zero waste. They put efforts into converting colleagues at their workplace or in their organizational communities to zero waste, for example, by inciting them to register for future challenges. As a consequence, internal communities emerged and launched intra-organizational initiatives related to zero waste, for example, replacement of disposable cups with reusable cups at the staff cafeteria. In some cases, existing organizational resources were leveraged, for example, to create zero waste workshops in a do-it-yourself store.

In parallel to changes initiated inside existing organizations, participants created new organizations fully dedicated to zero waste. They populated the territories where challenges took place to enable the diffusion of zero waste practices. Some organizations were a straightforward continuation of the groups created during challenges, and they pooled resources from former participants, for example, joint purchasing and supportive networks, and local shops' collective solicitations to adopt zero waste practices. These groups could also join emerging zero waste associations or launch local events associated with zero waste. In one case, these collectives formed during challenges resulted in

formal structures. In Mauges, the local branch of the zero waste national association was founded after the 2017 challenge edition.

Assisted by their newly converted acquaintances, friends, and family members, former participants made zero waste their profession, and created businesses mixing their expertise with the zero waste movement. For example, former consultants creating a consultancy specializing in zero waste or sometimes creating businesses having nothing to do with their former jobs, for example, bulk groceries. As a whole, these initiatives facilitated everyday life of zero waste aficionados by providing different frameworks and means of support corresponding to their lifestyle.

4.3.3. Wider social system sedimentation and institutionalization

At the society level, we observed how the challenges created deeper and broader change in the wider social system. First, the challenges themselves, due to their success, took place every year while increasing the number of direct stakeholders and expanding their geographical scopes.

Second, zero waste anchored itself within territories because the challenges garnered the practice lasting coverage (through participants and the new initiatives they took after the challenges) from the press, and zero waste was promoted by local authorities for further policy development.

Those successes and existing advocates of the practice were then put forward to further promote it. Interviews with local authority actors combined with the analysis of secondary data showed how challenges were exploited to take the zero waste approach further. Local press presented zero waste as an achievable goal for everyone. Participants were once again valorized as they explained their move toward zero waste. In the meantime, lessons stemming from challenges were retrieved to better understand what enabled or constrained the emergence of zero waste. In doing so, local authorities had further clues to develop related overarching policies aimed at improving waste management in their territories. In addition, individual and organizational advocates offered a personification of zero waste used by authorities to promote the practice. This promotional attitude was also taken on by private actors enthusiastic about zero waste. For example, a company headquarters integrated zero waste workshops into its national catalog after a participant launched a zero waste workshop in one of its stores after a challenge.

4.3.4. Sedimentation of the zero waste practice

We observed how gamified mechanics finally led to the wider acceptance and taken-for-grantedness of zero waste practices across three levels of interaction. At the individual level, the personal involvement of participants in challenges led to durable changes in their values and beliefs regarding waste. A participant in Nantes summed it up: "*it [the challenge] messed up our daily organization, our life and - it's very odd – our vision of the world*." At the local level, actors could promote and enable zero waste practices by pushing them onto their social acquaintances. They served as binding agents between the local actors and the set of beliefs and values around zero waste. They also diffused it within and through their organizations, for example, businesses, associations, and public administration, when they did not create themselves new organizations to promote and enable the practice. At the societal level, challenges

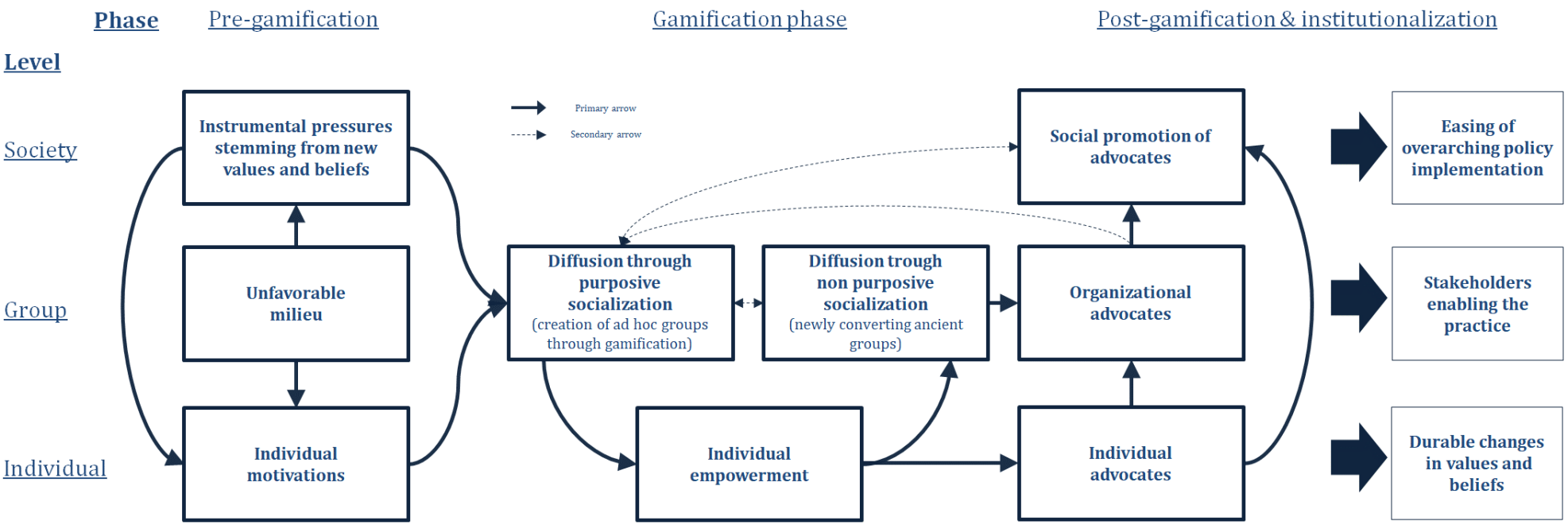
produced embodiments of zero waste—advocates—that could be used to push its promotion further, thereby contributing to drawing an overarching framework in which zero waste, as a set of beliefs and a practice, was deeply anchored.

4.4. A Multilevel Model of Institutionalization through Gamification

From our findings, we inductively theorized a process model detailing how gamification can trigger bottom-up institutionalization. As illustrated in figure 3, this model details a process in three phases with mechanisms at different levels of analysis, interacting with each other.

In the pregamification phase, our models depict the context wherein gamification is likely to be deployed to kick-start an institutionalization process. At the macrolevel, we observed how local stakeholders had an instrumental rationale for pushing the institutionalization of a new practice, acknowledging that those stakeholders would benefit from this process. In our case, local communities had an interest in zero waste because it would reduce the cost of waste treatment and help them comply with regulatory pressures. At the individual level, we have argued that individuals are intrinsically and extrinsically motivated to participate in a gamified system, especially when they are already familiar with the set of practices, values, and beliefs to be institutionalized. The social context of those targeted individuals might be limiting the engagement with the emerging institution, which explains why an external push, such as the push observed with the Zero Waste Challenges, is required for the diffusion. In other words, this core of first adopters needs to be willing to adopt new practices despite the disapproval they experienced from their kin.

Figure 3 – Model of Institutionalization through Gamification



Once the gamification mechanisms kick off, the different actors start interacting around the practices, values, and beliefs underlying the institutions. We observed that gamification principles intervene as an excipient in practice diffusion once the gamification phase has started. Through the Zero Waste Challenges, stakeholders were able to foster a positive and purposive socialization between participants. The participants created ad hoc groups favoring appropriation of the practices, values, and beliefs around zero waste, and shielding them against outsider pressures. In turn, participants felt empowered because they could monitor their progress. Their behaviors started changing durably as their beliefs in the importance of reducing waste became cognitively prevalent. Because of the social comparisons the participants experienced through the games, they then involved their network outside the game to compete—in our case, household members, local acquaintances, and friends. They motivated people they have social relationships with to support their practice by sharing the rationale behind zero waste as an institution that comprises a coherent system of values, beliefs, and practices; this coherence was stressed and shared by the participants of the Zero Waste Challenges who could then convert nonparticipants.

Based on our findings, we demonstrate that the outcomes of gamification effects survive the gamification phase *stricto sensu*. Participants experience deep changes in their attitudes as a consequence of the game they were involved in. The practices, values, and beliefs of the emerging institution become increasingly taken for granted as they keep diffusing through the social interactions initiated by the former participants. Those former participants become advocates for the institution and promote it through their individual network, within existing organizations they belong to, and then through ad hoc organizations designed only for the purpose of further promoting the practice. To operate, those advocates combine their resources with the resources previously developed in mastering the practices. For example, some of our informants became consultants in waste reduction or opened zero waste shops, putting to profit their pre-challenge expertise. Those advocates and their organizations are then put forward as prototypes by macrolevel stakeholders. With this strategy, stakeholders that initiated the institutionalization movement aim to further push for the diffusion of the practice by making it more visible and cognitively prevalent to a wider range of potential adopters.

5. DISCUSSION

In this study, we inductively theorized how gamification could trigger institutionalization from the bottom up. Anchoring our approach in the microfoundational perspective on institutional theory (Powell & Colyvas, 2008; Rerup & Powell, 2016), we acknowledged the importance of recursiveness between multiple levels of analysis (Harmon, et al. 2019). Although the microfoundation perspective emphasizes the individual level, we aimed to understand how microlevel engagement could trickle up to change wider social systems (Cardinale, 2018). To understand the underlying processes of such institutionalization, we empirically relied on a longitudinal study of the gamification of waste management in eight French communities by combining interviews with a variety of stakeholders,

observations, and secondary sources. Our model of bottom-up institutionalization shows how gamification helped the mobilization of advocates of the institution and triggered positive social interactions contributing to the progressive taken-for-grantedness of zero waste practices. Driven by social comparisons and purposive socialization, game participants went the extra mile to change not only their practices but those of others in their household, in their organizations, and in their neighborhoods. This diffusion mechanism was mediated by the support they built around them in their organizations and vicinity, and by ad hoc organizations furthering the zero waste lifestyle. We show how group mechanisms, individual engagement, organizational emergence, and stakeholder pressures interact in recursive processes to accelerate the institutionalization of a new practice.

Our theoretical contributions are threefold. First, we contribute to the literature on the microfoundation of institutional theory by approaching institutionalization from a bottom-up perspective (Ansari & Phillips, 2011; Zilber, 2017) and acknowledging the recursive process through which individual engagement can change wider social systems (Clemente et al., 2017). We stress the importance of taking a multilevel perspective on institutional processes and change (Aguilera et al., 2007; Aguilera et al., 2018). The second contribution of our work is the introduction of gamification in organization theory and provides information on how entertainment can be a key driver of organizational and social behavior (Woodcock & Johnson, 2018). From a practical perspective, we flesh out an innovative manner that social actors can use to promote practices that have a positive impact on society and the environment. Our work shows how gamification can trigger a multilevel process of institutionalization of social innovations. Through gamification, social actors can create enthusiasm for emerging systems of practices, values, and beliefs. This enthusiasm, in turn, generates positive energy for the innovation to diffuse through new organizational forms and networks. Waste management has important environmental implications, and zero waste practices have become accessible means for households to participate in the preservation of the environment. Our study shows that gamification can generate constructive social change, and we hope further research will continue to document such phenomena.

6. REFERENCES

Aguilera, R., Rupp, D., Williams, C., Ganapathi, J., (2007). Putting the S back in Corporate Social Responsibility: A Multilevel Theory of Social Change in Organizations. ***Academy of Management Review***. Vol. 32, No. 3, 836–863.

Ansari, S., & Phillips, N. (2011). Text me! New consumer practices and change in organizational fields. ***Organization Science***, *22*(6), 1579-1599.

Battilana, J., & Dorado, S. 2010. Building sustainable hybrid organizations: The case of commercial microfinance organizations. ***Academy of Management Journal***, 53, 1419–1440.

Bornstein, D. 1996. ***The price of a dream: The story of the Grameen Bank and the idea that is helping the poor to change their lives***. New York, NY: Simon & Schuster.

Butzbach, O., Fuller, D. B., & Schnyder, G. (2019). Manufacturing Discontent: National Institutions, Multinational Firm Strategies, and Anti-Globalization Backlash in Advanced Economies**. *Global Strategy Journal*.**

Cajaiba-Santana, G. 2014. Social innovation: Moving the field forward. A conceptual framework. ***Technological Forecasting and Social Change***, 82, 42-51.

Coleman, J. S. 1986. Social theory, social research, and a theory of action. ***American Journal of Sociology***, 1309–1335.

Corbin, J. M., & Strauss, A. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. ***Qualitative sociology***, *13*(1), 3-21.

Cristofini, O. (2019). L'institutionnalisation des pratiques d'économie circulaire : des discours à l'engagement individuel. Thèse doctorale, IAE de Paris, Université Paris 1 Panthéon Sorbonne

Dacin, P.A., Dacin, M.T. & Matear, M. 2010. Social Entrepreneurship: Why We Don't Need a New Theory and How We Move Forward from Here. ***Academy of Management Perspectives***, 24(3), 37-57.

Dalpiaz, E., Rindova, V., & Ravasi, D. 2016. Combining logics to transform organizational agency: Blending industry and art at Alessi. ***Administrative Science Quarterly,*** *61*(3), 347-392.

Duhigg, C. 2012. ***The power of habit: Why we do what we do in life and business.*** New York: Random House LLC.

Eig, J. 2014. *The birth of the pill: How four crusaders reinvented sex and launched a revolution*. New York, NY: W.W. Norton.

Emirbayer, M., & Mische, A. 1998. What is agency? ***American Journal of Sociology***, 103(4): 962–1023.

Glaser, B., & A. Strauss 1967. ***The Discovery of Grounded Theory.*** Chicago: Aldline.

Harmon, D. J. 2018. When the Fed Speaks: Arguments, Emotions, and the Microfoundations of Institutions. ***Administrative Science Quarterly***, 0001839218777475.

Harmon D, Haack P and Roulet T 2019. Microfoundations of institutions: A matter of structure vs. agency or level of analysis? *Academy of Management Review.*

Heugens, P. P., & Lander, M. W. 2009. Structure! Agency!(and other quarrels): A meta-analysis of institutional theories of organization. ***Academy of Management Journa****l*, *52*(1), 61-85.

Hirsch, P., & Lounsbury, M. 2015. Toward a more critical and "powerful" institutionalism. ***Journal of Management Inquiry***, *24*(1), 96-99.

Hwang, H., & Powell, W. W. 2009. The rationalization of charity: The influences of professionalism in the nonprofit sector. ***Administrative Science Quarterly***, 54(2), 268-298.

Jepperson, R., & Meyer, J. W. 2011. Multiple levels of analysis and the limitations of methodological individualisms. ***Sociological Theory***, 29(1): 54–73.

Langley, A. 1999. Strategies for theorizing from process data. ***Academy of Management review***, *24*(4), 691-710.

Langley, A. 2009. Studying processes in and around organizations. ***The Sage handbook of organizational research methods***, *409*, 429.

Lawrence, T. B. 2017. High-Stakes Institutional Translation: Establishing North America's First Government-sanctioned Supervised Injection Site. ***Academy of Management Journal***, *60*(5), 1771-1800.

Lawrence, T. B., Dover, G., & Gallagher, B. 2014. Managing social innovation. In M. Dodgson, D. M. Gann, & N. Phillips (Ed.), ***The oxford handbook of innovation management*** (pp. 316–334). Oxford: Oxford University Press.

Lawrence, T. B., Suddaby, R., & Leca, B. (Eds.). 2009. ***Institutional work: Actors and agency in institutional studies of organizations*.** Cambridge university press.

Liu, D., Santhanam, R., Webster, J., 2017. Towards meaningful engagement: A framework fordesign and research of gamified information systems. MIS Q. 41, 1011–1034. doi:10.1007/s13398-014-0173-7.2

Micelotta, E., Lounsbury, M., & Greenwood, R. (2017). Pathways of institutional change: An integrative review and research agenda. *Journal of Management*, *43*(6), 1885-1910.

Morschheuser, B., & Hamari, J. 2018. The gamification of work: Lessons from crowdsourcing. Journal of Management Inquiry, 1056492618790921.Munir, K. A. (2015). A loss of power in institutional theory. ***Journal of Management Inquiry***, *24*(1), 90-92.

Oliver, C. 1991. Strategic responses to institutional processes. ***Academy of management review***, *16*(1), 145-179.

Morganti, L., Pallavicini, F., Cadel, E., Candelieri, A., Archetti, F., & Mantovani, F. 2017. Gaming for Earth: Serious games and gamification to engage consumers in pro-environmental behaviours for energy efficiency. ***Energy research & social science***, 29, 95-102.

Powell, W. W., & Colyvas, J. A. 2008. Microfoundations of institutional theory. ***The Sage handbook of organizational institutionalism*,** *276*, 298.

Powell, W. W., & Rerup, C. 2016. Opening the Black Box: The Microfoundations of Institutions. ***The SAGE Handbook of Organizational Institutionalism***.

Rayner, S. 2006. Wicked problems: Clumsy solutions. Retrieved from http://eureka. sbs.ox.ac.uk/93/1/Steve%20Rayner%2C%20Jack%20Beale%20Lecture%20 Wicked%20Problems.pdf

Reay, T., Chreim, S., Golden-Biddle, K., Goodrick, E., Williams, B. E., Casebeer, A., & Hinings, C. R. 2013. Transforming new ideas into practice: An activity based perspective on the institutionalization of practices. ***Journal of Management Studies***, 50(6), 963-990.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. 2015. Is it all a game? Understanding the principles of gamification. ***Business Horizons***, *58*(4), 411-420.

Rothenberg, S. 2007. Environmental managers as institutional entrepreneurs: The influence of institutional and technical pressures on waste management. ***Journal of business research***, 60(7), 749-757.

Schneiberg, M., & Soule, S. A. 2005. Institutionalization as a contested, multilevel process. Social movements and organization theory, 122-160.

Scott W.R. 2007. ***Institutions and organizations***, Thousand Oaks, CA, Sage.

Smets, M., Morris, T. I. M., & Greenwood, R. (2012). From practice to field: A multilevel model of practice-driven institutional change. ***Academy of Management Journal***, *55*(4), 877-904.

Smith, W. K., & Besharov, M. L. 2019. Bowing before dual gods: How structured flexibility sustains organizational hybridity. ***Administrative Science Quarterly*,** *64*(1), 1-44.

Teschke, B., Wenten, F. (2016): Capitalism, in: Berensköttter, Felix (ed.), ***Concepts in World Politics***, London: Sage

Tracey, P., Phillips, N., & Jarvis, O. 2011. Bridging institutional entrepreneurship and the creation of new organizational forms: A multilevel model. ***Organization Science***, *22*, 60–80.

Tracey, P., & Stott, N. 2017. Social innovation: a window on alternative ways of organizing and innovating. **Innovation**, 19(1), 51-60.

van Wijk, J., Zietsma, C., Dorado, S., de Bakker, F.G. & Martí, I. 2018. Social Innovation: Integrating Micro, Meso, and Macro Level Insights from Institutional Theory. ***Business & Society*** . doi.org/ 10.1177/0007650318789104

Vijay, D. & Monin, P. 2018. Poisedness for social innovation: The genesis and propagation of community based palliative care in Kerala (India). ***M@n@gement***.

Wingfield, C. 2012. All the world's a game, and business is a player. The New York Times. Available at http://www.nytimes.com/2012/12/24/technology/all- the-worlds-a-game-and-business-is-a-player.html?_r=0

Westley, F., & Antadze, N. 2010. Making a difference: Strategies for scaling social innovation for greater impact. ***The Innovation Journal: The Public Sector Innovation Journal,*** 15(2), Article 2.

Woodcock, J., & Johnson, M. R. 2018. Gamification: What it is, and how to fight it. ***The Sociological Review,*** *66*(3), 542-558.

Zilber, T. B. 2017 How institutional logics matter: A bottom-up exploration. In J. Gehman, M. Lounsbury, and R. Greenwood (eds.), ***Research in the Sociology of Organizations***, vol. 48A: How Institutions Matter!: 137–155. Bingley, UK: Emerald Group.