

University of Tartu  
Department of Semiotics

Rhea Colaso

BUILDING COMMUNITY FOR NEIGHBORHOOD: USING INTERSEMIOTIC  
TRANSLATION FOR APP-BASED INTERACTION DESIGN

Master's Thesis

Supervisor: Tiit Remm

Tartu  
2021

## Table of Contents

<b>Introduction</b>	<b>3</b>
<b>1. From the physical world to the virtual</b>	<b>17</b>
1.1 Intersemiotic translation as a thinking tool in design processes	22
1.2 Chapter Summary	28
<b>2. Locating design claims to create virtual communities</b>	<b>29</b>
2.1 Design claims relating to lexical rules	30
2.2 Locating design claims in grammar rules	36
2.3 Chapter Summary	39
<b>3. Method and Materials</b>	<b>40</b>
<b>4. Analysis</b>	<b>46</b>
4.1 Reconstruction of the design process	47
4.2 Identifying the dominant behind the translation	62
4.3 Evaluation of the reconstructed process	66
4.4 Evaluation of the reconstructed dominant	72
4.5 Limitations & Way forward	75
4.6 Chapter Summary	76
<b>Conclusion</b>	<b>76</b>
<b>References</b>	<b>77</b>
<b>Annex 1: Table 2. summary of identified design claims</b>	<b>77</b>
<b>Annex 2: Table 3. organizing alternatives found for Nextdoor</b>	<b>78</b>
<b>Annex 3: Table 4. organizing alternatives found for Neighborland</b>	<b>81</b>
<b>Annex 4: Content-analysis results</b>	<b>84</b>
<b>Kokkuvõte</b>	<b>85</b>
<b>License</b>	<b>86</b>

## **Introduction**

The desire to work as a collective in human beings is undeniable, as “the life-process is essentially social from the start” (Ellwood 1909: 394). The start refers to the fundamentally biological origin of cooperative action and its inextricable link to the origin of species. Whereas the social, deals with the evolution from the lowest phases of physical interaction between individual organisms to higher stages of psychical interaction that lead to associations, and eventually social organization (ibid.). For centuries, those studying the nature of social organization as a system contrasting the individual from the collective (Hyypa 2010: 3) have tried to understand how, why and in what ways these associations are built.

One such reasoning has been through the production, accumulation, and use of ‘social capital,’ a productive resource found in the social relationships of collectives (Coleman 1988a; Defilippis 2001; Putnam 1993). Individuals build associations with each other by interacting and communicating, in turn embedding social capital “in social relations, [whereby] constructed forms of social organisation could function as resources for those who are able to use them as such” (Tacon 2016: 6). This provides an additional value for individuals to perform cooperative actions, as they do so to achieve their interests and goals (Obsiye, Tlili 2013: 553). It has been emphasized that social capital is “not embodied in any one particular person, but rather is embedded in people’s social relationships” (Defilippis 2001: 785). Moreover, it is possessed by communities, not people<sup>1</sup> (Defilippis 2001; Mattessich 2009; Schneider 2017).

In this thesis, community is defined as the social relationships of people existing within a certain boundary (Wellman 1999: xii). Therefore, referring to a ‘functional community’ that indicates the presence of social relations held between members, rather than a ‘structural community’ that focuses on the physical presence of members (Coleman

---

<sup>1</sup>Even though it is communities that possess social capital, it is the individual themselves who must realize and utilise it (Defilippis 2001: 785).

1988b: 385). This distinction is important as it is possible for a community consisting of all required members to still lack relations between them (Coleman 1988b: 385). Thus, specifying that “social capital resides in the functional community, the actual social relationships that exist” (ibid, 387).

Social capital is produced through repeated social interactions between members of the community, and where cooperation is the outcome (Rocco, Suhrcke 2012: 3). This interaction occurs “in areas where residents can meet and spend time - however short - together” (Aldrich, Meyer 2015: 263). Ray Oldenburg (1999) describes these as ‘third places’ as they are neither private residences, nor activity-specific workplaces. To foster these third places city planners and civic-bodies organize and reorganize the physical layouts of neighborhoods, housing complexes, surrounding streets and areas to create more spaces and activities that can increase interaction and communication between neighbors, thereby increasing social capital (Newman 1996; Aldrich, Meyer 2015). Thereby building ‘social worlds,’ a form of social organization delineated by boundaries of interaction and communication, instead of spatial demarcations or group membership (Shibutani 1955; Unruh 1980).

However, not all third places are considered as social worlds. This is because the reason they were constructed, might in reality, differ with the relations individuals have with them, thus terming them as non-places (Augé 1992: 94). In other words, a third place might be created with the intention of increasing neighborly interactions, however that doesn't ensure in reality neighbors will see that place as an opportunity to interact with their neighbors. Moreover, these non-places are characterized by “the feeling of transitoriness, staying for a brief moment, and do not require observers or visitors to get involved” (Markiewicz 2019: 11). And, has been attributed to the standardization of places, or building identical places expecting similar results (ibid).

The proliferation of different forms of technologically mediated interaction, has made it possible for third places to exist in the virtual world. Here, virtual world is defined as:

Shared, simulated spaces which are inhabited and shaped by their inhabitants who are represented as avatars. These avatars mediate our experience of this space as we move, interact with objects and interact with others, with whom we construct a shared understanding of the world at that time. (Girvan 2018: 1099)

Third places constructed in the virtual world become a shared simulated space away from both home and work for neighbors to interact and communicate with one another. They also provide affordances such as atemporal communication opportunities to time-constrained neighbors. And, a layer of anonymity (avatar) to neighbors who might be more introverted and therefore choose not to interact physically. However, third places in the virtual world can also be non-places. Then, how does one distinguish between third places and non-places in the virtual world?

First, I must not presume all virtual worlds are conducive to developing and maintaining relationships between users (Jones 1997), where group interactions and personal relationships simply result from the adoption of various forms of computer-mediated-communication (CMC) (Rheingold 1993; Hampton, Wellman 1999). Instead, I must separate the terms virtual world, from virtual settlements (VS) and virtual community<sup>2</sup> (VC). A VS, relates to a place constructed in the virtual world to promote interactivity amongst users, and a VC refers to the relations that form within them that build attachment and belonging (Jones 1997; Blanchard, Markus 2004; Akoumianakis 2010). This is similar to physical neighborhoods (virtual world), where not all third places constructed (VS) encourage neighbors to interact and build community (VC).

To differentiate itself from other group interactions in the virtual world, a VS must be “symbolically delineated by topic of interest and within which a significant proportion of interrelated interactive group-CMC occurs” (Jones 1997: 6). Moreover, they must meet the following conditions: (1) a minimum level of interactivity, (2) a variety of communicators, (3) a minimum level of sustained membership, and (4) a virtual common-public-space where a significant portion of interactive group-CMCs occur (Jones 1997: 6).

Within these settlements, a VC exists if the following conditions are met: (1) exhibit affective bonds through “feelings of membership, influence, need fulfillment, and emotional connection” (Blanchard, Markus 2004: 69), (2) boundaries are delineated by digital artefacts (Efimova, Hendrick 2005), and (3) norms and practices are established (Efimova, Hendrick 2005). Through these criteria we also understand how “the distribution of people in dispersed social systems is not only spatial, but mental” (Bernard 1973: 183),

---

<sup>2</sup> I will not be focusing on other terms such as ‘cyber communities,’ ‘online communities,’ and ‘digital communities (Agostini, Mechant 2019: 2028).

whereby a user doesn't just exist within a spatial boundary of a virtual environment, but must also feel belonging to it.

As the VS is represented as a particular place in the virtual world, it can be built by a designer. Here, a designer refers to a person who uses theoretical assumptions, internalizes mental representations, and then externalizes and manipulates representations to create a particular VS (sensu Oxman 2000:338). However, the designer cannot create a VC, as their formation depends on the users of the VS. Thus, only allowing the designer to make the VS conducive to VC formation (Boyd 2011: 41). This is similar to city planners and civic-bodies who create third places with the aim of increasing social capital and transforming the structural communities found in neighborhoods into functional communities, but cannot actually guarantee its outcome.

The boundaries between the VS and VC are demarcated through ability to form 'mediatized worlds,' which are the aforementioned social worlds expressed through media-mediated communication (Hepp 2013: 82). In doing so, I do not view the online world as independent of the offline world (Jurgenson 2012). Rather, I view it as "a new set of ways for the physical world to be understood and appropriated" (Bell, Dourish 2011: 132). I understand the physical world as:

The sociocultural world is grounded in semiotic interaction and involves both tangible material and mental aspects (respectively describable as physical and semiotic) inseparably related in semiosis and the intersubjective interactional dimension. (Remm 2015:8)

To reiterate, this thesis does not take the perspective of digital dualism where the virtual and physical world are deemed as separate (Jurgenson 2011), but as fundamentally interwoven spheres (Mosconi *et al.* 2017) that exist at the "intersection of people, technology and practice" (Boyd 2011: 39). Thereby, making the transference of social capital between the two worlds a possibility (Ye *et al.* 2012).

### **Applications that will be studied and why**

The usage of CMC to build third places for neighborhoods is not a novel topic. Since 1999, digital mediums have progressed from predominantly being used to exchange messages with others across the world to using digital to increase communication at the local level

(Casalegno 2006: 123). This is to address the state of urban decay and impoverishment of social relations in society today (Social Street 2013).

This decay is attributed to individuals in urban cities becoming “impersonal, reserved, indifferent, blasé, and calculating as a means of protection” (Simmel 1950), where they are wrapped up in their own bubbles, and overtime have become apathetic and indifferent to those around them, thus leading to fleeting interactions (*ibid.*), and decreasing levels of social capital (Putnam 2000). This state of decay was first highlighted by Ferdinand Tönnies (1887b), as he studied how traditional social relationships were affected by space transformation, urbanization and uncertainty caused by the Industrial revolution. He focused on the transition of human settlements from traditionally agricultural to modern industrial leading to the bifurcation of the strongly-knit community (*gemeinschaft*) versus the artificially built society (*gesellschaft*) (*ibid.*). Since, community has been often romanticised as a harmonic state of the past that lacks inequality and power struggles, and promotes “personal qualities over external status qualifications” (Brint 2001: 19).

Evidence of this decay has been substantiated through on-ground research that found only 57% of Americans knew some of their neighbours, and only 26% said they knew most of their neighbours (Davis, Parker 2019). Likewise, in the UK 75% of adults were not friends with their neighbours, with 1 out of 4 claiming there was no community spirit (Anderer 2019).

One solution found was to build community for neighbourhoods through VS creation, with the hope/aim that virtual interactions and communication between individuals could help increase social capital in their relations (Ferlander, Timms 2007; Tiwari *et al.* 2019). Examples of these projects include: A Toronto neighborhood that included internet access in its design called Netville (Hampton, Wellman 1999), a neighbor-to-neighbor social network called Nextdoor (2010), a civic engagement software known as Neighborland (2011), and a social movement on Facebook called ‘Social Street’ (2013). The two projects I will be analysing in this thesis are Nextdoor and Neighborland.

Nextdoor is a hyperlocal social networking site founded in 2008 to help neighbours get to know each other. It provides a dedicated mobile and web-based platform that offers each neighbourhood “their own restricted site within the system” (Masden *et al.* 2014:

3239). They are then equipped with identical design features, which can only be accessed after one is verified as part of a particular physical neighbourhood. One can be verified either through a “postcard with a verification code, a credit card or phone number linked to the address, having another neighbour vouch for you” (Lambright 2019: 86). The neighbourhood memberships are maintained by “a one-to-one mapping of real-world community to virtual community” (Masden *et al.* 2014: 3239) and requiring a user to sign up with their real names and residential address. Thus, encouraging members to be as true to their physical identities in comparison to groups on Facebook or other public social media (Adams, Rafalow 2017).

Neighborland is a civic-engagement platform founded in 2011 for government agencies, and civic-minded organizations to connect with their neighborhood (Neighborland 2019). The main aim is for collaboration on common goals for the neighbourhood, which are created as individual projects on the platform. Members then join the goals they are interested in to support them, share ideas on how to achieve them, to give feedback, or simply be updated on their progress.

NextDoor acquired Neighborland in 2020, which provides an interesting perspective as both applications were built by different designers, but share a common goal of community and social capital building. The reason for not focusing on neighborhood groups or social movements on Facebook and other social media networking sites, is because users themselves leverage the groups function to create interaction for their neighborhood, rather than being influenced by a designer. This is because Facebook was not built with the same goals as Nextdoor, Neighborland. And therefore, does not align with the aims of this thesis.

## **Background**

The shift in CMC being used at a hyper-local level to build social relations and community has been further amplified due to the Coronavirus pandemic of 2019. More commonly known as COVID-19, the virus is “an acute respiratory infectious disease, which is mainly transmitted through the respiratory tract” (2020a). Most patients infected contracted the virus from “being in contact with virus contained surface or infected patients or carriers of



the virus” (Baloch *et al.* 2020: 275). This led to governments and health organisations implementing measures such as social distancing to contain the spread of the virus, with the primary goal of reducing contact between individuals. This eventually created the “implicit equation of sociality with risk” (Romania 2020:52) thereby making the “semantic opposition between health and sociability” (ibid.).

Previously, individuals existed in their life environments of work, home, and public where they played their life roles of professional (work), private (home), and citizen (public) (Bradley 2006: 54). Based on the environment and the roles, interactions were conducted and actions performed. However, since the pandemic all three environments have collapsed into co-existence within the home environment. The home environment in this paper relates to both the physical house an individual lives in, and the surrounding neighbourhood the individual’s mobility has been restricted to. To escape these restrictions, individuals turned to CMC to interact, communicate and gain information about their changing environment.

A study of 25,000 consumers in 30 countries (2020b) recorded an exponentially risen surge in usage of CMC. WhatsApp achieved the most gains at a 40% increase in usage (ibid.), where in the early phase of the pandemic there was a 27% increase, which increased to 41% during the mid-phase and 51% in the late phase (ibid.). Facebook themselves found total messaging on all platforms (Facebook messenger, Instagram, Whatsapp) had increased by 50% globally, total time spent by 70%, and time in group calls over 1000% (Parikh, Schultz 2020). In the case of India, WhatsApp had a 40% increase in conversations (2020c) especially in groups such as: school-parents, and Residents Welfare Association (Jagannath 2020). China also experienced a similar increase in their local social media apps Wechat and Weibo at 58% (Kantar 2020).

Nextdoor found a resurgence in their application, with daily traffic numbers increasing by 73.3% in the USA (Koeze & Popper 2020). They also added Covid specific features, such as a ‘help map’ that mapped geographical neighbourhoods and showcased how neighbours could help one another from “running errands, helping with child care or donating extra food” (Cutway 2020). And, launched a service to help small local

businesses communicate about themselves and their take-out and delivery services<sup>3</sup>. By doing so, Nextdoor became a platform for neighbours to interact and communicate with each other without physically meeting. Thus, reinforcing the aforementioned idea that social capital can be embedded in relations built and maintained on a VC.

## **Purpose**

The importance of producing and using social capital during a pandemic can be studied through prior research conducted during other outbreaks such as SARS in 2003 (Koh, Cadigan 2008; Chuang *et al.* 2015) and Ebola in 2014 (Alonge *et al.* 2019). Research found that outbreaks were better contained and handled in places with higher social capital (Makridis, Wu 2021:1). Higher social capital refers to stronger relationships between people of a particular place, which enable them to accomplish tasks during emergency situations. This is due to the prevalence of trust, norms, and networks found in the relations that lead to the facilitation of efficient collective action. Furthermore, those who had direct access to a cohesive community (place with dense social relations) were able to cope, or even avoid the disaster all together (Koh, Cadigan 2008: 274). Research conducted during COVID-19 also found similar results where communities with higher social capital showed greater concern for others, and thereby adhered to guidelines more attentively, such as, social distancing (Ding *et al.* 2020) or having higher testing rates (Wu *et al.* 2020).

The research work conducted in this thesis stemmed from the lack of digital applications (apps) dedicated to building third places for neighbourhoods in India. In specific, they lack focus on fostering interaction and communication between neighbours to create community and social capital. Popular neighbourhood apps in India include MyGate<sup>4</sup>, JioGate<sup>5</sup> and Gatekeeper by ADDA<sup>6</sup>, but are built as solutions for security and

---

<sup>3</sup> Retrieved from:

[https://help.nextdoor.com/s/article/Using-Nextdoor-to-support-your-neighborhood-during-this-crisis?language=en\\_US](https://help.nextdoor.com/s/article/Using-Nextdoor-to-support-your-neighborhood-during-this-crisis?language=en_US) 12.04.2021.

<sup>4</sup> MyGate is a security and management app utilised by gated housing societies in India. It builds communication between residents, management committees, security guards and facility managers.

<sup>5</sup> JioGate is a management app for apartment complexes that records visitor, domestic-help, and other entry and exit times. It also has an e-intercom feature to accept or restrict entry of a visitor.

<sup>6</sup> Gatekeeper by ADDA is a management app for apartments that allows for visitor and staff management, emergency management and a mobile intercom service.

community management (paying bills). In gated neighbourhoods, residents mostly utilise Whatsapp to connect with neighbours (Bhatt 2020). There are apps such as The Padosi<sup>7</sup>, and Neighborly<sup>8</sup> by Google that attempt to resemble a neighbourhood social network, but failed to gain any traction amongst Indian audiences. Neighborly was eventually shut down in 2020 (Singh 2020) as it failed to provide users with any additional benefit even during the pandemic.

Therefore, I would like to create an app that can become a third place for Indian neighborhoods. In order to do so, I will take the perspective of an app designer to understand how to create a VS that is conducive to VC formation. Thereby, allowing social capital to be built even during the COVID-19 pandemic, where neighbors cannot interact due to physical restrictions. The following research questions have been formulated to help guide this process.

1. In what ways can a designer influence the building of social capital and community online for a neighbourhood?
2. How can interaction from physical space reappear on a virtual community?
3. How do interactions from neighbourhoods translate differently on NextDoor and Neighborland?
4. To what extent does the translation from physical to virtual impact app development on the levels of (1) interaction environment, (2) interaction with neighbors and community, and (3) philosophy or negotiations behind the application?
5. In what ways can the differences in translation between NextDoor and Neighborland assist future mobile application design for building social capital online?

---

<sup>7</sup> The Padosi (neighbor in Hindi) is an app created to connect government officers and civic bodies to the public. Users can post problems they face in their neighborhood, and other neighbors can support, oppose or discuss the issue. If a campaign/issue receives more than 10% of support, the app will relay it to the civic-body.

<sup>8</sup> Neighborly is an app that allows users to find answers about their neighborhood. It is a question and answer based format.

## **Delimitation and what makes this semiotic?**

The end-goal of this thesis is to build an app that can assist physical neighborhoods to become social capital producing communities. This requires the determination of conditions that can assist in the creation of community both online and offline. Over the decades researchers have made many attempts to determine these conditions, which have included dimensions of physical proximity (Tönnies 1887; Hale 1995; Effrat 1974), social network (Wellman 1999), a shared sense of belonging, warmth and security (Bauman 2001), and the addition of space in George Homan's elements of the group that include: interaction, sentiment, activities, and norms (Hillery 1955: 238). This thesis is another attempt to determine those conditions. However, my focus is on understanding how thought can be ordered and presented toward collective action instead of individualistic, thereby creating community.

To do so, I will utilise a sociosemiotic perspective to study conversations and interactions as 'communication' or a form of social action (Cobley, Randviir 2010: 20), where as a consequence of social action, sign users make meaning (Vannini 2007: 116) in their neighborhoods. Michael Halliday suggests that it is through language that individuals are able to form social groups, as it allows them to interact with one another and designate social roles (1978: 14). Augusto Ponzio add another layer by suggesting it is 'dialogue' that recognizes the social element of language, which can be maintained through the process of semiosis of: (1) information or signification, (2) symptomatization, and (3) communication (*ibid.*).

Prior studies of social capital have either been through a sociological or economic approach, and focus predominantly on its existence, accumulation and benefit to order transactions. Either by illustrating it as "an aspect of relationships among individuals," considering it as 'property' to be owned by individuals in a collective, or as a "collective good, by definition available to each citizen" (Van Deth 2003: 82). However, I will view social capital as messages constructed, exchanged and utilized by neighbors, where dialogue occurs and not just accumulation. Here, I am focusing on messages as 'channels' rather than their 'content' (Dijkstra, Veenstra, Peschar 2003). Furthermore, the interactions on the app will be analysed as ways to produce and receive messages of social capital. Thus, helping to select "a given form of social capital that is valuable in facilitating certain

actions [in contrast to those that] may be useless or even harmful for others” (Grootaert, Serageldin 1999: 46).

## **Content Summary**

The main goal of this thesis is to build a virtual settlement (VS) as a third place for neighborhoods in India to interact and communicate on. The aim of this is to help physical neighborhoods become social capital producing communities with strong relations between neighbors. To achieve this, I will reconstruct the design processes of two pre-existing VSs that focus on neighborhoods and community-making. By studying the choices and configuration of choices taken by their designers, I hope to create a blueprint for the app I am attempting to create.

In order to achieve this, I have constructed this thesis on four main content pieces: (1) studying how designers can bring patterns from the physical world to the virtual world, (2) identifying the interaction patterns from the physical world that lead to social capital production, (3) determining methods to reconstruct and evaluate the Neighborland and Nextdoor design process, and (4) reconstruct and evaluate the design process of both apps to identify the blueprint for my app. After which, a conclusion is presented.

To understand the ‘how’ of the first content piece, I study the claims-to-pattern approach to a designer’s process. Through this, a designer first identifies the goal of the app, and constructs a vision based on how that goal is achieved in the physical space. Then, he/she creates a set of grammatical rules based on predictive claims from the physical space. And finally, specifications on the app are determined by answering claims through explicit patterns that have been used in the virtual space by previous designers. During each stage of this process, a designer utilises intersemiotic translation as both an anticipatory tool to navigate the virtual world. And as a generative tool to fill the gaps created in the physical world.

The next content piece studies social capital and community-oriented theories and empirical works to identify predictive claims: (1) elements that make a settlement more conducive to community formation, (2) the role of third places in building connection between neighbors, and (3) how social capital can be produced by a settlement or

community. The claims chosen are based on the perspective of procedurality, to identify rules of interaction that lead to the production of social capital or community. Thereby, organizing the claims as either lexical or grammar rules. The purpose of this is to build a logonomic system for future-users to understand how to produce or receive messages of social capital and community building.

Content piece three determines two methods to study the reconstruction process of Nextdoor and Neighborland. The first is a categorization of possible design alternative types by Paul Resnick and Robert Kraut (2011) that can be chosen to create a virtual community (VC). Based on the types, configurations of alternatives are selected to answer the claims. The second method focuses on evaluating the designer's process and the chosen alternatives. To achieve this a content-analysis on user reviews is conducted through a customised extractor model created on Monkey Learn, a text analysis software. The content is reduced through content-tags relating to either positive or negative reviews toward features, designated roles, partnerships with institutions, impact on social relations or suggestions.

Based on the results, the design process and intersemiotic translation are reconstructed and evaluated. Thereby differentiating the two apps. The vision for Nextdoor is based on a neighborhood association, versus Neighborland as a neighborhood council. The vision then determines the claims selected to build the logonomic systems of both apps. And the patterns from virtual space used to create the specifications. Moreover, the designer's dominant is also identified, where intersemiotic translation occurs from the *gesellschaft*-oriented physical world to the *gemeinschaft*-oriented app.

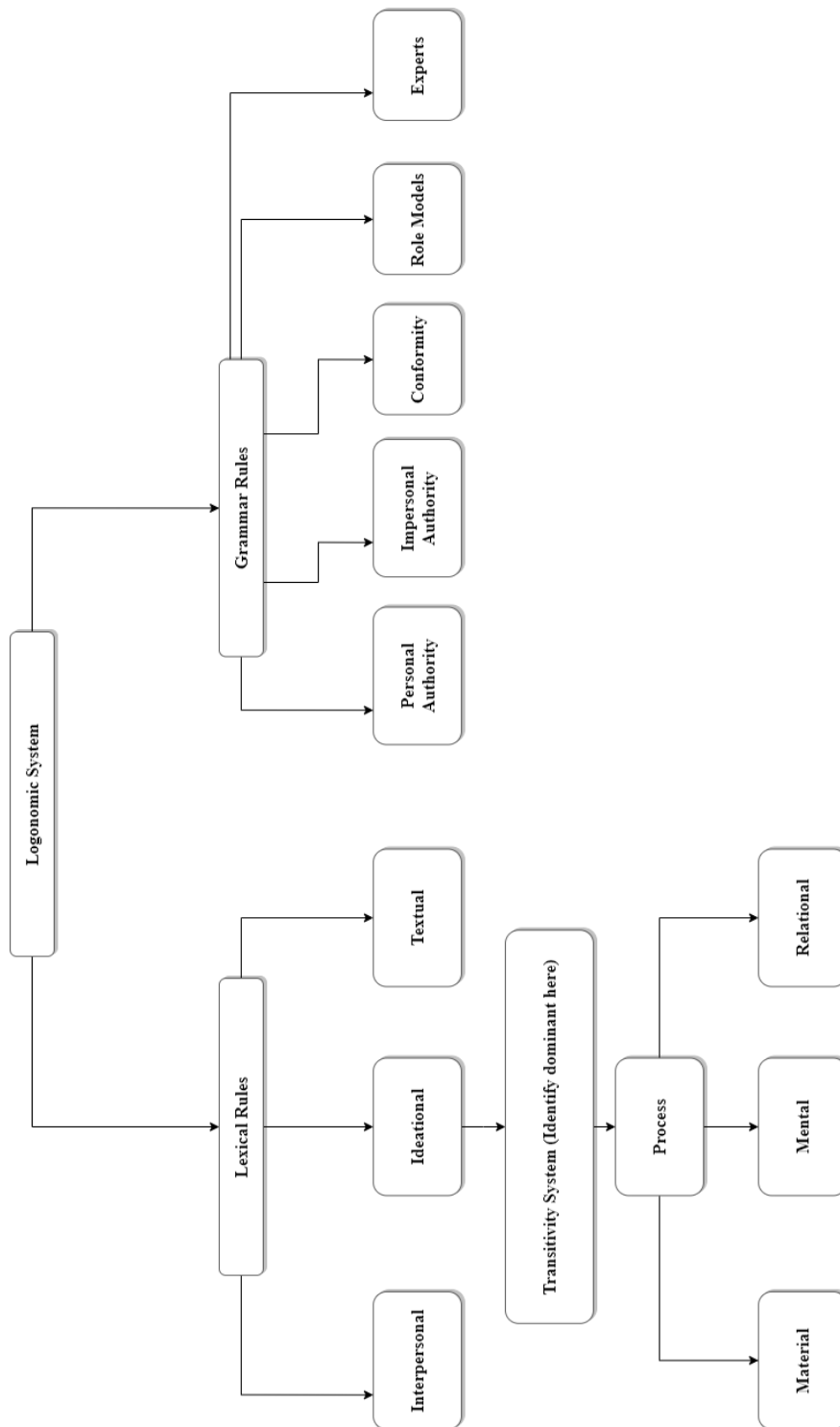


Figure 1: Summary of steps required to create the logonomic system.

## **1. From the physical world to the virtual**

The aim of this chapter is to study ‘how’ designers can build a VS by bringing patterns from the physical world to the virtual world. The ‘how’ refers to the cognitive process of a designer, who uses design as a form of problem solving (Eastman 2001: 147). Here the problem is to create a VS that is conducive to interaction and communication between neighbors. To study how this problem is solved, I will focus on both the structure of the designers’ mental representations (Lawson 1990: 3-4). And, how these mental representations are then displayed as external representations on the app (Oxman 2000; Eastman 2001). The choice to focus on both was to aid my understanding of the full range of depictions, choices and combinations that might result in a VS, especially a VS conducive to VC formation. Furthermore, the designers’ process and its representations will be approached through a sociosemiotic perspective, thereby placing focus on the “relations between signs and sign users” (Cobley, Randviir 2009: 20).

The objective of the design process is to find ways to hide the true complexity of computer processing, so that everyday-users can interact directly with their devices to conduct actions, such as document writing, illustrating designs (Sharples 1996: 3) or messaging friends. Depending on the digital device, user-interfaces can be menu-driven, graphical (GUI) (Saade, Otrakji 2007) or touchscreen GUI (Sonntag *et al.* 2009). Different users interact with devices differently and for a myriad of purposes, therefore the design process changes depending on the expected end-user. Here the end-user relates to user-groups, not just a single individual and their anticipated reactions.

Over time there have been three main approaches to design processes that relate to what the end-user hopes to achieve: (1) requirement-fulfilling (2) task-oriented, and (3) goal-oriented. Initial design processes catered to workplace professionals and those in the Information Technology field. Therefore, their interfaces were built through a requirement-fulfillment perspective, known as ‘Waterfall-design’ (Lewis, Rieman 1993).



However, as workplaces diversified it was argued that designers might not always know the problem or requirements in the beginning of the process, and instead should use an ‘iterative method’ that allows for coevolution of problems and solutions through numerous design iterations (Guo 2016: 26). This led to task-oriented designing (Lewis, Rieman 1993).

Now, designers are met with a diversity of interfaces available, such as mobile devices (Jones, Marsden 2006), desktop, laptops, tablets (Johnson 2021), while also expanding tasks to variety of contexts and settings with their own unique cultural significations (Schmidt 2000; Eikenes, Morrison 2010). To cater to this shift, design processes have become goal-oriented because goals are driven by human motivation and are more long-term rather than tasks or activities that are impermanent (Cooper *et al.* 2007). Here it is not the feature that is key to success, but the achievement of goals (Cooper *et al.* 2007), thereby conceptualizing this approach as ‘contextual design’ that focuses on structuring user goals as intents, desires, and drivers (Beyer, Holtzblatt 2014). Therefore, the system that is being built must first identify the goal of their end-user, and then design to make achieving that goal as easy as possible.

Design itself can be further bifurcated into user interface design (UI), user experience design (UX), and interaction design (IX), which have often been used interchangeably, but in actuality are quite different. UI relates to the graphic design aspect, UX to “the practice of designing products, processes, services, events, and environments with a focus placed on the quality and enjoyment of the total experience” (Norman 2013: 5). Whereas IX is the “the practice of designing interactive digital products, environments, systems and services” (Cooper *et al.* 2007: xxviii). The interaction designer focuses on behaviour related aspects, in comparison to graphical and industrial designers who focus on form, or information architects and copywriters who focus on content (*ibid*, xxxi). I will be taking the IX perspective to build the system of a VS. Here systems refer to semiotic systems composed of signs, and the relations between them (Ernest 2006: 70).

## The design process

A designer first begins the design process by identifying a ‘vision’ that connects the end-user to the anticipated use of a product. The vision turns into an ‘operative image’ as a sketch or plan, which is then transformed to a ‘specification’ that constructs the container and conditions that can implement the prior processes (Lowgren, Stolterman 2004: 16-18). Together these three steps build the entire design process.

At each stage, the designer identifies design problems that must be solved, and locates familiar elements from the physical world to help provide, navigate and implement the solutions in the virtual world. The solutions to these problems are either presented as claims or as patterns. Here, claims are an effect of an action conducted in the physical world (Belay *et al.* 2016), and patterns are the generic guiding principles for repeatable problems (Alexander *et al.* 1977). These solutions can be utilised in three ways: (1) locating an emerging pattern language that can be codified and used as guidelines for recurring requirements, situations or contexts (Van de Veer, Van Weile 2011; Crumlish, Malone 2009). (2) Identifying patterns that are ‘causal claims’ “in which X leads to Y rather than merely observing that X frequently occurs in practice” (Resnick, Kraut 2011: 14). Or, (3) combining claims and patterns (Belay *et al.* 2016). I will be taking the third perspective.

The designer first identifies causal claims in topic-relevant theories to study solutions to problems based on the different psychological human responses an individual can have in a given scenario (Carroll, Kellogg 1989; Carrol, Rosson 1992). As the claims are scenario based, they only retain meaning when placed in a context. Therefore, they are collected and organized to form a claims library (Belay *et al.* 2016). This library is accessed during the specifications stage, and answered with patterns.

Whereas, “patterns provide a detailed solution to a contextually rooted problem that is meant to capture a reusable or adaptable truth about a situation” (Belay *et al.* 2016). They are identified on three levels: (1) postural patterns at the conceptual level, which are used in service of a larger goal, (2) structural patterns that consist of views and element groupings to arrange information and functional features, and (3) behavioural patterns

relating to specific interactions with the overall elements created (Cooper *et al.* 2007: 158).

For each claim a designer can choose from a set of possible patterns on how they would like to approach the goal-oriented problem. After which, the designer will select the most appropriate design option/alternative to demonstrate the pattern (Resnick, Kraut 2011: 6). In other words, claims help locate the ‘type’ of solution, patterns help in the ‘content’ of the solution, and alternatives/options ‘execute’ the solution. In this way, this process is not deterministic, but requires the designer to be an active decision maker rather than a passive follower of prescriptive rules. Additionally, this allows the designer to study the impact of a particular choice they make in the design process, and later study its impact on a user of the application. Through this we can also infer that for every claim, a plethora of patterns exist, and the choice to use one over the other is either because they achieve a particular goal, or they are more effective in achieving the goal than another (Resnick, Kraut 2011: 14-15).

### **Building internal and external representations**

The aforementioned claims and patterns can be represented as metaphors on the app to help build familiarity for both the designer and the end-user. These metaphors are a cross-domain mapping (Lakoff 1993) between the physical and virtual world. Examples of such metaphors include: Microsoft Word resembling a typewriter (Kunde 1986), Adobe Illustrator<sup>9</sup> alluding to an artist’s toolkit (Burrough, Mandiberg 2017), or email written as a letter. Each of these have been taken from the physical world to make the virtual world easier to navigate and use.

However, we must be cognizant that not all choices made based on the claims and patterns from the physical world become easily usable or understandable metaphors on the virtual. To make sure that the metaphors are as usable and understandable, a designer must also conduct analysis on the following levels: (1) ‘cultural’ constraints in accomplishing the task, (2) detailed ‘sequence’ of actions required to conduct and accomplish the task, (3) how the work is conducted in the ‘physical’ environment, (4) what ‘artifacts’ were created

---

<sup>9</sup> A design software that assists in creating vector-graphics.

or used in accomplishing task, and (5) ‘flow’ of coordination required amongst individual for the task (Beyer, Holtzblatt 2014). Depending on the overall goal of the app system, different metaphors can be built on some or all levels.

To illustrate these three concepts, I will reconstruct a designer’s hypothetical process. The designer first visits an office space, where they study how professionals work and the tools they use. During observation a scenario is identified where individuals sometimes require removing certain items. From there a design claim can be set that if a user does not find use for an item they remove it. Now the designer looks at different types of removal patterns, and identifies metaphors through the aforementioned levels: (1) a user requires something sharp, or a user requires a container (2) a user selects what must be removed, then removes it, then stores what has been removed in some place, (3) a user physically cuts something, another user takes out the garbage (4) a user utilises scissors to remove items temporarily, and a trash bin to remove them permanently. Based on the design options selected the user interface will either display a ‘cut’ function on Microsoft Word, or a ‘bin’ on the computer interface.

These metaphors not just make a computer function recognizable, but they also indicate to a user what the effects of their use are (Trætterberg, van Weile 2000). Moreover, they must be made by considering the entirety of the system metaphor (Beyer, Holtzblatt 2014), that builds its metaphorical space to differentiate itself from another application (Trocchianesi, Pirola 2017). Such as Microsoft Word emulating paper, therefore using cut as scissors, or Desktop using a bin as it recreates an office space (Trætterberg, van Weile 2000). If the two had been switched it is possible that users would not have understood their purpose, which would have been a detriment to the aforementioned applications.

Mihai Nadin elaborates on the computer’s interface system as a metaphor by suggesting it actually represents a complex sign system (1998: 275). He suggests the system comprises a repertory, grammar, language, and meaning (ibid.). Through Nadin’s work, we can begin to study the design process as “laws of sign processes meant to convey a certain meaning to an intended interpretant (that is, the process of interpretation in which various users become involved, the use of the system)” (ibid, 276). .

Scott Chase (2002) further elaborates on these grammar-based systems, as “production systems that generate designs according to a specific set of user-defined rules”

(Chase 2002: 161). The initial analogy was made by James Gips and George Stiny to build vocabularies and interpretative mechanisms for paintings and sculptures by using grammar as the internal organizing logic (1971: 134). However, Chase's grammar-system focuses on: (1) system development, including identifying object representation, control mechanism, and grammar rules, and (2) application, focus on determination of rule, object and matching condition by the designer (2002: 166). However, it is still based on shape-grammar therefore focusing on 2D and 3D forms, rather than interaction based systems.

### **1.1 Intersemiotic translation as a thinking tool in design processes**

Designing a grammar-based system is the outcome of a design process, which requires a designer to make decisions. Jiri Levy (1967) defines translation as a decision-making process where a translator must use 'definition instruction' to define all their options to translate a particular unit, and then use 'selective instruction' to select one of the options to translate the unit. In doing so, translation becomes the thinking tool of a designer. More specifically, 'intersemiotic translation' (Atã, Queiroz 2017), as it deals with the process of translating text 'a,' elaborated to a semiotic system 'A' into text 'b,' elaborated to a semiotic system 'B' (Eco, Nergaard 2001: 221), and the system is a "a disparate rule-based organisation of meaningful signs unlike any other such entity" (Gottlieb 2017: 46). Here, the physical world is the source system, and the virtual world the target system (sensu Kourdis 2015: 1).

The conceptualization of intersemiotic translation I am using is different from Roman Jakobson's (1959) initial term. His focus was more on "Intersemiotic translation or transmutation [as] is an interpretation of verbal signs by means of signs of nonverbal sign systems" (ibid. 233). This focus is too rooted in verbal language and must instead be viewed as a process to be applied in this thesis (Toury 1986). The process being referred to, does not involve the designer merely substituting physical interactions for virtual, but using it as "a double act of communication" where the designer is a translator who is "a doubly acting subject, as interpreter and as creator of a new text" (Sonesson 2014: 263–264).

Here, I am also referring to Pierce's triadic model of sign-object-interpretant rather than Saussure's linear 'nature of the signifier' (Kourdis 2015: 2). Therefore, focusing on the translation of semiotic relations between sign-object-interpretant of one system into another (Atã, Queiroz 2019: 189). Furthermore, the translation process can be mapped to this triad in two ways: (1) the source is the sign and the target the interpretant, or (2) source is the object and target is the sign (Atã, Queiroz 2019: 189). Thus, suggesting a relationship between source and target where it refers to both the retaining, or transferred aspects of the source language and the changed aspects noted in the target text.

With respect to designers, the functional role of the interpretant relates to their design process, where intersemiotic translation scaffolds creativity by transforming one semiotic system. In this way, the designer showcases how "an elementary act of thinking is translation" (Lotman 1990: 143) where "the fundamental mechanism of translation is dialogue" (ibid.). Moreover, "translative processes across languages evidence the dialogic intertextuality structural to texts, such that textual practice itself in a single language is already an exercise in translation" (Petrilli, Ponzio 2012: 15).

A designer can differentiate systems based on the logic that organized them by identifying what provides the textual unity to the translation. This requires the designer to identify the 'dominant' (Torop 2000). In this case, the dominant is not of objective value (Torop 2000), as "translation is ideological since the choice of a source text and the use to which the subsequent target text is determined by the interest, aims, and objectives of social agents" (Schäffner 2003: 23). Or, by identifying 'codes' that are required for the production or intention of texts (Chandler 2007: 147). Therefore, I must identify the dominant logics the designer utilises during the design process.

By using intersemiotic translation in the design process, the designer brings "temporary stability to the system, not in the sense of stasis (absence of change), but in the sense of structured change towards sought-after goals" (Atã, Queiroz 2017: 46). The source system acts as a pre-existing structured collection of one or more quality dimensions, known as a 'conceptual space' (Gärdenfors 2004) that can be used as a map or framework so that designers don't have to start their process from the absolute beginning. As previously mentioned the design process starts with a vision that becomes an operative

image, which is then converted to specifications. This process stems from an intersemiotic comparison between semiotic systems to locate differences.

If a source system is part of a conceptual space that is structured differently from the conceptual space of the target system, the influence of the source system on the target system can generate novelty (difference) in the latter. Furthermore, because the source system has a structure with at least some degree of internal coherence, it is easier to produce novelty that is non-gratuitous and potentially recognizable as aesthetically valuable. (Atã, Queiroz 2019: 193)

This leads to intersemiotic translation as either anticipatory, or generative tools (Atã, Queiroz: 193-194). If the translation helps to direct a designer's actions or predict certain aspects then they are considered anticipatory tools (ibid, 193). An example of this would be a poet thinking through the different styles of poetry writing (Boden 2016) and each of their structures and systems before writing his own poem. In the design process this most relates to the vision to the operative image stage, where the designer must sift through styles, conventions and canonical references to best reflect their vision. On the other hand, if a designer finds a significant difference between the semiotic system of their source and target, and chooses to elaborate on it in the target then we can view intersemiotic translation as a generative tool (ibid, 194). This is most likely to happen in the operative image to specifications stage.

The process of replacing the source text with a substitute text, highlights 'substitution' as a fundamental concept. Dirk Delbatista (1993) supplements substitution with his other code operations of repetition, deletion, addition, permutation . He also suggests that when dealing with multi-authored texts one can utilise the holistic strategy of transferring textual-functional clusters of features, thus finding approximate equivalence on the 'synfunctional level' (Delbatista 1993: 32). This can be done instead of "assuming that the equivalent transfer of individual text features will also yield an equivalent synfunctional unity" (ibid.). There are two ways translators can deal with this. Either the translator "may choose to pass over particular S.T. structures or even whole levels of S.T structuration" (ibid.), or they may "leave behind altogether the viewpoint of the individual S.T signs and their auto-functions" (ibid.).

As translation is an activity, it requires a purpose (Reiss, Vermeer 1984: 84-93). In translation the purpose is known as 'skopos' (de Leon 2008: 1), which correspond to three text types: (1) plain communication of facts, where content is the main focus of the communication, (2) creative composition that focuses on the producer and form of the

message, and (3) inducing behavioural responses, where the text type is operative and persuasion focused (Reiss 2000). Depending on the purpose of this app being created the text type can shift, such as a WHO Corona website would require content as the main focus, in comparison to an interactive website based on Mozart's work that transforms the form of the message.

I will focus on the third type, as IX focuses more on inducing behaviour changes from their users so that they (user) can meet their end-goals. Moreover, individuals must access the virtual space from the physical space thereby making this a cognitively supplementary translation, where audiences can simultaneously access, and partly understand the source text (Gottlieb 2017: 53). For example: IX design has shifted user behaviour by influencing users to book taxis on Uber or Bolt, by building a semiotic system translated from the traditional system of calling or hailing a taxi. It follows the sequence of real world interaction to want, find, call, ride, and pay for a taxi, but substitutes the physical gesture of hailing with tapping buttons on a phone, and adding elements like feedback and ranking.

When translating between semiotic systems, especially in relation from physical to virtual I must navigate the complexities of relations between different modes, and the affordances provided by each mode (Adami, Pinto 2019: 10). This is because the translation process (1) transfers elements (2) transfers meaning, and (3) accounts for the system of relations between the content and expression plane in the source text (Torop 2000). Only in doing so can I understand what the translation units are (*ibid.*). In order to retain consistency of meaning, translation across different modes require different semiotic resources, as certain resources are not modally shared (O'Halloran *et al.* 2016). An example of this is the intersemiotic translation of novel into cover designs (Eghtesadi, Salmani 2015), where the designer first notes that words, spelling, letter case, and punctuation do not exist in the pictorial form (Gips, Stiny 1972). And then, during translation must make certain choices on how to achieve the necessary meaning. This might be possible by reconfiguring verbs as vectors, and prepositions by spatial arrangement (Kunkhet 2015: 42). However, in doing so meaning can also be impacted, or changed when one mode is translated into another.



This leads to criticism based on the level and possibility of translatability between the two semiotic systems. As we are not directly translating natural language and both systems are not easily interchangeable we must leverage “the possibility of getting different languages to interact in enunciative operations that are of the same nature or perform the same functions” (Dusi 2015: 181). This is what makes IX design a truly creative process, as they must determine what details to add when there is inadequate information in the source-text, and how to organize the narrative into ‘thematic hierarchies’ and ‘groupings’ when there is too much information, and it cannot all be translated into the different medium (Louhema *et al.* 2019: 496). Thus, we must elaborate the aforementioned grammar structures, and take them one step further by suggesting it is actually the entire language system that must be studied so that translation can occur to form an unified whole (Eghtesadi, Salmani 2015: 1186).

By studying the online gaming world and its variety of media types and discourse modes (Bratteteig *et al.* 2010: 75), IX designers can understand how to create new media environments by translating physical to virtual. These environments are usually translated in a way where they appear more appealing than a user’s everyday environment by constructing an imitation reality (Lemke 2002). To construct these, an IX designer must define and study the different meanings produced by semiotic acts in a source text: (1) the presentational meaning of the ideational content, (2) the orientational meaning attribute to participants attitudes and feelings, and (3) the organizational meanings of units that must be combined to create meaning (Lemke 2002: 302-304). By collating this data, the designer can identify if a certain genre or trope (Corneliussen, Walker 2008) can be identified amongst semiotic systems, and then cross-check how other digital designs in the particular category or canon have translated them. Once a gap has been identified, the designer can build on it through the three meanings and recombine them to create the new environment through:

- a) the aesthetics of the gameworld as both an actualised explorable and mentally imagined universe;
- b) the experiences and means of expression the world as a game system and tool allows and affords;
- c) the social interaction in and about the world . (Klastrup 2009 cited in Manning 2019:1)

When the physical systems are translated into the virtual, two key elements of space and time play a crucial role. This is because in the virtual world the “past, present, and future exist all on one plane, different times bleeding into each other rather than the

delineated linear conception of temporality” (Gourley 2013: 170). Similarly, sense of space is perceived to be different with respect to “boundaries, partitions, change, and ownership” (Pontikakis, Navratil 2006: 25). This time-space relation online has been conceptualized as the ‘internet chronotope’ by Wegerif (2007). It is used to distinguish between differently translated design processes that have led to distinct digital genres based on features, functionalities, designed artifacts, and discourses (Bratteteig *et al.* 2010: 75), especially concerning applications based on real-time spatial, locative, or world-building. For example: differences in real-time spatial qualities of Waze, Google Maps and Apple Maps (Popow 2018), different world-building of online simulated environments such as Sims (Lemke 2005) and the game-world of Ryzom built on the alien planet of Atys (Manning 2019), or locative apps based on neighborhoods like Nextdoor and Neighborland. This plays a crucial role when intersemiotic translation is utilized as a generative tool, and the designer must realize new ways to translate the source system into the target system.

Works based on digital applications being used for learning and engagement in public spaces (Pierroux 2018; O’Neil, Wilson 2010) introduce another level to using intersemiotic translation as an anticipatory tool. This can be noted in examples of digital apps that focus on expanding the museum experience through educational curation (Pierroux 2018), and increasing engagement with cultural heritage (Stuedahl 2009). In both examples, digital has been utilized as a tool to increase ‘voluntary attention’ toward an object or process in the physical world (Vygotsky 2004 -- *cited in* Pierroux 2018: 129) by users. To pin-point aspects requiring voluntary attention we must replace traditional engagement processes of design that follow the linear sequence of “context, motivation, engagement, and outcome” (Pierroux 2018: 131) with intersemiotic translation. By doing so an IX designer can study the source system in the physical world to locate how:

Contexts mediate engagement in “a complex and nested arrangement of social-ecological features and processes” that may differ according to subpopulation and institutional features (Lawson & Lawson, 2013, p. 444). Such nested features include engagement with “various tools/objects/technologies (e.g., computers), tasks (e.g., labs/assignments), activities or disciplines (e.g., dance or math), people (e.g., peers, teachers, coaches) and places/social settings (e.g., school or community agency)” (Lawson & Lawson, 2013, p. 444). (Lawson, Lawson 2013 cited in Pierroux 2018: 131)

Afterwhich, the IX designer can highlight areas that require more attention, in the case of the museum, a specific exhibit and design an experience around it. However, in doing so

the translator also becomes incredibly selective as they “attend to objects that bear salient meaning for certain goals” (Gibson 1979: 48).

## 1.2 Chapter Summary

The focus of this chapter was on explaining how a designer brings patterns from physical space to virtual space.

- Through the design process:
  - Design process relates to the cognitive process of the designer resulting in internal/mental and external representations.
  - Focusing on a goal-oriented design process.
  - Through the stages of vision, operative image and specifications.
  - By identifying claims to be answered by patterns.
  - Building a grammar-based semiotic system
- Through intersemiotic translation:
  - Translation from the physical world system to virtual world system.
  - Focus on the process, and generation of a new text -- not just substitution.
  - Requires the identification of a dominant to provide textual unity.
  - Can be used as an anticipatory tool to create a plan.
  - Can be used as a generative tool to identify a gap.
  - Purpose is to induce behavioural responses.

## **2. Locating design claims to create virtual communities**

In this chapter, I will build a library of predictive design claims, which will be accessed during the reconstruction of the claims-to-pattern approached design process in the analysis. The collection I am building is known as a ‘claims library’ and contains statements predicting the effect a certain action, feature or artifact will have on an individual during a certain scenario (Carroll, Kellogg 1989; Chewar 2004).

To form the design claims, I will study theories, empirical studies and experiments conducted in the physical space relating to: (1) elements that make a settlement more conducive to community formation, (2) the role of third places in building connection between neighbors, and (3) how social capital can be produced by a settlement or community. And then select the claims during reconstruction that best suit the vision and goals of the app being created (Carroll, Sutcliffe 1999: 216).

During the operative stage, a vision is usually converted into a metaphor. However, as described in the prior chapter I am building a grammar-based system. Therefore, the claims I will identify are rules, rather than individual interactions. This is to make the design process more efficient and the final product suited to different neighborhoods rather than just one. To exhibit the inefficiency let us use the example of ‘welcoming a new neighbor’ as one interaction that can build social capital in a neighborhood. This interaction is multimodal and requires a combination of choices from the welcoming neighbour; waving-greeting (gestural) or full embrace (haptic) to make-meaning of gaining intimacy and breaking boundaries between the two participants (Kimmel 2013: 76-124). A change in weight projection toward a participant (kinetic) to showcase invitation, or torso turning to indicate that the participant is open to conversing with the other (Barnstaple 2017: 44). The different choices, combinations of modalities, and ability to choose a modality to suit any possible situation are affordances of the

physical world that cannot all be translated online. Moreover, this is only one interaction amongst the myriad that can build social capital, making it impossible to design for.

Thus, I will identify claims through the perspective of procedurality, to identify certain rules or behaviours that can lead to social capital (Ferreira 2015: 22). These claims will assist in building a grammar-based system, known as a ‘logonomic system’ that will eventually act as a set of knowledge for neighbors to produce and receive meanings through (Hodge, Kress 1988: 4). However, the knowledge being built is not static, but made and changed through organized social interaction (Van Leeuwen 2005; Volosinov 1973). By organizing social intercourse through this system individuals are more encouraged to work cooperatively to “order future transactions and make such transactions unambiguous” (Vannini 2007: 117), as they operate through messages about the participants’ identity, relations, status, power, and agreement (Mehawesh 2014: 260).

Social intercourse can be organized in the logonomic system through two types of semiotic rules: lexicon and grammar. Lexicon rules “establish the relation between referents and sign vehicles” (Vannini 2007: 131), whereas grammar “refers to a body of rules stipulating how message units are made up of smaller subunits” (ibid, 132). For neighbours to participate in dialogue with each other and build social capital through the VC they must be able to construct and exchange messages based on both rules.

## **2.1 Design claims relating to lexical rules**

“Lexicon rules stipulate what signifiers refer to” (Vannini 2007: 370). Based on social capital research, there are three main outcomes that social capital can refer to. The first is obligations and expectations that require trustworthiness of the social environment (Coleman 1988a: 102). The second is the information capability of the social structure, where information exists in social structures and provides a basis for action (ibid.). Information can be acquired through social relations that may be maintained for other reasons (ibid, 104). And, the third are norms accompanied by sanctions that when enforced by a member of a social structure also benefits all who are part of the structure (ibid, 104).

Here ‘signifier’ is used through Pierce’s conceptualization of ‘index’ (1965) and indicates the causal relationship between the signifier, and what is being signified, making them motivated signs (van Leeuwen 2005: 49). Thus, social capital cannot be directly equated to obligations, information, and norms, but should be viewed as effects (Torsvik 2000). This point of view addresses both the receiver who must make meaning of that sign, and a producer who must decide what form the sign must take to best communicate the meaning. Therefore, social capital is the message that is being communicated, but its production and interpretation deem what social capital is being referred to. Through rules formulated in an objectively built system “it is possible to say why their signifiers are appropriate for their signifieds” (van Leeuwen 2005: 49). This means that when a situation arises the formulated rules control how one uses a semiotic resource, but not in a way where the rules are simply applied as situations vary and require both the producer and receiver to adapt (ibid, 50).

These rules are formulated based on three types of metafunctions; ideational, interpersonal and textual meanings that intrinsically structure a semiotic system (Halliday 1978: 112). The broad metafunctions assist in drawing boundaries between different systems, and are “motivated by use in context” (Asp 2017: 32). The following design claims are constructed based on these metafunctions, and will organize the system we are creating.

The ideational metafunction organizes resources based on the content function that encodes both the external world of cultural experience, and the internal consciousness relating to the individual’s experience as a member of that culture (Halliday 1973: 66; Halliday 1978: 112). This can be illustrated through Robert Putnam’s (1993) study of how social capital creation is affected in communities in Italy.

In the North the crucial social, political, and even religious allegiances and alignments were horizontal, while those in the South were vertical. Collaboration, mutual assistance, civic obligation, and even trust - not universal, of course, but extending further beyond the limits of kinship than anywhere else in Europe in this era were the distinguishing features in the North. The chief virtue in the South, by contrast, was the imposition of hierarchy and order on latent anarchy. (Putnam 1993: 130)

Through this we note how the democratic worldview of the North Italy produces higher amounts of social capital messages in comparison to the non-democratic South (Putnam 1993: 130). In this case, democracy is not referring to the constitutional and

representational political system, but “all ways in which citizens influence the political decision-making and political action of officials in a way that is considered legitimate” (Peters 2005: 86). These can include formal and informal associations, thereby not restricting citizen participation to just voting.

Heather Campbell and Robert Marshall (2000) outline five different motivations for participation, however I am only focusing on two as they are most relevant to neighborhoods. The first motivation is preserving community interests, and the second, participating in deliberative democracy<sup>10</sup> (Campbell and Marshall, 2000, 325-327). Both motivations encourage ‘participatory planning,’ the process of non-elected individuals taking part in making decisions regarding public issues (Churchman, Sadan 2003). For this process to take place, neighbors must communicate and interact with each other to identify common issues, set goals and implement solutions (Eshkol, Eshkol 2017: 216). Moreover, this process requires a neighborhood to draw on financial and human resources. Therefore, during this process messages of social capital are exchanged.

**Design Claim 1:** By fostering democracy through participatory planning, a neighborhood can exchange messages of social capital.

Furthermore, to ensure and maintain a high level of democracy there must be transparency created in the participatory planning process through: (1) transparency of political decisions, (2) availability of alternative sources of information, and (3) retrospective accountability (Breustedt *et al.* 2016: 648).

**Design Claim 2:** To ensure a high level of democracy be maintained, there must be transparency in decisions, alternative sources of information provided, and a sense of accountability.

Next, is the interpersonal metafunction that relates to the interaction between producer and receiver of a message (Halliday 1973: 66). It organizes resources into two parts during dialogue to establish and maintain interaction; mood and residue (Matthiessen

---

<sup>10</sup> Deliberative democracy encourages individuals to participate in debate regarding public issues, and also assists institutions in finding collective solutions. (Campbell, Marshall: 2000, 325-327)

1989: 863-867). Here, mood<sup>11</sup> is a system that realizes interpersonal meanings (Fang 2019: 136) within dialogue by identifying the subject and finite verb, action, or occurrence. Whilst, residue relates to any remaining meaning conveyed in the interaction.

In exchanging messages of social capital, the subject plays a major role in promoting trust and accountability. Only if the producer and receiver are deemed trustworthy will the receiver cooperate and sustain interaction (Millen, Patterson 2003). This decision can be based on different dimensions of an individual's identity and the degree to which they are revealed (Chen *et al.* 59). These dimensions include: gender, name, race, occupation etc.

**Design Claim 3:** Revealing different dimensions of an individual's real identity can lead to more trustworthy exchanges of social capital.

Residents of large neighborhoods residents are far less likely to interact with each other than those in smaller neighborhoods (Williams 2006: 199). This is due to the anonymity of other residents' identities, including their natural identities, values, attitudes and norms (*ibid.*). However, residents of very small neighborhoods also face issues, but due to a lack of privacy (*ibid.*). This can cause a withdrawal from social interactions.

**Design Claim 4:** A medium sized neighborhood is most likely to promote social interactions, as residents will know other residents, but also have privacy.

The second element in the mood system is the finite, or the action taking place. Here, we aren't focusing on the individual actions, but on the action of third place construction through which interaction and communication amongst neighbours can be promoted. Therefore, more messages of social capital can be produced and received.

To build the structural framework of this environment the following conditions must be met: (1) it is formed on neutral grounds, (2) allow different members of the neighborhood to attend, (3) center conversation as the main activity, (4) be accessible to all residents by lacking physical or monetary barriers, (5) have a regular set of members that

---

<sup>11</sup> In Halliday's perspective mood does not relate to an emotive state, but the combination of subject and finite verb.



root themselves in the space, and (6) keep the mood upbeat (Oldenburg 1989). By fulfilling these conditions the constructed environment becomes a third place that “function[s] as unique public spaces for social interaction, providing a context for sociability, spontaneity, community building and emotional expressiveness” (Bracken *et al.* 2009: 335).

**Design Claim 5:** To create an environment for communication and interaction between residents, the conditions for being considered a third place must be fulfilled.

Although, if the third places display extremely high densities of residents it could lead to a reduction in social interaction (Williams 2006: 198). Neighborhoods must either create policies to optimize their third places where there are enough neighbors to consider the space for interactions, but not so many that they become overcrowded (Altman 1975). Or, build semi-private spaces, between private and public to be used as buffer zones (Williams 2006: 198). These buffer zones can then provide residents “a degree of privacy and territorial control with options for active contact into adjacent public space” (Skjaeveland *et al.* 1996: 193).

**Design Claim 6:** Building semi-private spaces can act as buffer zones to create interaction with a higher degree of privacy and territorial control than the public place.

To encourage residents to interact with each other, there must be ‘opportunities for surveillance’ to be created (Williams 2006: 198). These opportunities include situations where residents can either see actions conducted by other residents, or hear them communicate (*ibid.*). Their purpose is to allow residents to locate those they might have similar interests with, and therefore must be constructed into the environment being built. They can be built through constructing “shared pathways to activity sites (private units, parking spaces and local facilities)” (*ibid.*).

**Design Claim 7:** Opportunities for surveillance allows neighbors to see who they would like to interact with.

Finally, the third metafunction, the textual organizes resources based on experiential meaning that enables a producer to construct a message that makes sense in the context, and fulfills their goal (Andersen 2016). The producer can choose the type of social capital they are signifying in their message based on the context of their social environment. Although, it is important to point out that while goals shift, rules cannot be changed by everyone as power is not equally distributed, and “agents with varying degrees of social power have different influence” (Vannini 2007, 131).

Robert Wade’s (1994) study of villages<sup>12</sup> within one irrigation system in south India showcases a strong relationship between insufficient and uncertain water supply on collective action. The results of the study indicated that farmers who received uncertain water supply “developed the most active organizational responses: irrigator associations backed with serviceable rules and widely accepted norms” (Krishna 1999: 74). This behaviour was in stark contrast with “atomized individual” (ibid.) farmers in villages that received sufficient and certain supply of water. Therefore, the conclusion was reached that the villagers who required more cooperation, were the ones in which collective action was achieved. Here we see how uncertain water supply led to a change in what is being signified, from a lack of motivation to forming social norms to increased motivation to do so.

Uncertainty of social environments is not the only factor, and can stem from community members defining a social purpose with common objectives, and similar views on the nature of the cooperative task (Krishna 1999). This is reinforced by the belief that the probability of success can increase, by increasing participation of community members (Klandermans 1984: 585).

There was tremendous commitment to ... go to that [Board member’s] place ... we went on a Saturday and most of us were in the middle of shearing ... I had to get people to do my work for me and the other members of the Board were in the same boat ... We just had to do it, and it worked really well and we all gained from it (ExecutiveLink™ business in Kilpatrick *et al.* 1999: 130).

Here farm owners help another owner with a management problem, even though they themselves incurred a cost. This is because they believed that cooperation can lead to an increase in mutual benefits. Although for building social capital in the short run an appropriate stimulus such as insecurity or uncertainty is required (Krishna 1999: 89),

---

<sup>12</sup> The villages that were studied shared a common history, and similar social and cultural features with the only significant difference being on water supply (Wade 1994).

which could revive stocks of social capital cultivated in the past (Hirschman 1984; Krishna 1999).

**Design Claim 8:** Defining a social goal with common objectives can lead to more cooperation.

**Design Claim 9:** Insecurity or uncertainty can lead to more goal-oriented interaction.

## 2.2 Locating design claims in grammar rules

Grammar rules indicate the subunits constituting social capital messages, such as actions, materials and artifacts used for communicative purposes (van Leeuwen, 2005: 285). This allows us to not presume the existence of social relations directly leads to social capital formation. In this subchapter, I will study semiotic regimes defined as the “norms that enable and restrict different types of meaning-making at a given time and place” (Archer, Björkvall 2021: 2) to establish patterns existing in the subunits. Furthermore, I will utilise five different semiotic regimes to locate design claims<sup>13</sup>; personal authority, impersonal authority, conformity, role models, and expertise (van Leeuwen 2005: 53- 57).

Personal authority rules are exercised by people who are in a power of position, or require no justification for their actions (van Leeuwen 2005: 53). This power is created through linking between individuals, where one has more power over the other, or with institutions (Rothstein, Stolle 2008). These lead to top-down processes as differences in power create a hierarchical context. This is important to: (1) establishing trustworthy relationships as institutions “signal to citizens about the moral standard of the society in which they live” (Rothstein, Stolle 2008: 446) and are used as a resource by citizens’ to make meanings of trust and belonging. (2) Teach, initiate, or maintain the modalities, combinations of modalities, and semiotic resources required to form the social capital messages, whereby members learn to function in a community by “learning the shared language and acquiring the community’s subjective viewpoint” (Kilpatrick *et al.* 1999: 131).

---

<sup>13</sup> Whether these rules are single articulated, or double articulated depends on the context it is being used (van Leeuwen 2005: 51).

**Design Claim 10:** If some users have more power than others then more trustworthy relationships will form, and the community will know how to function.

**Design Claim 11:** If partnerships with institutions exist then more trustworthy actions will occur and the community will know how to function.

The next regime is impersonal authority, which can either exist as the authority of the written word, or as the authority of tradition (van Leeuwen 2005: 54). They refer to social norms that can provide rewards for positive behaviour, and sanctions for negative (Kao 2004: 173), in order to create social control (Claridge 2017). They are differentiated based on social context, thereby creating formal-informal, and internal-external norm distinction (Claridge 2017).

Formal norms are built through rules, policies, or regulations (ibid.) by representatives of the community or linking with institutions, such as police, justice or welfare systems (Dasgupta 1999: 330). These play an important role in the willingness to produce and exchange messages of social capital with another participant, as the exchange is based on generalized reciprocity where “a service is repaid at a later, unspecified time and by a different kind of service if possible and necessary” (Flap, Volker 2004: 4). Therefore, requiring written rules that are enforced through an external authority to encourage “people [to] spend their resources on others, not only for the rewards at the present moment but also with an eye to their future” (Flap, Volker 2004: 4).

**Design Claim 12:** Formal rules enforced by an external authority increase willingness to exchange messages of social capital.

Whereas authority from tradition indicate behaviours that are ‘moral’ and ‘proper’ (Dasgupta 1999: 339) either on an internal individual level, or an external community level. For this authority to arise there must be a high degree of social closure within an intergenerational community (Dijkstra, Veenstra, Peschar 2003: 125), where “everyone is connected, such that no one can escape the notice of others” (Burt 2001: 37). This encourages the formation of “an informal framework for sharing information, coordinating activities, and making decisions” (Grootaert, Serageldin 1999: 47) due to the peer monitoring, common set of norms, and sanctions at a local level that mitigate risk and

allow trust to emerge (ibid.). However, these networks can also reduce beneficial deviant actions (Coleman 1999: 23), or lead to coercive conformity (Yair 2008).

**Design Claim 13:** If all members can view an individual's actions, they are more likely to conduct trustworthy actions due to informal rules.

Conformity is another semiotic regime that appears when a producer or receiver of a message receives the outcome because they followed what others in their social environment were doing (van Leeuwen 2005: 56). To reduce coercive conformity yet encourage moral behaviours, actions can be conducted in front of, or through acknowledgment of 'Mutual friends' (Burt 2001: 38). If mutual acquaintances observe behaviour then: (1) the behaviour between both people becomes public, (2) it affects the salience of reputation for future relationships with the observing mutual acquaintances, and (3) it increases awareness about the cooperative behaviour that will be publicly displayed (Burt 2001: 38). This encourages the individuals to conduct actions morally to maintain their reputation in their network (Arrow 1999; Burt 2001).

**Design Claim 14:** If mutual acquaintances observe actions through a reputation system then a user is more likely to conduct interactions appropriately.

The next regime relates to role models, which has varying definitions in literature, in terms of characteristics of the role models, and their functions. Either way, the role models act as facilitators of social capital messages within an individual's immediate context (Cawthon *et al.* 2016: 118). They can exist as a mentorship relationship between two people where one requires personal support through relational infrastructure and the other provides guidance (ibid, 116). Or they can be found in programs and structures for enhancing skills (eg. literacy), or preventing problematic behaviours like alcohol and drug abuse (ibid.).

**Design Claim 15:** Presence of role models can facilitate messages of social capital being exchanged.

Experts are also facilitators of messages, however they have specific knowledge to suggest and guide another individual's production or reception of messages (van Leeuwen 2005: 57). They can be consulted in the exchange of messages, but the participants are the eventual deciders of what they will incorporate or interpret in their messages. In a community different individuals have different expertise, which must be organized to build a shared corpus of objectified knowledge, or embedded in relations through collective knowledge (Ghoshal, Nahapiet 1998: 242-248). This process leads to a combination or exchange (ibid, 248) of 'practical,' 'experience based,' or 'theoretical'<sup>14</sup> knowledge (ibid, 246).

**Design Claim 13:** Expertise of community members must be made visible to facilitate messages of social capital.

### 2.3 Chapter Summary

- Design claims identified and collected to build a claims-to-pattern approach.
- Located claims in theories, empirical studies and experiments conducted in physical space:
  - Find claims that make a settlement more conducive to community formation.
  - Find claims about the role of third places in community building.
  - Find claims about how social capital can be produced by a settlement.
- The full list of design claims can be found in Annex 1.

---

<sup>14</sup> Theoretical expertise relates to "knowledge derived from reflection and abstraction from that experience" (Ghoshal, Nahapiet 1998: 246).

### **3. Method and Materials**

This chapter outlines the methods and materials that I will use to study the previously defined design claims, and how they are translated on to the sites of Nextdoor and Neighborland. Previously, I had posed research questions pertaining to the differences in translation between the two apps, and the effects it has on user experience. To answer these now, I will use two different methods as the questions focus on two different outcomes. The first method will focus on reconstructing the design alternatives utilised by the designers' of Nextdoor and Neighborland to answer the design claims. And, method two will study user reviews to understand how by choosing a certain design alternative the user experience is affected, which will allow us to evaluate the effect of choosing a certain alternative to answer a claim.

#### **Materials one: locating design alternatives**

Even though I am studying Nextdoor and Neighborland, I will not be using the actual apps as materials because they require a verification process that necessitates a physical address in a country<sup>15</sup> I currently do not reside in. Therefore, I will use the 'about'<sup>16</sup> page of Neighborland, especially the section that discusses 'What does our software do?' as it contains a full list of alternatives created on the app. And for Nextdoor, the alternatives are listed on different pages either highlighting one or more alternatives of the app. These pages are: 'Help Center,'<sup>17</sup> product screens found on the 'media assets'<sup>18</sup> page, product screens found on the 'blog'<sup>19</sup> page, especially the sections on 'product news'<sup>20</sup>. As I cannot

---

<sup>15</sup> Nextdoor operates in the United States, United Kingdom, Netherlands, Germany, France, Italy, Spain, Australia, Sweden, Denmark, Canada. Neighborland operates in the United States and Canada.

<sup>16</sup> The Neighborland about page can be retrieved from: <https://neighborland.com/about>

<sup>17</sup> The Nextdoor Help Center page can be retrieved from: [https://help.nextdoor.com/s/?language=en\\_US](https://help.nextdoor.com/s/?language=en_US)

<sup>18</sup> The Nextdoor media assets page can be retrieved from: <https://about.nextdoor.com/us-media/>

<sup>19</sup> The Nextdoor blog page can be retrieved from: <https://blog.nextdoor.com/>

<sup>20</sup> The Nextdoor product news page can be retrieved from: <https://blog.nextdoor.com/category/product/>

gain access to the actual applications, I do acknowledge that the materials gathered are lacking. However, the materials gathered do provide an extensive list of design alternatives utilised in the apps.

**Method one: categorizing design claims with design alternatives**

Through the first method, I will locate the design alternatives chosen to answer the design claims from the previous chapter. As I do not possess Nextdoor, nor Neighborland designers' perspectives, this method will focus on reconstructing their decisions to answer a particular claim. To structure this process, I will utilize the categorizing method illustrated by Paul Resnick and Robert. E. Kraut (2011), who identified eight categories of technical and social design alternatives that a designer can choose from to build an online community. These are summarized in table 1, where the left column relates to the broad category of design alternative (type), and the right column the different ways a designer can alter or configure a community (design alternative). This table will be used as both a structure and a guide, with the results adding another column to showcase the design claim that is addressed in a certain type.

Type	Design Alternatives
Community structure	<ul style="list-style-type: none"> <li>● Alternatives of size</li> <li>● Degree of homogeneity</li> <li>● Possibility of further dividing into sub-groups</li> <li>● How other members are recruited (through existing ties, or non-existent ties)</li> </ul>
Content, tasks and activities in the community	<ul style="list-style-type: none"> <li>● Opportunities for self-disclosure</li> <li>● How content is generated (user, professional)</li> <li>● Welcoming activities</li> <li>● Level of dependence on others to conduct actions (requires moderator, facilitating actions)</li> <li>● Degree of embedment in social experiences</li> </ul>
Selection, sorting and highlighting	<ul style="list-style-type: none"> <li>● Ability to choose content</li> <li>● Ability to remove inappropriate content</li> <li>● Recommendation systems</li> <li>● Ability to see others/friends feeds</li> <li>● Separation based on content choice</li> </ul>



External communication	<ul style="list-style-type: none"> <li>• Can import and export content</li> <li>• Non-members can see user profile/identity</li> <li>• Facilities to forward content</li> </ul>
Feedback, rewards and sanctions	<ul style="list-style-type: none"> <li>• Informal (commenting on post) versus structured (likes/ratings)</li> <li>• Tangible (monetary/prizes) vs. intangible (community approval)</li> </ul>
Roles, rules, and procedures	<ul style="list-style-type: none"> <li>• Newcomers vs. long-standing</li> </ul>
Access controls	<ul style="list-style-type: none"> <li>• Limit members, or who can join</li> <li>• Moderation privileges to some members</li> <li>• Access through payment, or other</li> </ul>
Framing	<ul style="list-style-type: none"> <li>• Showcase how one is different from another</li> </ul>

Table 1: Summary of design alternatives types and configurations to build an online community as defined by Kraut and Resnick (2011: 6-8).

A potential problem of this method is in its reliance on observation that is dependent on me as a researcher (Weber, Weibelzahl 2002: 3), and the bias I might have in assigning a design claim to an observed design alternative. However, in order to create a link between the design claim and the alternative chosen, a qualitative analysis that is substantiated with logical reasoning is required. Therefore, the reconstruction process provided in the analysis will act as a categorization record to explain the interpretative choices that were made (Given 2012).

Additionally, I will focus on establishing the categorizational integrity to improve the credibility of the method undertaken (Given 2012). As I am following Table 1 as the base of characteristics to look for and categorize material by, I am justifying its credibility based on prior usage of it to answer design claims relating to encouraging contribution, encouraging commitment, regulating behavior and starting new online communities (Resnick *et al.* 2011). However, this method has not been utilised to differentiate approaches to design claims between two different apps.

## **Materials two: efficacy of the design claims**

To understand the end-user's perspective for NextDoor I will collect data through online materials of TrustPilot UK<sup>21</sup>, and TrustPilot USA<sup>22</sup> a review site collecting user feedback, and Quora<sup>23</sup> and Reddit<sup>24</sup>, multi-topic forums. I will be focusing on the substance of the reviews, rather than the rating given in the form of numbers or stars (Peterson 2017). Additionally, I will select reviews with more substance and words instead of single word reviews such as 'good experience' or 'useless app'. NextDoor has two sections on TrustPilot, for their USA and UK divisions and I will be utilising both as the recent US elections led to more negative reviews about moderation and fake news thereby swaying results, when I am looking for average sentiments.

The selected platforms are spaces for public discussion amongst a myriad of user-groups and therefore provide different evaluations regarding Nextdoor. Other than product-specific sites, we are also utilising multi-topic forums to gather data, which are organized by topic-specific, product-specific or feature-specific conversation threads. Along with regular users, some threads also include comments made by experts with credentials to validate their reviews or suggestions (Peterson 2017). NextDoor currently has around 8000 followers and some conversations are addressed by employees of NextDoor.

## **Method two: text reduction and content analysis**

The choice to use a second method is to: (1) identify how user experience is affected by a design alternative, and (2) method one is based more on my interpretative choices and requires further evaluation based on the actual experiences created through the app. The results provided can further the analysis by indicating what is a better design alternative to

---

<sup>21</sup> 39 reviews retrieved from: <https://uk.trustpilot.com/review/nextdoor.co.uk>

<sup>22</sup> 127 reviews Retrieved from: <https://www.trustpilot.com/review/nextdoor.com>

<sup>23</sup> 29 reviews retrieved from: <https://www.quora.com/What-do-people-think-of-Nextdoor>

<sup>24</sup> 55 reviews retrieved from:

[https://www.reddit.com/r/washingtondc/comments/8d703r/does\\_anyone\\_here\\_have\\_experience\\_using\\_the/](https://www.reddit.com/r/washingtondc/comments/8d703r/does_anyone_here_have_experience_using_the/) and [https://www.reddit.com/r/raleigh/comments/851lj9/whats\\_your\\_thoughts\\_on\\_the\\_nextdoor\\_app\\_a\\_good/](https://www.reddit.com/r/raleigh/comments/851lj9/whats_your_thoughts_on_the_nextdoor_app_a_good/)

answer a design claim, and also to compare the different effects of answered design claims on the levels of virtual interaction environment built, social interaction facilitated between neighbors, and philosophy or negotiations behind the design alternatives.

The method I will use is a content analysis, which is a process by which we can systematically reduce text to a set of statistically relevant symbols (Popping 2017: 329). These can show the “the presence, the intensity, or the frequency of some characteristics, which allows making replicable and valid inferences from text to their context” (ibid.), thereby quantifying qualitative data.

I will utilise MonkeyLearn,<sup>25</sup> a text analysis software to reduce my data. In order for it to be reduced in a way where it addresses the thesis’ goals of identifying how users are affected by the way a design claim is answered, I must build an extractor model with machine learning. Through this, I have to categorize content by defining tags to help the machine learn how to identify and extract the specific data required from the text. I will then train the extractor model with atleast 100 examples from the uploaded materials in relation with the created tags to build precision of the extractions. Before uploading all materials, I will test the model with 10 examples to see the precision of the extractions.

I will now provide the customized tags defined on the model:

Tag 1 and 2 focus on the perceptions users have of certain alternatives. Tag 1 relates to positive perceptions and tag 2 negative perceptions. During the tagging process sentences that refer to a particular alternative as determined by method 1 are selected. The model is trained to differentiate between positive and negative perceptions by identifying keywords: ‘like vs. don’t like’ and also identifying positive and negative adjectives and verbs to describe a particular alternative, or as an effect of using the alternative.

Tag 3 and 4 focus on partnerships with institutions, which requires tagging of different types of institutions such as police, local govt, civic-bodies and public agencies. Tag 3 refers to partnerships with institutions being perceived positively, while tag 4 focuses on the partnerships being perceived negatively. The keywords selected to determine the relationship will be similar to tag 1 and 2.

Tag 5 and 6 focus on roles created on the app and how users perceive the role. These require tags referencing the different roles available on the app, such as ‘leads,’

---

<sup>25</sup> MonkeyLearn can be accessed on this site: <https://monkeylearn.com/>.

‘moderators,’ and ‘facilitators’. The effect they have on users’ experience of the app determines the tag being positive (5) or negative (6).

Tag 7 is to study the different types of suggestions a user provides in the review. This is identified through keywords such as: ‘better if,’ ‘include,’ or ‘instead of’. The purpose of this is to understand how the user themselves views their neighborhood and what can actually be done on the app differently to make the experience more conducive to interaction and participation.

After the dataset of user reviews is exported as an excel file the tags and related content will appear. Based on that a pie chart will be created to visualize the percentage of user reviews that noted a particular tag. Also, category tags will have a separate pie chart to determine the difference in positive or negative reviews on them.

Based on a 2018 report published by reviewtracker it was found that a user is 21% more likely to leave a review after a negative experience than a positive one, therefore there is a possibility that there will be more negative tags extracted than positive ones. However, it is still useful to understand why they were perceived in that manner, which can assist in my own selection of certain alternatives over another.

## 4. Analysis

In this chapter, I study the results of applying intersemiotic translation as a thinking tool for IX designers, by reconstructing the IX design processes of Nextdoor and Neighborland. The aim of this analysis is twofold. First, to study how intersemiotic translation can be used as an explanatory frame for the design process and its different stages through which design claims and design alternatives for the app are created. And second, to question the impact of using intersemiotic translation as an interpretative process to generate certain practices and outcomes. By analysing these two aims, I hope to answer all the research questions that were set in the beginning of the thesis. Thus, gaining insight into the IX design process required for the app I am attempting to create.

The process begins with the goal being addressed as a design problem, which can have many different solutions based on a myriad of concepts, strategies and interpretations. Donald Schön (1987) suggests that the vision selected amongst all other visions cannot be judged as the right or wrong choice, but must be understood as an action that will have consequences.

There are three processes related in judging the action and consequences: reflection-in-action that are reflections taking place during an action, reflection-on-action that are reflections after an action has ended (Schön 1983), and reflection-for-action “thinking about future actions with the intention of improving or changing a practice” (Olteanu 2017: 350). In this chapter, I focus on all three. As both apps are already produced and in-use, I am reflecting-on-actions that have already been conducted, however at the same time I am reconstructing the designer’s choices without truly knowing what the designer was thinking when making the choice. Therefore, in some form it is reflection-in-action. Lastly, the purpose of this reconstruction is to assist me in designing my own app, therefore being a reflection-for-action.

#### 4.1 Reconstruction of the design process

The design process first begins by identifying the goals the apps are being built to achieve. This is central to the approach of the design process I am taking in this thesis, and shapes decisions made at every stage. Moreover, by locating the common goal between Nextdoor and Neighborland, comparisons and differences can be drawn based on how the goal is being achieved. This common goal was identified on the Nextdoor blog<sup>26</sup> after Nextdoor acquired Neighborland:

Nextdoor and Neighborland share a passion for helping neighbors get more involved in their local community by connecting them to important neighborhood information and resources. We know that this is critical to building stronger communities. (Lisowski 2020).

Both apps share the goal of building a stronger community for neighborhoods. In this thesis, we understand a strong community, as one that possesses social relations that produce social capital, and is built through interaction and communication between neighbours.

With this goal in mind, the respective designers of both apps utilise intersemiotic translation as a thinking tool. The designer first utilises it as an anticipatory tool to “reduce (or at least attempt to reduce) the number of possible choices a cognitive system will face in the future” (Atã, Queiroz 2019: 193). This creates a map or blueprint for the designer from the source-text, which in this case is the physical world to: (1) identify the vision for the app, (2) turn the vision into an operative image, and (3) construct specifications based on the operative image. At each stage, the designer uses definitional instruction to define and organize all options relating to what they are attempting to create. And then selective instruction to find the most fitting option from all the listed options based on context and goal-achievement.

Once the initial blueprint is created for all three stages, the designer revisits the source-text and uses intersemiotic translation as a generative tool. Through this the designer locates “the semiotic difference between source and target to generate competing and otherwise unprompted creative opportunities in the target system” (Atã, Queiroz 2019: 194). While the anticipatory tool is required to provide an initial structure, the generative

---

<sup>26</sup> This blog post can be retrieved from:  
<https://blog.nextdoor.com/2020/04/14/welcoming-neighborland-to-the-nextdoor-family/>

tool can transform elements from the physical world either to suit the app's objectives or to fill an identified gap. This tool is mostly utilised in the operative and specifications stage, as it focuses on transforming an element identified in the vision.

The outcome of reconstructing the entire design process should help me identify claims and alternatives that can be used to create my app. As we are taking a claims-to-pattern approach, the reconstruction must result in a blueprint that is a combination of goal-specific claims identified, and the pattern-based design alternatives chosen to answer them. By combining the claims and patterns, the blueprint formed should result in an app that can assist in transforming a neighborhood into a social capital producing community. It must be emphasized that the app itself can only be considered a VS. However, the configuration of claims and patterns selected by a designer can make the VS conducive to VC formation. And, in doing so, the VC formed becomes a third place for neighbors to interact with one another, and create social relations with new neighbors.

#### **4.1.1 From goal to conceptualizing a vision**

The vision is the first stage of design and the “designer’s first organization principle” (Löwgreen, Stolterman 2004: 18), where the outcome is to create an action plan that concretizes the objectives of the long-term goal set above. I am analysing “vision based on the idea of a specific form and the use of a specific material” (Löwgreen, Stolterman 2004: 18). During this stage many different visions develop, until consensus reaches on one. By determining the form the vision is going to take might seem like a straight path to creating the specifications (Löwgreen, Stolterman 2004: 25), however this is not entirely the case. From vision to specifications the product seems more defined, but it is defining these concrete details that make a designer revisit the abstract vision and make some alterations, changes and even sometimes complete rejections. In this way, the process is dialogic and occurs between the designer and the situation.

Now I will try to reconstruct the vision of Nextdoor based on their about us page description that describes the following:

Neighbors turn to Nextdoor daily to receive trusted information, give and get help, and build real-world connections with those nearby — neighbors, local businesses, and public agencies.

Here, the vision is focused on the core element of ‘connection’ and ‘information sharing’ either between neighbours or to resources and agencies/institutions. Through this information, a designer can deduce the form this is present in the physical world, and extract some sort of abstract idea. One such form, can be ‘neighborhood associations’ (NA). These associations are defined as “voluntary groups of residents living within a closely delineated section of the community” (Fonseca *et al.* 1989: 1). Their focus is on both connection and information sharing, as they are created for the following reasons:

Including building a sense of community through engagement, serving as a social network, maintaining the physical quality of the neighborhood collectively, helping protect property values, dealing with external issues such as land development/redevelopment projects, and facilitating municipal services. (Bollinger, Hur 2015: 1153)

The designer utilises intersemiotic translation as a thinking tool to study the different ways a neighborhood association can be brought into the virtual space. Furthermore, the designer studies strategies neighborhood associations implement to encourage collective action in their neighborhoods. For fulfilling Nextdoor’s goal, Mancur Olson’s (1965) third strategy of interpersonal cohesion can be used. This strategy focuses on increasing social ties amongst neighbors to increase their sense of social responsibility, which can encourage them to conduct cooperative actions in the interest of the community (Olson 1965). Neighborhood associations hold get-togethers, shared activities and neighborhood improvement projects to foster these social relations, which also builds collective identification (Fonseca *et al.* 1989: 3).

Based on this learning, the designer can explore different forms to materialize the vision. The final form selected by Nextdoor is ‘social media networking sites’ customized for neighborhoods. Here, social media sites are defined as “ socio-technical systems, websites or applications that build on Web 2.0 technologies to provide space for social interaction, communication, collaboration, and community formation” (Liu *et al.* 2013: 290). Whilst, networking sites relate to “Facebook, Twitter, MySpace, Four-Square, and LinkedIn, are mainly used to share updates on users’ daily encounter, as they occur” (Osatuyi 2013: 2622).

The choice to form the vision as a social media networking site is based on the form’s ability to rapidly and conveniently share information, and produce user-generated content to a target base of users (Osatuyi 2013: 2622). Moreover these sites focus on



connecting people. In both ways they act similar to the neighborhood associations they are translated from. This is only used as a base for the vision, as a critical problem such associations face is that only a small proportion of residents participate (ibid.). And, the issue of using social media networking sites as a form is a lack of credibility in the information produced and shared, and the lack of verification of users trying to connect with you.

In comparison, is the reconstruction of Neighborland's vision. Dan Parham, co-founder of Neighborland, shared the company's vision in an interview with Street Fight:

We started with a simple question: "What if residents could easily share their ideas for improving their neighborhoods?" Could these ideas help community leaders, entrepreneurs and developers better meet the needs of their communities? Can presenting this data in a transparent and friendly way help shape the development of a neighborhood — or at the very least, provide a new form of public accountability? (Parham 2011 cited in Street Fight)

In this case, the intersemiotic translation from the physical space appears to be a 'neighborhood council' (NC), which is a formal system of associations of mediators between the neighborhood and local governance (Cooper, Musso 1999). Moreover, their goal is to increase discussion and participation regarding civic issues (ibid.).

This vision is different from Nextdoor, as it isn't about connecting neighbors by increasing daily interactions between them, rather it is about connecting neighbors with civic-minded bodies to address common goals that can better the neighborhood. Moreover, Neighborland's vision is about building transparency in actions relating to the neighborhood, and incorporating opinions of neighbors by asking them what they require.

According to their about us page, they have built a 'public engagement platform,' which is a tool "specifically dedicated to the purpose of accommodating citizen input on an issue posed by local governments" (Cho *et al.* 2021: 764). Amongst all forms for their vision, constructing a social media site could have been one as it has the potential for the required interaction. However, to execute Neighborland's vision the form requires a government or a civic body to initiate a discussion, and residents to provide feedback, ideas or discussions accordingly (Kersting 2012), whereas a social media site would be more useful if the vision was for governments to disseminate information to targeted social groups (Bertot *et al.* 2011; Mergel 2013).

#### 4.1.2 From vision to producing an operative image

Once the vision is chosen, the designer moves to the next stage; building the operative image. This operative image is the “first externalization of the vision” (Löwgreen, Stolterman 2004: 19), and is usually understood through a metaphor. However, I am studying operative images as logonomic systems, thus requiring a designer to access the claims library (Annex 1) related to their overall goal, and then utilise intersemiotic translation to select the design claims that best suit the purpose of their vision.

In this way, intersemiotic translation is used as an anticipatory tool to reduce the number of possible choices of design claims a designer must build for. This process reduces the abstract vision into a more concrete and complex grammar system with lexical and grammar rules. However, defining the operative image is not a linear process, and requires a designer to go back and forth with their vision and selected claims. Thus indicating a “dialectical play between the situation at hand and the operative image, and between the operative image and the vision” (Löwgreen, Stolterman 2004: 19).

To implement Nextdoor’s vision, a study of how Neighborhood associations (NA) are organized as third places for connecting and building relations with neighbors is required. An NA is created based on an insular focus, as they are only devoted to strengthening relationships and resolving issues within their clearly demarcated boundaries (Hyde, Meyer 2004: 88). This is done by increasing and improving “local knowledge, local rights and local power” (Hur, Bollinger 2015: 1153), to create healthier democracies. To foster these democracies on Nextdoor, the designer selects claim 1, and to maintain a certain level of democracy, design claim 2.

The reason for their insular focus is because they are “locally based and basically autonomous, volunteer-run, nonprofit groups that have an official membership of volunteers” (Smith 1997: 269). The associations between members are built voluntarily, informally, and as a whole don't require legal verification from the local government to operate (Fonseca *et al.* 1989:1). Furthermore, relations between members are based on personal and affective bonds, and therefore don't operate based on formal rules and regulations (Rothschild-Whitt 1979). To ensure cooperation in this informal setting, claims

3 regarding real-world identities, 13 about conducting trustworthy interactions through informal rules, and 14 about observation by mutual acquaintances are selected.

The structure of this system rests entirely on voluntary contributions of association members (Knoke, Woode 1981). Thus, for it to operate “at least a few committed and capable leaders who are willing to devote considerable time and effort to association activities” (Fonseca *et al.* 1989:4) are required. Moreover, the boundary defined is based on how much the NA can cater to based on their limited resources, thereby preferring a smaller community size. However, the designer selects claim 4 for a medium-sized community to promote a certain level of interaction.

For an NA to be considered effective, it must achieve three elements that can help encourage cooperation in the neighborhood: (1) social networks that share information, (2) trust built through reciprocity between neighbors, and (3) a sense of duty fostered through feelings of obligations toward maintaining the quality of the neighborhood (Lelieveldt 2004: 536). Each of these elements are created once neighbors start to familiarize themselves with one another through interactions, communication and exchange.

The NA promotes active communication between residents by sharing information on local issues, neighborhood volunteering, and “ asking for and making recommendations or organizing and being invited to events” (Vogel *et al.* 2019: 6). The content of most local issues include traffic problems, cleanliness levels, noisy neighbors, crime, and lack of facilities (Lelieveldt 2005: 540), and are discussed during formal events such as, town hall forums, NA monthly meetings, committee meetings of NA members (Hyde, Meyer 2004). The NA also hosts informal<sup>27</sup> social events and activities like get-togethers, block parties, festival celebrations and yard sales to create opportunities for residents to foster relations (Hur, Bollinger 2015: 1157; Graif, Sampson 2009: 1589 ). Therefore claims 5 regarding conditions for third place creation, and 7 about increasing opportunities for surveillance are selected.

The NA must also build ties to institutions both local (horizontal) and extralocal (vertical) political contacts (Graif, Sampson 2009: 1590) to find assistance, resources or funding for local projects. Local contacts include school, district police, local newspaper etc., whereas the mayor’s office, senator, housing authorities and public health institutions

---

<sup>27</sup> Informal events can also build intergenerational closure between adults and children in the neighborhood (Graif, Sampson 2009: 1589).

are extralocal (ibid.). By building such partnerships and implementing successful projects, interest amongst non-NA residents can be built. In doing so, participation in the NA could also increase, thereby providing the structure more stability by increasing the total voluntary resources available to it. Therefore, claim 11 about institution partnerships is selected.

In contrast, Neighborland is focused on translating a neighborhood council, whose reason for existing, and organizational structure formed differ from Nextdoor and NA's. Their focus is on increasing citizen participation toward civic issues, mediating between neighborhoods and civic-bodies, and assisting in making the civic-bodies more responsive to the local needs of a neighborhood (Li *et al.* 2019: 932). In this case, the citizen participation refers to anyone above the age of 13<sup>28</sup> who register on the app. They don't focus on providing tangible outcomes, but on facilitating "democratic processes and connect[ing] citizens to the administrative system of the city" (Li *et al.* 2019: 933). Therefore, to be considered effective they must "encourage more citizen participation in government and include representatives of the many diverse interests in the neighborhood" (ibid, 933), and work toward solving neighborhood issues (ibid.). To build accountability and transparency from the civic-body in charge of their project, the NC can help facilitate transparency by sharing information publicly about the project, answer questions residents may have, or build more collaboration by listening to the inputs of the residents. Through this, claims 1 and 2 are selected to ensure transparent and accountable democratic processes be created, and 11 to link partnerships with institutions.

Unlike NAs, a NC is a formal organization that is "guided by rules that place participants within a particular (often hierarchical) structure in which duties are defined" (Chaskin 2005: 410). As there is a structured list of duties, members of the NC are chosen based on their qualification for the specific duty, and are also accordingly rewarded for their performance (ibid.). Moreover, they have codified and written rules that impact decision making and action taken during the mediation process (ibid.). Through this, claims 10 about some users having more power than others, 12 about enforcing formal rules are selected.

---

<sup>28</sup> If a user is between 13-18 they require permission from a guardian to participate. Retrieved from: <https://neighborland.com/about/terms> 05.17.2021.

There are four elements that determine the efficiency and capabilities of a NC: (1) council size, (2) ability of the NC to navigate conflict, (3) level of sustained interest in the neighborhood's wellbeing (community capacity) (Gaeke *et al.* 2002).

Council size is considered an important factor in building a successful participation system, where council refers to an officially recognized geographical boundary being drawn to define the participants within who will be serviced by the NC (Cooper, Musso 1999: 200). By defining this boundary a particular NC subjectively self-defines itself based on the collective place-based identity created by the participants existing within it (Cooper, Musso 1999: 231). This identity may be defined, experienced and used differently by different neighborhoods, and individuals living in them based on variations in size, population, income levels, resource levels<sup>29</sup>, race and other social characteristics (Cooper, Musso 1999; Massey, Denton 1993). This in turn assists the NC in determining the local issues they should advocate for, and identify the related civic associations that can assist in fulfilling them (Cooper, Musso 1999). For a more effective NC to be built, it is suggested that the boundary be drawn with fewer than 10,000 residents (Berry *et al.* 1993). By studying council size, design claim 4 about community size is selected.

The next factor relates to community capacity, which is the resources a community can leverage to solve collective problems (Chaskin 1999:4). There are four conditions required for community capacity: (1) a sense of community requiring connection between residents, and mutual recognition of a situation (*ibid.*, 5), (2) level of commitment to neighborhood wellbeing in the form of time, energy and resources (*ibid.*, 6) from the NC, local civic-bodies and residents, (3) ability to define problems, identify priorities and solve problems (*ibid.*, 6), and lastly (4) access to internal resources of residents, and external of civic-bodies (*ibid.*, 7). Therefore, claims 8 and 9 regarding goal oriented are selected.

A NC mediates a myriad of conflicts arising from both their neighborhood, and during facilitation with civic-bodies. These disagreements can appear at multiple stages of a project from issue recognition, perspectives on the issue, to ideas on resolving the issue (Gaeke *et al.* 2002: 2). To mediate conversations amongst residents, a NC can either achieve consensus on an opinion, or select the way forward through a majority-vote (Chaskin 2005: 416). The choice to use either one of these strategies is based on the

---

<sup>29</sup> Resource levels in this context refer to physical infrastructure, housing, jobs, education and income (Chaskin 1994: 4).

context of a situation, or the method of choice for a particular NC. Whereas, conflicts arising with civic-bodies require different strategies. For example: to encourage collaboration or focus on an issue, a NC can increase their participation numbers (Chaskin 2005: 417).

To summarize the design claims chosen: Nextdoor utilises 1, 2, 3, 4, 5, 7, 11, 13, 14, and Neighborland 1, 2, 4, 8, 9, 10, 11, 12. By selecting these claims differently, the overall structure and purpose of the apps shift. Moreover, they reaffirm the effect an end-user has on the design process. This is due to intersemiotic translation used as an anticipatory tool, which allows a designer to increase voluntary attention to a particular feature in the virtual world that may not be gaining/requires more attention in the physical world. For Nextdoor, the designer selects claims that build neighbor-to-neighbor interactions, whereas the Neighborland process focuses on how civic-bodies can present themselves as open and transparent by integrating citizens into public decision making.

#### **4.1.3 From operative image to designing specifications**

Once the claims have been selected, the designer must answer them through design alternatives, also known as specifications. This requires three phases: (1) grouping of claims with types of alternatives (Resknick, Kraut 2011), and (2) identifying patterns in the virtual space of successful design solutions (Belay *et al.* 2016), or concerns related to a claim, and (3) listing configurations of the alternatives. This subchapter is a reconstruction of the work demonstrated in Annex 2 and 3.

The designer begins the process by selecting claims most crucial to building the grammar systems, and the number of design alternatives that may be required to answer them. Nextdoor is structured around claim **5**, and **7** which state conditions required to build a third place. By adapting the conditions determined by Oldenburg (1999: 29-42): (1) the app is neutral as there is no main host, allowing users to sign in and out based on their preference, (2) it is accessible to all members of the neighborhood, (3) conversation on various local topics and interests is the main activity, (4) it is accessible throughout the day,

(5) active set of members present known as leads, and (6) the setting is different from the home and work environment.

As conversation is the main activity, there are more design alternatives created based on selection, sorting and highlighting in the community that can help foster it. The decision to choose this over content, tasks and activities as a focal point of the design, is to foster connections based on mind and not just proximity. This is due to the “positive mutual impact of attitudinal similarity on interpersonal attraction” (Lausen, Ziegler 2004: 840), and a correlation between trust and interest similarity on virtual communities (ibid, 843). Based on this, the Nextdoor design can choose design alternatives of content-based filtering tools (ibid.), and content-tagging. And to increase surveillance opportunities, allow users to access profile similarities (Ashtiani *et al.* 2021).

Whereas, claim **11** for Neighborland keeps partnerships with institutions the main focus, which doesn't require as many touchpoints for interactivity on the app. However, as institutions signal to their citizens a certain moral standard of society, they must include more touchpoints (**1,2**) to show transparent decision-making processes regarding neighborhood projects and procedures, openness to citizen questions, a high level of responsiveness through immediate feedback to citizen demands (Gelders *et al.* 2014: 495-496). And, build engagement with their neighborhood by requesting citizens to contribute in public decision making, and goal-setting.

Therefore, the most important types are content, tasks, activities, and feedback in the community that can assist in increasing government-citizen dialogue<sup>30</sup> (Gelders *et al.* 2014: 501). 60% of government agencies use online platforms to disseminate news and updates (ibid, 497). Furthermore, dialogue is not the central focus, nor questions directed toward citizen response, leading to a lack of engagement (Alam, Lucas 2011). Based on this, the Neighborland designer can create the following tasks and activities: (1) interactions conducted in a common virtual public-place, (2) govt. can post public detailed plans for projects, (3) citizens view all projects related to their neighborhood, (4) govt-citizens share ideas and solutions for a project, (5) opportunity to host govt-citizen events to discuss projects, and (6) updates on projects sent to all users.

---

<sup>30</sup> Here dialogue refers to (1) two-way non-reactive interaction where users can send messages bilaterally, (2) reactive where a user can send messages later, whilst referring to earlier messages, and (3) fully interactive where the later messages in any sequence still account for the messages that preceded them, and the way they were reacted to (Jones 1997).

Furthermore, the designer must allocate tools to increase govt-citizen dialogue for feedback from their citizens at different stages of the participatory planning process: diagnostic, expressive, conceptual, organizational and political (Horelli 2002). These tools must not only reduce the cost of time, money or resources incurred by both govt and citizens, but also emphasize the value of the collaboration. This is because citizens feel they cannot influence govt. decisions, and thereby decide to ignore involvement as it is not worth the costs incurred (Krek 2005). These tools can appear in the form of comment sections in a forum, polls, surveys, and integrations with automated sentiment analysis tools like Google Analytics or Facebook Analytics. And, results published as data or progress reports, two-way comments in the forum, or through some-sort of visualization tools. Through this, the government can also increase engagement with more citizens as they aren't constrained by spatial (citizens can only share their opinion at a specific place) or temporal (citizens can only present their opinion at a certain time) requirements that face-to-face interactions require. Thereby, making this process one of continuous learning and inputs from diagnosing the issue, to implementing the solution.

Claim **11** was identified by the Nextdoor designer as well, however the role it plays is much lesser than that on Nextdoor. Moreover, it is answered differently through the external communication type. The designer can create ways for neighbors to inform institutions such as creating a report/online form for the police, or sending an emergency alert.

Similarly, the content, tasks, and activities type is used differently by the Nextdoor designer. The goal here is not to increase transparency or openness, but to allow neighbors to share their expertise, as determined by claim **16**. This is because content creation relies on the volunteership of individual members of the neighborhood, rather than it being provided by a formal or external institution. Therefore, the designer must promote ways for the volunteers to share their expertise and build a shared corpus of knowledge. The alternatives chosen are tools to: share information to build practical knowledge, share recommendations to build experience-based knowledge, and provide solutions to build theoretical knowledge. The corpus created becomes the shared language of the VC, where members acquire the subjective point of view of the community (Lave, Wenger 1991; Klinpatrick *et al.* 1999). Moreover, this also promotes social participation through the



shared meanings that emerge by developing similar views on goal identification and problem solving. Most importantly, all members must be allowed to share their expertise to create the perception that all members have contributed to the group outcome (Klinpatrick *et al.* 1999: 131). And, emphasize the value provided by the network, over a single opinion in both the creation and transfer of knowledge (Ghoshal, Nahapiet 1998: 242).

The designers' planned structure for the two apps also bifurcates, as the NA is organized informally and NC formally. Thus, tapping into different rules to promote trustworthy exchanges. As Neighborland receives its validation from its partnerships with institutions and formal rules enforced by external authorities (**12**), it doesn't require as much focus on designing alternatives for roles, rules and procedures. However, the designer must still make provision for written rules and formal guidelines.

Moreover, the roles designated must work in tandem with the access controls (**10**) by providing institution users with more power than citizen users. This is because participatory planning is a tool used by institutions to get public perspectives on pre-set plans or objectives, and do not view residents as equal stakeholders that can implement solutions or policies. However, they are viewed as important stakeholders for the planning process, whose level of participation is determined on a project-by-project basis. The types of participation required include: (1) neighborhood consults on the development of a predetermined agenda, (2) neighborhood advice on solutions or suggestions of a predetermined agenda, or (3) communities and institutions work together on predetermined objectives (Cilliers, Timmermans 2014: 421). To achieve this the designer provides institution users the following access controls: (1) to create a new project based on a predetermined agenda or objectives, (2) to moderate and facilitate conversations on the platform to achieve predetermined goals, and (3) select types of feedback tools required for the project.

As the resident is not the main stakeholder of this project, the process must “rely on the willingness of the relevant persons to participate out of interest, curiosity, or social responsibility” (Cilliers, Timmermans 2014: 419), therefore it is important to follow claim **8**, and clearly state the common goal of the project. This can be further emphasized by a designer when creating alternatives in the selection and sorting type by creating content

filters based on topic, goal, shared ideas/solutions, and allowing users to locate projects occurring in their neighborhood or around them.

Whereas, Nextdoor is constructing a social networking site, which is already negatively perceived due to users creating deceptive or fictitious identities (Gurzick, Lutters 2009), and must therefore create more specifications relating to identity revelation (3). This necessitates a number of alternatives in the rules, and procedures type, which can order exchanges and make them less ambiguous.

With regard to procedure, registration on the app as a user should require legal-name verification to make the user known. Next a double verification must be made to ensure that the user actually lives in that neighborhood. Although this cannot ensure the type of content posted on the app will be true, by providing a variety of barriers to entry the volume of false identities attempting to enter can reduce. Therefore, necessitating reputation systems to encourage transactions and collaborations, by making a user seem more credible as their actions impact their self-reputation (Blanchard, Markus 2004: 73). The most common types are score or rating (Dellarocas 2010), however these can breed unhealthy competition, and collusive behaviours from ranking obsessed members thereby having detrimental effects on user participation (Dellarocas 2010).

Instead, the Nextdoor designer can build a reputation system based on receiving positive or negative comments on actions, where more positive comments deem a user more credible (Blanchard, Markus 2004: 73). Moreover, to increase behaviours promoting self-reputation, neighborhood members and mutual acquaintances can observe user interactions (14). Although some interactions can be conducted through private chats for privacy, the communication should still be based on self-reputation, as the member they are interacting with is a user of the app who can write a negative comment about them.

Community structure is an important type as it can affect a participant's desire to participate on the VS. Both Neighborland and Nextdoor designers approach this by answering claim 4 and creating alternatives to ensure an optimal medium community size is formed. This is because, "a larger community reduces the marginal impact of any one member's actions and thus motivations to contribute" (Resnick, Kraut 2011: 69). And a very small community size may not be able to maintain a minimum level of interaction to sustain flow of dialogue (Jones 1997). A medium-size also increases the variety of

communicators, such as those who will post in the public forums and private chats, and those who will post actively versus passively. By increasing the variety, the VS also becomes less conducive to lurkers (Liu 1999). Although, the overall visions of the app differ, therefore the reason for their need of medium community size does too.

For Nextdoor, the goal is to build interpersonal relations between individual members of the neighborhood, who previously may or may not have interacted in the physical world. By designing size limitations on the app, the designer can increase opportunities for members to interact with one another, and create a more comfortable atmosphere that encourages mutual self-disclosure (Resnick, Kraut 2011: 151). Through this more trustworthy interactions can form because “trust rests on intimate familiarity” (Millen, Patterson 2003).

Whereas, for Neighborland it is more about encouraging citizen participation for institutions to make more informed decisions. By designing size limitations on the app, a citizen is more likely to contribute as they believe their contribution can make a difference, (Resnick, Kraut 2011: 63) and their voice will be heard. Additionally, to increase participation the designer can create alternatives in the external communication type, for users to share projects to their acquaintances through Facebook or Twitter. This also allows the institution to showcase how they care for their public, as they are focused more on their opinion than a large number of approvals. Furthermore, the medium size can increase the uniqueness of suggestions and opinions, as people won't find their contributions redundant with those that others in the large group can provide (ibid.).

#### **4.1.4 Intersemiotic translation as a generative tool**

The prior subchapters utilise intersemiotic translation as an anticipatory tool to create an action plan for the designer. This is done by organizing units from the physical world that must be represented in a similar way on the virtual. In contrast, this subchapter focuses on using intersemiotic translation as a generative tool to locate different ways to organize units from the physical world. Here, the designer locates gaps in how the vision functions in the physical world, and how it can be filled or optimized in the virtual. In this

reconstruction, the gaps identified either build on an affordance provided in the virtual world, or introduce a feature that could be implemented in the physical world as well.

This can be noted in the Nextdoor designer's choice to add claim **10** to the app, and provide some users with more power than others in both the role and access control types. In this way, the designer attempts to create some element of formal structure in the otherwise voluntarily run informal structure. The possibility of this occurring in the physical space is also possible, however it is less prominently featured in NAs. The choice to create such hierarchies develops from the "need to manage the activities of malicious minorities of 'spammers,' 'trollers,' and 'flamers'" (Cavanagh 2009: 9), thus requiring some members to have different access controls to moderate conversations. This moderation can eventually build a new social knowledge for their members; "a mutual construing of objects, events, interests and purposes that not only links them but also makes them what they are: an objectified social need" (Miller 1984: 157). This new social knowledge structures the way members approach and experience situations and then choose to conduct their actions (Poletti, Rakk 2009: 148). This knowledge might be different than how they think and act in their offline lives, and in the membership of other virtual communities<sup>31</sup>. Furthermore, they can also help keep the dynamics of mutual support and exchange balanced in the virtual communities (Kollock, Smith 1996; Kollock, Smith 1999).

Visualization tools are an affordance of the visual world that has been implemented by designers of both Neighborland and Nextdoor. They allow a designer to base map neighborhoods on vector models, that represent the physical space through lines, polygons<sup>32</sup> based on objects of interest such as, "roads, land parcels, and governmental units, allowing for faster analysis and visualization of spatial objects that don't encompass an entire area, and features that retain their shape at any scale" (Payne 2017 7). Once users see these boundaries, they not only understand 'where' they are in terms of physical space, but they also call that 'where' into existence" (Payne 2017: 2). In doing so, Nextdoor users become more conscious of their boundaries; of where their neighborhood starts and ends,

---

<sup>31</sup> An individual can be a member in different virtual communities, as long as they are a member of what can be deemed a virtual community based on the aforementioned requirements.

<sup>32</sup> Basemap of Nextdoor is Google Maps that utilises polygons to construct boundaries in geographic space, in comparison to other base maps like Apple or Bing Maps that use neighborhoods as points a user can navigate to and from (Payne 2017: 10).

and who can and cannot be considered part of it. Whilst for Neighborland, institutions can create targeted projects and build collaborations with actual residents of those boundaries. And residents within those boundaries who are interested in increasing the wellbeing of their surroundings can contribute.

In both cases, the recognition of members and their boundaries leads to their framing as they now can start to perceive themselves as similar or different from another neighborhood. Either in the way they present themselves, highlight distinguishing characteristics or through the common goals they set (Resnick, Kraut 2011: 7). The designer selects framing alternatives that allow differentiations to be created, however it is important to note that for the feature to be useful it must have a shared context; only has meaning in context to a referent (Akoumianakis 2013: 34). The designers can then create alternatives that will (1) lead to the formation of meme paths or the way ideas travel through content-tagging, (2) help in identifying interaction patterns by collecting trending or popular topics in the neighborhood, (3) help in building linking patterns by suggesting similar topics and interests, (4) promoting shared context and enabling a system of relations through conversations on public forums, (5) hosting and mentioning events to connect with each other, and (6) displays or markings of belonging through user profiles indicating the name of the neighborhood, or placement of members on the visualized map generated (sensu Efimova, Hendrick 2005).

After reconstructing both processes, I realize my vision is more similar to the Nextdoor designer. My focus is more on building relationships between neighbors, rather than increasing citizen participation with institutions through participatory planning. Therefore, I now know my app must also be centered around alternatives that keep conversation as the main activity. This can not only help neighbors familiarize one another, but build social bonds of spirit rather than just physical proximity. However, I would like to adapt the alternatives of Neighborland that build transparency in actions, instead of being over reliant on informal reputation systems. This could help structure the consensus of particular issues or ideas neighbors have by making them more objective. And, not affect the personal relations required for voluntary participation. Thereby, making participatory planning a more crucial element for my app than it is on Nextdoor.

## 4.2 Identifying the dominant behind the translation

This subchapter focuses on identifying the dominants used to provide unity in the system being created, and the role of intersemiotic translation as a generative tool in identifying this dominant. There are two types of dominants that can be identified: (1) translative, that focuses on the translation of the whole text or individual elements, and (2) translator, that provides a perspective of the translator's creative method (Bednarczyk 2008 in Jankowski 2015: 215).

I will focus on reconstructing the translator's dominant to find the conditions placed on the intersemiotic translation process that affect the decisions made by the designer (Jankowski 2015: 215). In this case, it is the overall experiential meaning the designer wants to create for the app to encourage the formation of a 'we attitude,' defined as a "commitment of an individual to participate in joint action, and involves an implicit or explicit agreement between the participants to engage in that joint action" (Tuomela 1995: 2). This determines how a design claim is answered, as the experiential meaning "refers to the grammatical choices that enable [the] speaker to make meaning about the world around and inside us" (Marbun, Yanti 2017: 6). Moreover, it focuses more on the content and topic of the message being exchanged, rather than the purpose of the interaction (ibid.). Thus, locating the translator's dominant and related design claims in the way content will be ordered and presented (Hodge, Kress 1988: 5). Just to reiterate, I will only be reconstructing the dominant of the Nextdoor designer due to reasons mentioned prior.

To study the dominant experiential meaning of the designer's process, I will utilise transitivity, which is defined as the grammar of experience (Halliday 1985). The designer utilises transitivity as a tool for construing experience by identifying configurations of the types of process occurring, the participants in the process and circumstances associated with the process (Martin *et al.* 1997; Halliday 1985). To begin with, I will determine process types as they are central to transitivity (Gerot, Wignell 1995: 54), and are required to be set before participants and circumstances (Marbun, Yanti 2017: 7). There are three main process types: mental, material and relational (Halliday 1985).

Mental processes focus on "a processor (the sentient being that does the mentalizing) and a phenomenon (that which is mentalized)" (Stillar 1998: 23). Here, the processor is the Nextdoor designer, and the phenomenon is the distinction between

neighborhood and community. The designer separates the two to highlight the difference for future users between the neighborhood they currently live in, versus the community they could form through the app and live in. Thereby building the utility for using the app.

To create this distinction the designer utilises intersemiotic translation as a generative tool to identify two pure types of social bonds. The physical neighborhood as ‘gesellschaft,’ and the community being created through the app as ‘gemeinschaft’. These two terms were initially defined by Ferdinand Tönnies (1887b), where gemeinschaft is formed by the natural will of individuals, and ‘gesellschaft’ is a “purely mechanical construction, existing in the mind” (ibid, 17) built through rational will and self-interest of individuals (ibid.).

To further concretize the differences between the two bonds, the designer identifies mentifacts related to both, which include shared values, beliefs, symbols and rituals (Jansma 2019: 126). They are then assigned as the dominant of the neighborhood if they have the tendency to create ‘associative’ relationships (*Vergesellschaftung*) that rest “on rationally motivated adjustments of interests or a similarly motivated agreement” (Weber 1978: 41). Or, the dominant of the app if they are more likely to form ‘communal relationships’ (*Vergemeinschaftung*) based on “a subjective feeling of the parties, whether affectual or traditional, that they belong together” (Weber 1978: 40). Based on this the designer can integrate identified mentifacts on aforementioned levels of presentational meaning, orientational meaning and organizational meanings.

To create presentation meaning on the app, the designer distinguishes the state of current neighborhoods with negative characteristics, such as “artificiality, isolation, self-interest, and tension” (Kayahara 2006: 130), where neighbours live ‘detached’<sup>33</sup> from one another, and “nobody wants to do anything for anyone else, nobody wants to yield or give anything unless he gets something in return that he regards as at least an equal trade-off” (Tönnies 1887b: 53). And then contrasts them through positive gemeinschaft-oriented presentational meanings being created on the app:

Sense of familiarity and safety, mutual concern and support, continuous loyalties, even the possibility of being appreciated for one’s full personality and contribution to group life rather than for narrower aspects of rank and achievement (Brint 2002: 2).

---

<sup>33</sup> In contrast, communities live in unity with each other.

These provide a context for the designers to organize and create a translated environment that is more appealing than the end-user's everyday environment.

The designer represents the presentational meanings on the app through a past-positive point of view alluding to warm and nostalgic feelings toward larger social networks consisting of long-lasting relationships where members received and provided more support (Holman, Zimbardo 2009: 143). Thereby, referencing a romanticized version of communal life that is depicted as being lost to present society, which is portrayed through a past-negative and present-fatalism point of view. By creating this dualistic distinction, designers present the *gemeinschaft* experience on the app as “endowed with an atmosphere all of its own” (Bauman 2001: 1). The atmosphere described has “a sort of air about it, like a balmy summer's day it ‘feels good’: whatever the word...may mean” (2001:1). By presenting the experience in such a way, the designer tries to influence future users' to think and perceive in a *gemeinschaft* manner.

The next task of the designer is to create orientational meanings that influence how future-users will interact with one another, and the alternatives on the app. This is achieved by making mentifacts visible through material creations, known as artifacts (Jansma 2019: 126). To do this a material process is required to determine how a future-user can perform the action in a *gemeinschaft* manner, and the goal that will be achieved when the user conducts the action (Stillar 1998: 23). Here, artifacts refer to shared understanding in the tangible form of ‘objectified knowledge’ (Cerroni 2015: 429), either expressed as physical objects, created environments or symbols (ibid, 429-430). Emile Durkheim<sup>34</sup> (1897: 276) views these shared understandings as collective representations. These are “states of the conscience collective which are different in nature from the states of individual conscience” that build *gesellschaft* mental processes (Lukes 1973: 6). The difference in conscience arises from social states of mind being “in a sense exterior to individuals” (Durkheim 1897: 276), and express the way a group makes-meaning and develops their world view in relation with material objects that can affect it (Lukes 1973; Durkheim

---

<sup>34</sup> Durkheim initially focused on solidarities of similarities, and solidarities arising from division of labor (1893:46). These terms are used in many community-research paper, however Durkheim replaced these terms in his later works due to their failure to segregate between “*cognitive, moral and religious beliefs, between different beliefs and sentiments, and between the beliefs and sentiments associated with different stages of a society's development*” (Lukes 1973: 6). This is why we also do not use these terms in this thesis.



1897). These representations are made possible “by the fact of speech and by the existence of a fund of common symbols and meaning” (Goist 1971: 52).

The designer must choose certain design alternatives that will assist future-users to build this common fund of meaning. One such way is, ‘the circulatory model for social reproduction’ that focuses on building knowledge through interactions between the “individuals level and their societal environment and between this environment and a collective heritage” (Cerroni 2015: 432); the individual being the user, the social environment the neighborhood, and collective heritage the neighborhood’s “history and traditions, its own individual problems, and its own conception of the future” (Bulmer 1984: 119). The model is divided into four phases: phase 1 involves the generation of new knowledge when an individual contributes their own knowledge to their neighborhood. Phase 2 identifies and validates the knowledge from phase 1. Phase 3 diffuses the validated knowledge to other residents during everyday social interactions. And, phase 4 focuses on the socialization of knowledge that is passed through commercialization, or passed down to generations via education and learning (ibid.).

Lastly, the relational process assists the designer in identifying, attributing, classifying, and locating (Stillar 1998) combinations and organizations of claims and alternatives that can create the *gemeinschaft* experience. Based on the three types of *gemeinschaft* identified by Tönnies (1887b): kinship (*blood relations*), locality (*place-based relations*), and friendship (*like-minded*), the designer chooses to focus on the last two. Furthermore, the focus is on the transition from interactions based on physical proximity to a community of mind that enables collective action to achieve certain goals (Tönnies 1887b: 22). Thus, changing the binding link between combinations and organizations from physical space to “the level of conscious thought” (ibid.).

This evolution can be displayed through sociofacts, which are defined as mentifacts made visible through societal structures of kinship, political and economic institutions (Jansma 2019: 126). They play a more restrictive role as they “exclude certain ways of communication and collaboration due to explicit and implicit rules of dealing with hierarchy or boundaries” (Riss *et al.* 2011: 57). As the evolution from local to mind occurs, the ‘unwritten’ normative orientations and regulating norms for actions change. To foster a higher degree of understanding of these changing sociofacts, the designer implements the

following: tools to increase perceptions of similarity between neighbors, shared understanding on relevant topics, knowledge of written and unwritten rules of cooperation (ibid, 57-58).

### **4.3 Evaluation of the reconstructed process**

Based on the process described above, a vision, operative image and specifications for Nextdoor and Neighborland have been reconstructed. However, this doesn't ensure that the choices made during those stages had the same consequences they were set with. In other words, the designer made the choice they did because it fit best during the process, but the end-user might not have the same experience while using it. Therefore, to study the consequences of the designer's choices, I will study user reviews as described in method 2. In this evaluation, I am only focusing on the Nextdoor designer's choices. This is because from the work done in the prior chapters, I have realized that my vision and desired process aligns more closely to Nextdoor's. Therefore, this evaluation will help me in deriving takeaways based on end-users' understanding of alternatives.

In reference to the 399 reduced and organized results found from the content analysis conducted (method 2) on the 249 user reviews collected: 30.8% of reviews were about how a particular feature was perceived negatively versus 27.1% were positive; 10.8% of reviews indicated the app promoted positive social relations in the neighborhood in comparison to 10.5% of negative comments; 7.8% of reviews focused on how a role contributed to negative consequences on the app, versus 1.8% found them positive; 3.8% indicated that the partnerships with institutions had a positive impact on them, versus 1.3% who said it was negative. Lastly, 6.3% of reviews consisted of suggestions on how to better the app. The following results can be found in Annex 4 in the form of a pie chart.

To begin with, I will study the reviews about perceived effects of alternatives chosen. Interestingly, the alternatives that were most mentioned by users appear on both the negative and positive sides. Thus showcasing how users of the app can experience the same alternative but have different experiences with them. These alternatives are: (1) identity revelation requirements, (2) request and answer posts to share information, and (3) ability to post and sort crime specific posts.

When identity revelation requirements were perceived positively the reviews highlighted the users' increased desire to interact with another neighbor as they believed they were a real person who lived in their neighborhood. This desire to interact increased their communication both online and offline. In the physical world, neighbors hosted more get-togethers with neighbors they spoke to online. Thereby, also acting like a verification process of both their identity and their interactions. Through the real identities, offline interactions were also conducted in more trustworthy manners as they were tied to online reputation systems; if a neighbor acted differently in person they could be reported online to warn other neighbors.

However when identity revelation requirements were perceived negatively, the reviews found that instead of leading to trustful exchanges, user's began questioning their safety. This was either caused by the number of requirements asked for during the verification and profile building process that made the experience feel invasive, and geared toward data mining from big-tech companies. Or attributed to the number of requirements displayed to other users, including real name, physical address, and display photos, which led to users' not feeling safe in their own homes. Instead of users thinking of the identity revelations as a way to meet other neighbors, they were actually afraid that in the case of an argument or disagreement it would affect their safety. Therefore, creating a space that does not foster self-disclosure.

Based on this, I now understand that the total number of alternatives selected to answer a certain claim can impact final usage. As the claim (3) stated, knowing real world identities can increase trustworthy exchanges of social capital, however when there are too many dimensions of identity-revelation added they can be negatively perceived. Therefore, the design process for my app should locate the maximum number of identity revelation dimensions that a user is comfortable with answering and displaying. And, the minimum required to build perceived realness of a user being one's neighbor.

The next alternative is the ability to request and answer posts to share information. The positive reviews in this case indicate that the sharing and knowing of local information and happenings, made users more aware and/or eager to learn about their neighborhood and neighbors. Based on the content of a post or the way it was communicated, neighbors viewed this alternative as an opportunity to learn about who their neighbors were, and

identify potential like-minded individuals and friends within them. Popular information shared included recommendations for local services, babysitters, and other community related advice, which could not be found elsewhere. Furthermore, users had more positive responses to the feature when another user discouraged them from using a disreputable service. Based on the exchanges of the different types of local knowledge, it can be said that the alternatives chosen assisted neighborhoods in creating their unique and common fund of knowledge.

The negative reviews related to this alternative were the result of a drawback in the initial vision. Both Nextdoor and NA's are volunteer based, and therefore the content produced is all user-generated. If there is a lack of active users, especially those who post on the public forum to ask or answer then there is a lack of content. This would make users perceive the app as useless and sign out. This usually occurs if the neighborhood has just joined the app, or if the neighborhood lacks enthusiastic participants, thereby lacking the minimum threshold of interaction.

Through this, I recognize that there are situations where using intersemiotic translation as a generative tool can be more useful than an anticipatory tool. By locating patterns in NA failures, and not just successes a designer can identify what requires a new solution in the virtual space. In this situation, the failure comes from an overreliance on volunteers, therefore to avoid this I need to create alternatives for non-user generated interactions to keep initial or passive users of the app incentivized to stay. For example one player games. Additionally, I also see a need to create alternatives to prompt user-generated content creation. These could include popular topics identified like recommendations for local services, babysitters and other community-related content. It is also possible to identify some alternatives related to encouraging non-members to join to reach a minimum threshold of interaction. In the negative reviews, there were users who found the content they were receiving to not be related to their goals, which led to them to sign out of the app. However, this cannot be changed to a large extent as the designer cannot actually influence the type of content (other than prompts and suggestions) that is being generated from a particular neighborhood. Also, what may be useless content for one user, could be useful for another.

The last feature is the ability to report crime, which could either be posted and tagged in the crime & safety section, or filed as a report to the partnered police department. The overall goal of this alternative was to help foster a safer neighborhood for all residents. Those who viewed this feature positively indicated the formation of neighborhood watch groups who posted information about break-ins, unidentified strangers, and other suspicious activities led to users being more cautious. Another alternative created was to send urgent alerts to all neighbors as a push notification during time-sensitive situations such as missing persons or pets. Through these alternatives, neighbors were able to both keep each other informed, and also mobilize action when required. Moreover, when neighborhood groups met face-to-face in meetings, they were able to interact and build relations with each other to keep their neighborhood safe. This feature also relates to the positive reviews related to perceptions of the institution, where the police department was identified as the only institution to be mentioned in the reviews. This perception was created through information sharing by the police, prompt responses and an overall sense of safety their presence created.

The neighbors who reviewed this feature negatively found that it led neighbors to be more suspicious of one another, and created an environment of constant fear that made neighbors constantly stay on alert. This was attributed to the public forum as the alternative where neighbors could immediately post, share and comment what they found suspicious. The lack of barriers to posting, and verification of the posts allowed citizens to become vigilantes of their neighborhoods.

Moreover, it led to an increase in racial profiling. This can be further substantiated through prior studies conducted on Nextdoor that noted the popularity of racially profiled surveillance posts on the app's crime and safety section (Payne 2017; Kurwa 2019; Lambright 2019; Mols, Pridmore 2019). Especially posting “unsubstantiated ‘suspicious activity’ warnings that result in calls to the police on Black citizens who have done nothing wrong” (Levin 2015 cited in Kurwa 2019).

Evidence also suggests that the enthusiastic adoption of sites like Nextdoor could be reinforcing existing class and racial boundaries in increasingly divided cities, drawing lines between ‘us’ and ‘them’ and amplifying the voices of neighbors who want to use the site to profile people they consider outsiders, even those who may have lived in the area for generations. (Payne 2017: 18)

This showcases how the pairing of the crime reporting alternative with the boundary visualization alternative led to negative consequences during the actual usage of the app. Whilst, in the process they were reconstructed separately with positive effects of the pattern focused on building connections between neighbors, and protecting themselves from strangers. In actuality led to neighbors identifying other neighbors as suspicious strangers and outsiders of the community.

Based on this, I would still focus on creating alternatives that increase neighbor vigilance to foster safer neighbourhoods. However, I would increase the barriers a user faces when posting a particular post detailing suspicious activity. In India, the profiling that occurs is not based on race, but on divisions in religion (Banaji 2018), caste (Narula 2008) and socio-economic inequalities (Bharadwaj 2014). Therefore, to prevent or at least reduce biased or stereotyped posts connecting the aforementioned, a filter can be applied where a mention of a stereotype leads to further questions about the suspicious activity conducted. Furthermore, alternatives in the form of 'are you sure' button can be implemented, for the user to reaffirm what they saw.

Another change in alternatives I would implement includes a lack of visualization of the boundary and the members in them. To participate in the app the users must be verified and organized based on boundary, however the actual boundary drawn will not be shown. This is to reduce the focus on who is a neighbor and who is not, and to refocus the narrative on increasing interactions between neighbors. Furthermore, the boundaries that are shown may be different than where a resident actually locates themselves in (Edwards *et al.* 2014).

The aforementioned also highlights the importance of studying different consequences of combining alternatives. In other words, alternatives chosen by themselves both provide their own benefits, but together they can impact the users differently.

In a more recent occurrence, users found the app useful in providing alerts and information regarding the COVID-19 pandemic. While neighbors had to physically distance themselves from each other, Nextdoor proved a valuable resource to build social proximity and collective action. A user indicated that their neighborhood used the app to determine who required help, what could actually be done to help, and which neighbor could help. In this way, claim 9 which was not selected prior could now also be applied.

The next category of reviews relate to a design alternative created when intersemiotic translation was used as a generative tool. The alternative to give one user more power than another, led to the formation of ‘leads,’ which in the content-tag is listed as a role. During the formation of a neighborhood on Nextdoor, the founding members are made leads, and their main role<sup>35</sup> is to moderate conversations occurring as they are given the power to vote and remove ‘guideline violating messages’. They can also promote other users to the position of leads. During the design process, this claim **10** was chosen to create some formal hierarchy to build more trustworthy responses. While, 18.4% found themselves sympathetic to the lead’s role or suggested they were doing an adequate job in moderating conversations, 81.6% of role-related reviews were about the leads fostering a negative environment. Some users questioned the process Nextdoor used to vest this power. Whilst most were unhappy with the censorship and abuse of guidelines that led to the removal of their posts, termination of their accounts, and creation of intolerance to different views.

From this, I re-assess the consequences of using intersemiotic translation as a generative tool. The role of lead did not exist in the NA, and was thereby added by the designer in an attempt to order online communications to be more trustworthy. In this way, certain users were given more power than others. However, in the generative process the designer failed to assess (1) how to determine the person who will receive the power, (2) why does power work in formal systems, (3) how does power work to create trustworthy relationships, and most importantly (4) why does power fail in NA or informal systems. This led to the lead being selected based on them signing their neighborhood to Nextdoor, without assessing if they are the right person to hold the power. To know if I will make alternatives to give more power to one user over another, I will have to conduct further analysis based on the aforementioned points.

---

<sup>35</sup> They have other privileges as well, which include the ability to adjust neighborhood boundaries, verify applicants as neighbors, and edit the about section of the neighborhood.

#### **4.4 Evaluation of the reconstructed dominant**

As determined previously, the designer utilises intersemiotic translation as a generative tool to translate the dominant. Here, the translation is from a *gesellschaft*-oriented neighborhood to a *gemeinschaft*-oriented VS to foster a *we*-attitude amongst users. By creating this distinction the designer attempts to make the app a more appealing place for neighbors to interact and communicate on. To assess if the designer was successful in creating such a place, I will analyse the user-reviews based on the three process types utilised to construct the experience. To conduct the evaluation, I will predominantly focus on the social relations category, as the focus of the dominant is on social bonds.

Based on the results from the content analysis it was found that 10.8% found the app had a positive influence on their relationships with neighbors, and 10.5% who believed it had negatively affected their relationships.

First, I will study these results in relation to the mental process of *gemeinschaft* and *gesellschaft*, and how they influence thought and relations to be organized. In both the negative and positive reviews, the users were able to identify Nextdoor as a different experience from the physical neighborhood through a before-app and after-app comparison. Thus suggesting the designer chose the alternatives appropriately to encourage users to divide their mental processes.

The positive reviews focused on how Nextdoor assisted their neighborhood in community building, as users noted they felt more connected, participated more and were able to build stronger relationships either through providing or receiving support. Additionally, users found that the app helped them meet neighbors, thereby breaking the alienation or isolation they might have felt in the neighborhood before. Thus, being able to differentiate the before-app neighborhood as *gesellschaft*, and after-app as *gemeinschaft*.

In contrast, negative reviews focused on the toxic environment that had been created on the app due to neighbors fighting, and leads abusing their power. However, this doesn't mean that the app is viewed as *gesellschaft*. It simply indicates that the *we*-feeling



is not experienced equally by all users. Cary Beckwith (2019) identified a link between status and negative feelings toward *gemeinschaft*:

Groups often require contributions from their members, and a person's status position can shape his or her perception of what constitutes an appropriate contribution to the group. When the demands of group life do not align with a high-status individual's expectation of what contributions are appropriate for him or her, the individual may be less likely to form affective attachments to the group. (Beckwith 2019: 32)

On Nextdoor, it is possible that a high-status individual from the physical world is not a lead member on the app. Therefore, the contributions they are required to make may not align with what they deem appropriate. Similar to how social capital is transferred, users from the physical space may want their status to also transfer. To be assigned a lead all one has to do is create the neighborhood page on Nextdoor. This may be a different person from the members of the neighborhood association. Thus, fostering negative feelings. Therefore, I must remember this when designing my app, as it is an important factor when assigning alternatives under the role type. Furthermore, it highlights how I must also study the negative consequences of *gemeinschaft* bonds, rather than just the romanticised point of view. And the level of influence members' identity and status have on their experience on the app.

The next process focuses on the orientational and is evaluated on the designer's ability to foster the creation of a common fund of objectified knowledge. Through this knowledge, users should be able to interact in a *gemeinschaft*-oriented manner thereby producing a *we*-attitude. To create this, the designer chooses alternatives such as the public forum and ability to interact in interest-based groups to encourage users to exchange perceptions of similarity, either about their lifestyle or experiences etc. And, also alternatives that help instill common beliefs, about ideas or morals etc. However, the usage of these alternatives depends entirely on the users, as the content is user-generated and volunteer based. Therefore, positive reviews focus on sharing recommendations, referrals and fostering communal responsibility for the neighborhood. Whereas, negative reviews focus more on not building the common fund, as the posts were more focused on fighting with neighbors or leads about issues, or were used for neighbor gossip and bullying. However, this is not a direct issue caused by the designer's choice of using a public forum,

but the way it was misused by neighborhood members. It is an outcome that is entirely possible on my app as well.

The relational processes cemented as sociofacts cannot be generated by the designer, as they emerge from social interaction. Based on the creation of the common fund there is an evolution in the “internal representation in people’s mind as a capacity to act in a social context” (Riss *et al.* 2011: 58). Thus, highlighting the social dimension of an user’s intended action. The identification of these sociofacts will be inferred from indicators, as I cannot directly access sociofacts. Here, I will focus on social character as a way to understand sociofacts, as they are both shared and produced by the experience of a social group (Riesman *et al.* 1969: 4). To evaluate social character, I will study the user reviews to understand the character traits acquired by users that make them act in a certain way.

Based on the different character traits analysed there are three main patterns of interactions; categorized in the following groups: (1) *gesellschaft* of neighborhood, (2) *gemeinschaft* of place, and (3) *gemeinschaft* of mind. Each group has members with mutual understandings and expectations, and have different sets of implicit and explicit rules for their members to abide by.

Reviews relating to *gesellschaft* of neighborhood focus on users not finding the app useful as they don't understand the need for neighbors to be friendly with each other. This perspective is built on the norm of impersonal relationships between group members and interactions are conducted to further one’s self-interest. Moreover, the actions are not focused on community-building and support, but on need-based queries. The existence of this group can be found in the negative reviews section from users who were displeased by the lack of praise and thanks they received for their efforts in addressing other users’ needs. And, reviews suggesting users were not being respectful of others. From this we can infer that the users are operating by different rules on the app.

The next set of character patterns appear in users who identify other users as neighbors, but not as friends. This group is termed as the *gemeinschaft* of place as they operate based on obligations of physical proximity. Here, users are termed as ‘good neighbors’ by other users if they frequently share information, provide advice and recommendations. Hence, actions or interactions are conducted to maintain or construct

their reputation as a good neighbor. This makes the source of direction for the user ‘other-directed’ as they look for validation and guidance for their actions from other users (Riesman *et al.* 1969: 17) without understanding the true purpose of why they should conduct actions in this manner. A problem of functioning in this way relates to the competition it might create with other users to seem more ‘good’ in the neighborhood, thus defeating the purpose of community-building.

The third group is *gemeinschaft* of spirit and is characterized by users conducting actions to benefit their neighborhood, and neighbors. Here, the actions are not based on physical proximity or reputation management, but on a personal sense of responsibility. Furthermore, reviews suggest users post content to look out for, help, or ‘bring a smile’ to other members. Moreover, the focus is more on the action than equating it with social approval or a need for praise and thanks. Such actions thereby stem from an inner sense of the *we*-attitude and are based on the choice of a user to conduct an action in this way.

By analysing these three patterns, we can see the evolution of social character from focusing entirely on one’s needs to being part of a community and its needs. However, I cannot presume that all neighborhoods on Nextdoor follow this evolution. It is possible that the reverse occurs and actually demotivates users from acting on behalf of their neighborhoods. Although a designer cannot guarantee this evolution, they can promote opportunities for it to occur organically through the interest groups feature<sup>36</sup>, treat-map<sup>37</sup> feature, and cheer-map<sup>38</sup> feature.

#### 4.5 Limitations & Way forward

There are four main limitations to the application of this thesis. My main aim is to build an app for Indian neighborhoods to form social capital producing communities. However,

---

<sup>36</sup> By using this feature users can create groups according to their interests and find other users with similarities.

<sup>37</sup> Interactive map based feature created for Halloween for neighbors to know which houses will distribute candy, which houses will decorate, and which neighbors will host a haunted house. Retrieved from: <https://blog.nextdoor.com/2019/10/01/time-to-score-those-treats-nextdoors-annual-treat-map-is-back/> 17.05.2021

<sup>38</sup> Interactive map based feature created for holidays like Christmas to let other neighbors know which houses will be lit or decorated. Retrieved from: [https://help.nextdoor.com/s/article/holiday-cheer-map?language=en\\_US](https://help.nextdoor.com/s/article/holiday-cheer-map?language=en_US) 17.05.2021

community and social capital formation in this thesis has been analysed from a predominantly western perspective. This is a limitation because the base of many of the theories used to build the claims library or identify patterns come from effects of urbanization after the Industrial Revolution. Therefore, social order and organization is based on the emergent working class (Freitag 1989: 4). In contrast, India's social organization is built on a fundamentally different system of values that are 'cultural' rather than 'material' (Upadhyaya 1998). These include ethnicity, caste and religion. Moreover, the meaning and associations attributed to the concept of community are based on a myriad of significant events in Indian history: pre-colonial, British colonial, Indian independence from the British, separation between India and Pakistan (ibid.). Therefore, as a way forward I would have to study these different concepts, and identify how they are viewed today. Especially, to identify which concept of community can be identified as *gemeinschaft*.

The next limitation relates to the digital divide present either due to accessibility to technical infrastructure, low digital literacy levels or socioeconomic reasons. This is important because "if a significant part of a population begins to form social relationships on computer networks, then the rest of the population, even if it is the majority will be less able to participate fully in all aspects of the society" (Fernback, Thompson 1995). This limitation is recognized, especially since most neighborhoods in India are not as equal in resources as the suburban neighborhoods of America that Nextdoor and Neighborland cater to. Therefore, providing access to such an app will also mean leaving some potentially-active members of the community behind.

With regard to achieving participation from the rest of the population, there is another limitation. Most apps created have an age limit of 13 and above. Thereby not permitting younger members to participate in community building activities online.

The next limitation is the optimistic point of view toward technology that has been taken. Through the process, I focus on how a claim or pattern can positively lead to social capital production or community formation in the physical world. However, I do not focus on the negative impacts of isolation or increase in impoverishment of social relations caused by increased technological usage (Lawson 2017). This is because my biggest focus is on the affordance of connectivity that technology provides. Moreover, through the app

one of the objectives is to increase offline interactions between neighbors, and possibly help neighbors who currently feel isolated to connect with their neighbors. Although, in the evaluation of the features and dominant I do highlight how certain choices taken by a designer can have negative consequences during app usage, and create negative impacts in the physical neighborhoods.

#### 4.6 Chapter Summary: Learnings to implement on my app

- **The design process:**
  - Requires a combination of using intersemiotic translation as an anticipatory and generative tool.
  - Focus similar to Nextdoor to increase interaction between neighbors.
  - Keep conversation as the main activity.
  - Add participatory planning and visualization tools to reduce overreliance on informal reputation systems.
  - Focus on creating bonds of spirit, not just physical proximity.
- **Evaluation of the reconstructed design process:**
  - Total number of alternatives used to answer a claim can impact final-use
    - Number of verifications and display of identity
  - Must be some provision of non-user generated content to keep a level of interactivity.
  - Must provide some prompts to create and guide content.
  - Combinations of alternatives must be analysed to understand impact.
    - Will not implement visualization of boundaries.
    - Will add filters to reduce profiling.
  - Using a generative tool might deviate too much from the actual form and lead to negative effects.
    - Will not create a hierarchy of leads as moderators.
    - Or, will create a more elective process to choose leads.
- **Evaluation of the reconstructed dominant:**
  - All members will not experience gemeinschaft at equal levels.

- The negative side of gemeinschaft must be accounted for in the app design.
- Evolution of social characters present: gesellschaft neighborhood, gemeinschaft of place (other), and gemeinschaft of mind (inner).

## **Conclusion**

This thesis set out to study and evaluate the design processes involved in creating an app to help a neighborhood build social capital and community. The objective was to construct a blueprint for an app as a third place for neighborhoods in India to interact and communicate on. Especially during the COVID-19 pandemic, as there is a necessity for social capital, but a lack of physical interactions due social distancing measures.

To achieve this, I studied both the design process and the designer's cognitive process. Through the design process three stages were identified; vision, operative image and specifications where a designer uses translation as a cognitive process to make choices (definitional or selective instruction). The concept of translation was further built on to understand how patterns from the physical world can appear in the virtual. Based on this it was understood that intersemiotic translation can be used as an anticipatory tool to create a plan, and generative to fill the gaps or transform elements from the physical world.

To find takeaways to build my app, a claims-to-pattern approach was taken, through which a reusable claims library was created. During the reconstruction of Neighborland and Nextdoor's design process these claims were identified based on their respective goals and vision. After, which patterns were used to create alternatives for the app. And, lastly, an evaluation was conducted on the reconstructed design process to understand the users' point of view.

Based on which the following results were identified that could impact final usage: (1) number of alternatives chosen to answer a claim, (2) combination of alternatives, (3) translating the flaws from the physical world, (4) deviating too much in the transformation from the actual form, and (5) focusing only on the positive consequences of the dominant.

The work conducted in this thesis provides a new lens for interaction design by introducing semiotic concepts of intersemiotic translation and logonomic systems. Moreover, it builds a way forward from metaphors and shape based grammar systems to

study the physical world during app design. This could be helpful in implementing both interactions and microinteractions on an app.

It also provides a lens for studying social life online, and how users' act in accordance to a particular feature. As our world becomes more media-mediated, this thesis provides a look at designing apps for people, not just users. Therefore, focusing on ways to build interaction and communication to foster relations among real people, not automatized bots. In this way, it is different from studies focusing on artificial intelligence, and using translation for chatbots.

Lastly, this process of reconstruction and reflecting can assist designers to study more apps in a structured manner. This could help in creating a bigger reusable claims library for many different topics, not just community and social capital. Additionally, the reconstruction in collaboration with the user reviews can help find gaps in the main structures of apps and their functions. Therefore, making more user goal-oriented apps in the future.



## References

- Adams, Britni; Rafalow, Matthew 2017. Navigating the Tavern: Digitally Mediated Connections and Relationship Persistence in Bar Settings. *Symbolic Interaction* 40(1): 25–42.
- Adami, Elisabetta; Pinto, Sara Ramos 2020 [2019]. Meaning-(re)making in a World of Untranslated Signs: Towards a Research: Agenda on Multimodality, Culture, and Translation. In: Boria Monica; Carreres, Angeles; Noriega-Sánchez, Maria; Tomalin Marcus (eds.), *Translation and Multimodality: Beyond Words*. London: Routledge, 71-93
- Akoumianakis, Demosthenes 2010. Tracing community life across virtual settlements. *International Journal of Virtual Communities and Social Networking* 2(4): 51-63.
- Akoumianakis, Demosthenes; Kafousis, Ioannis; Karadimitriou, Nikolas 2013. Social ties in video sharing services: tactics for excavating virtual settlements. *International Journal of Virtual Communities and Social Networking* 5(2): 27-54.
- Aldrich, Daniel; Meyer, Michelle 2015. Social Capital and Community Resilience. *American Behavioral Scientist* 59(2): 254–269.
- Alexander, Christopher; Ishikawa, Sara; Silverstein, Murray 1977. *A Pattern Language*. New York: Oxford University Press.
- Alonge, Olakunle; Cooper; Fahim, C; Gwaikolo, W; Peters, David; Sonkarlay, S 2019. Understanding the role of community resilience in addressing the Ebola virus disease epidemic in Liberia: a qualitative study. *Global Health Action* 12(1).
- Altman, Irwin 1975. *The Environment and Social Behaviour*. Monterey: Brooks/Cole Publishing Company.
- Anderer, John 2019. Sign of the time: 75% of adults aren't friends with any of their neighbours. *Study Finds*. Retrieved from:

<https://www.studyfinds.org/sign-of-the-times-75-of-adults-arent-friends-with-any-of-their-neighbors/> 03.05.2021.

Andersen, Thomas Hæstbæk 2016. Metafunctions. In: Nørgaard, Nina (ed.), *Key Terms in Multimodality: Definitions, Issues, Discussions*. Retrieved from: [www.sdu.dk/multimodalkeyterms](http://www.sdu.dk/multimodalkeyterms). 17.05.2021.

Archer, Arlene; Anders, Björkvall 2021. Semiotics of Destruction: Traces on the Environment. *Visual Communication*, 1-19.

Arrow, Kennet 2000 [1999]. Observations on social capital. In: Dasgupta, Partha; Serageldin, Ismail (eds.), *Social Capital: A Multifaceted Perspective*. Washington D.C: The International Bank of Reconstruction and Development, 3-6.

Ashtiani, Mehrdad; Hamzelou, Nasrin; Sadeghi, Raha 2021. A propagation trust model in social networks based on the A\* algorithm and multi-criteria decision making. *Computing* 103, 827–867.

Asp, Elissa 2017. What is a system? What is a function? A study in contrasts and convergences. In: Bartlett, Tom; O’Grady, Gerard (eds.), *The Routledge Handbook of Systemic Functional Linguistics*, 27-41.

Atã Pedro; Queiroz, João 2019. Intersemiotic translation as a creative thinking tool from Gertrude Stein to dance. In: Ellestrom, Lars; Salmose, Niklas (eds.), *Transmediations*. New York: Routledge, 186-215.

Augé, Marc 1995 [1992]. From places to non-places. In: Howe, John (trans.), *Non-Places: Introduction to an Anthropology of Supermodernity*. New York: Verso, 75-120.

Baloch, Mohsin Ali; Baloch, Saira; Pei, Xiaofang; Zheng, Tianli 2020. The coronavirus disease 2019 (COVID-19) pandemic. *The Tohoku Journal of Experimental Medicine* 250, 271-278.

Banaji, Shakuntala 2018. Vigilante Publics: orientalism, modernity, and Hindutva fascism in India. *Journal of the European Institute for Communication and Culture* 25(4): 333-350.

Barnstaple, Rebecca 2017. Trading in imaginaries: Locating authenticity in Argentine Tango. *Phenomenology and Practice* 11(1): 43-57.

Bauman, Zygmunt 2001. An Overture, or Welcome to Elusive Community. *Community: Seeking safety in an insecure world*. Cambridge: Blackwell Publishing, 1-6.

- Beckwith, Cary 2019. Who Belongs? How Status Influences the Experience of Gemeinschaft. *Social Psychology Quarterly* 82(1): 31–50.
- Bernard, Jessie 1973. *The sociology of community*. Glenview: Scott Foresman.
- Berry, Jeffery; Portney, Kenneth; Thomson, Ken 1993. *The rebirth of urban democracy*. Washington D.C: The Brookings Institution.
- Bell, Genevieve; Dourish, Paul 2011. Mobility and urbanism. *Divining a digital future: mess and mythology in ubiquitous computing*. Cambridge: MIT Press, 117-136.
- Belay, Elefeliou; Besufekad, Solomon, McCrickard, Scott 2016. Claims-to-Patterns Approach to Leverage Mobile Interaction Design for Low-Literacy Users. *Proceedings of the 7th Annual Symposium on Computing for Development, ACM DEV-7 2016*.
- Bertot, John Carlo; Jaeger, Paul T; Grimes, Justin M 2012. Promoting transparency and accountability through ICTs, social media, and collaborative e-government. *Transforming Government: People, Process and Policy* 6(1): 78-91.
- Beyer, Hugh; Holtzblatt Karen 2014. *Contextual Design: Evolved*. London: Morgan & Claypool Publishers.
- Bharadwaj, Ashish 2014. Is poverty the mother of crime? Empirical evidence on the impact of socioeconomic factors on crime in India. *Atlantic Review of Economics* 1, 2174-3835.
- Bhatt, Shephali 2020. Hello Neighbour! Building bonds in the time of social distancing. *The Economic Times*. Retrieved from: <https://economictimes.indiatimes.com/news/politics-and-nation/hello-neighbour-building-bonds-in-the-time-of-social-distancing/articleshow/75649655.cms?from=mdr>. 15.05.2021.
- Blanchard, Anita; Markus, Lynne 2004. The Experienced Characteristics Community: “Sense” of a Virtual and Processes. *The DATA BASE for Advances in Information Systems* 35(1): 65-79.
- Blokland, Talja 2008. Gardening with a Little Help from Your (Middle Class) Friends: Bridging Social Capital Across Race and Class in a Mixed Neighbourhood. In: Blokland, Talja; Savage, Mike (eds.), *Networked Urbanism*, 147-170.

- Bogdanova, Maria; Hoyler, Bob 2020. Hyperlocal grocery delivery sales surge during coronavirus. *Euromonitor International*. Retrieved from: <https://blog.euromonitor.com/hyperlocal-grocery-delivery-sales-surge-during-coronavirus-pandemic/> . 03.05.2021.
- Boden, Margaret 2016. Creativity in a nutshell. *Interalia Magazine*. Retrieved from: <https://www.interaliomag.org/articles/margaret-boden-creativity-in-a-nutshell/>. 07.04.2021.
- Bollinger, Ashley; Hur, Misun 2015. Neighborhood Associations and Their Strategic Actions to Enhance Residents' Neighborhood Satisfaction. *Nonprofit and Voluntary Sector Quarterly* 44(6): 1152–1172.
- Boyd, Danah 2011. Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications. In: Papacharissi, Zizi (ed.), *A Networked Self: Identity, Community, and Culture on Social Network Site*. New York: Routledge, 39-58.
- Bracken, Cheryl C; Casey, Mary F; Jeffres, Leo W; Jian, Guowei Jian 2009. The Impact of Third Places on Community Quality of Life. *Applied Research in Quality of Life* 4, 333-345.
- Bradley, Gunilla 2006. Theoretical perspective on the psychosocial and organizational life environment and ICT. *Social and Community Informatics: Humans on the Net*. New York: Routledge, 29-61.
- Bratteteig, Tone; Liestøl, Gunnar; Morrison, Andrew; Mörtberg, Christina; Stuedahl Dagny; Wagner, Ina 2010. Analytical perspectives. In: Bratteteig, Tone; Stuedahl Dagny; Wagner, Ina (eds.), *Exploring Digital Design*. New York: Springer, 55-105.
- Breustedt, Wiebke; Pickel, Susanne; Smolka, Theresia 2016. Measuring the quality of democracy. *International Political Science Review* 37(5): 645-655.
- Brint, Steven 2001. Gemeinschaft Revisited: A critique and reconstruction of the community concept. *Sociological Theory* 19(1): 1-23.
- Bulmer, Martin 1984. The organization of sociology by Park and Burgess. *The Chicago School of Sociology: Institutionalization, Diversity and Rise of Sociological Research*. Chicago: University of Chicago Press, 109-128.
- Burrow, Xtine; Mandiberg, Michael 2017. The metaphor of using graphics applications. *Digital Foundations: Introduction to Media Design with The Adobe Creative*

*Cloud*. Retrieved From:

<https://openoregon.pressbooks.pub/digitalfoundations/part/chapter-1-the-metaphor-of-using-graphics-applications/>. 06.04.2021.

- Burt, Robert 2001. Structural holes versus network closure as social capital. *Theory and Research*, 31-56.
- Cadigan, Rebecca; Koh, Howard 2008. Disaster, preparedness and social capital. In: Kawachi, Ichiro; Kim, Daniel; Subramanian, SV (eds.), *Social Capital and Health*. Berlin: Springer, 273-286.
- Campbell, Heather; Marshall, Robert 2000. Public Involvement in Planning: Looking Beyond the One to the Many. *International Planning Studies* 5(3): 321-344.
- Carroll, John; Sutcliffe, Alistair 1999. Designing claims for reuse in interactive systems design. *International Journal of Human-Computer Studies* 50, 213–241.
- Carroll, John; Kellogg, Wendy 1989. Artifact as theory-nexus: hermeneutics meets theory-based design. *SIGCHI Bull.* 20, SI (March 1989), 7–14.
- Casalegno, Federico 2006. Connected Memories in the Networked Digital Era: A Moving Paradigm. In: Purcell, Patrick (ed.), *Networked Neighbourhoods: The Connected Community in Context*. London: Springer,
- Cavanagh, Allison 2009. From Culture to Connection: Internet Community Studies. *Sociology Compass* 3(1): 1-15.
- Cawthon, Stephanie W; Johnson, Paige M; Garberoglio, Carrie Lou; Schoffstall, Sarah J. 2016. Role Models as Facilitators of Social Capital for Deaf Individuals: A Research Synthesis. *American Annals of the Deaf* 161(2): 115-127.
- Cerroni, Andrea 2015. Knowledge artifacts: when society objectifies itself in knowledge. *Proceedings of the 7th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management* 3, 429-435.
- Chandler, Daniel 2007. *Semiotics: The Basics*. New York: Routledge.
- Chase, Scott 2002. A model for user interaction in grammar-based design systems. *Automation in Construction* 11, 161-172.
- Chaskin, Robert 1999. Defining Community Capacity: A Framework and Implications from a Comprehensive Community Initiative. *Urban Affairs Association Annual Meeting (April 22-25, 1998)*.

- 2005. Democracy And Bureaucracy in a Community Planning Process. *Journal of Planning Education and Research* 24, 408-419.
- Chernozhukov, Victor; Kasahara, Hiroyuki; Schrimpf Paul 2020. Causal impact of masks, policies, behavior on early covid-19 pandemic in the U.S. *Journal of Econometrics* 220(1): 23-62.
- Chewar *et al.* 2004. Designing the Claims Reuse Library: Validating Classification Methods for Notification Systems. *ACMSE (April 2–3, 2004)*.
- Christoforou, Asimina 2013. On the identity of social capital and the social capital of identity. *Cambridge Journal of Economics* 37(4): 719-736.
- Chuang, Ying-Chih; Huang, Ya-Li; Tseng, Kuo-Chien; Yen, Chia-Hsin; Yang, Lin-hui 2015. Social Capital and Health-Protective Behavior Intentions in an Influenza Pandemic. *Plos One* 10(4).
- Churchman, Azra; Sadan, Elisheva 2003. Facilitating citizen participation: an experimental course for citizen participation advisors. Retrieved from: <http://cinefogoconference.pbworks.com/f/PN003%20Churchman-Sadan.pdf> 17.05.2021.
- Cho, Seongkyung; Mossberger, Karen; Selby, John David; Swindell, David 2021. Experimenting with Public Engagement Platforms in Local Government. *Urban Affairs Review* 57(3): 763–793.
- Cilliers, Elizelle J; Timmermans, Wim 2014. The importance of creative participatory planning in the public place-making process. *Environment and Planning B: Planning and Design* 41, 413–429.
- Claridge, Tristan 2014. What does it mean to build social capital? *Social Capital Research*. Retrieved from: <https://www.socialcapitalresearch.com/what-does-it-mean-to-build-social-capital/#:~:text=Building%20social%20capital%20can%20focus,a%20forest%20can%20be%20planted>. 23.03.2021.
- 2015. Coleman on social capital - rational-choice-approach. *Social Capital Research*. Retrieved from: <https://www.socialcapitalresearch.com/coleman-on-social-capital-rational-choice-approach/>. 01.03.2021.

- 2017. Social sanctions and reputation in the workplace. *Social Capital Research*. Retrieved from:  
<https://www.socialcapitalresearch.com/social-sanctions-reputation-in-workplace/#:~:text=Some%20examples%20of%20sanctions%20for,such%20as%20penalties%20and%20fines>. 07.03.2021.
- Cobley, Paul; Randviir, Anti 2010. Sociosemiotics. *The Routledge Companion to Semiotics*. New York: Routledge, 118-134.
- Coleman, James 1988a. Social capital in the creation of human capital. *American Journal of Sociology* 94, 95-120.
- 1988b. Creation and destruction of social capital: implications for the law. *Notre Dame Journal of Law, Ethics & Public Policy* 3(3): 376-404.
- 2000 [1999]. Social capital in the creation of human capital. In: Dasgupta, Partha; Serageldin, Ismail (eds.), *Social Capital: A Multifaceted Perspective*. Washington D.C: The International Bank of Reconstruction and Development, 6-12.
- Coleman, James; Greeley, Andrew; Hoffer, Thomas 1985. Achievement growth in public and catholic schools. *Sociology of Education* 58(2): 74-97.
- Coleman, Kimberly; Stern, Marc 2015. The Multidimensionality of Trust: Applications in Collaborative Natural Resource Management. *Society and Natural Resources* 28, 117-132.
- Cooper, Terry; Musso, Juliet Ann 1999. The potential for neighborhood council involvement in American metropolitan governance. *International Journal of Organizational Theory and Behavior* 1(2): 199-232.
- Cooper, Alan; Cronin, Dave; Reimann, Robert 2007. *About Face 3 The Essentials of Interaction Design*. Indianapolis: Wiley Publishing Inc.
- Corneliussen, Hilde; Walker Jill 2008. *Digital culture, play, and identity: A world of warcraft reader*. Cambridge: MIT Press.
- Crumlish, Christian; Malone, Erin 2009. *Designing Social Interfaces - Principles, Patterns, and Practices for Improving the User Experience*. Sebastopol: O'Reilly.
- Cutway, Adrienna 2020. NextDoor launches new map so neighbours can help each other during the coronavirus pandemic. *Click Orlando*. Retrieved from:

- <https://www.clickorlando.com/news/local/2020/03/18/nextdoor-launches-new-map-so-neighbors-can-help-each-other-during-the-coronavirus-pandemic/> . 05.03.2021.
- Dasgupta, Partha 2000 [1999]. Economic progress and the idea of social capital. In: Dasgupta, Partha; Serageldin, Ismail (eds.), *Social Capital: A Multifaceted Perspective*. Washington D.C: The International Bank of Reconstruction and Development, 325-401.
- Davis, Leslie; Parker, Kim 2019. A half-century after ‘Mister Rogers’ debut, 5 facts about neighbours in U.S. *Pew Research Center*. Retrieved from: <https://www.pewresearch.org/fact-tank/>. 12.04.2021.
- De Leon, Celia Martin 2008. Skopos and beyond: a critical theory of functionalism. *Target* 20(1): 1-28.
- DeFilippis, James 2001. The Myth of Social Capital in Community Development. *Housing Policy Debate* 12(4): 781-806.
- Delbatista, Dirk 1993. *There’s a Double Tongue: An Investigation into the translation of Shakespeare’s Wordplay, with special reference to Hamlet*. Amsterdam: Rodopi.
- Dellarocas, Chrysanthos 2010. Online reputation systems: how to design one that does what you need. *MIT Sloan Management Review*. Retrieved from: <https://sloanreview.mit.edu/article/online-reputation-systems-how-to-design-one-that-does-what-you-need/>19.03.2021.
- Ding, Wenzhi; Levine, Ross; Lin, Chen; Xie, Wensi 2020. Social Distancing and Social Capital: Why U.S. Counties Respond Differently to COVID-19. *SSRN Electronic Journal*.
- Durkheim, Emile 2013 [1893]. In: Lukes, Steven (ed.), Halls, W.D (trans.), *Division of Labor in Society*. London: Palgrave Macmillan.
- 2002 [1897]. In: Simpson, George (ed., trans.), Spaulding, John A (trans.), *Suicide*. New York: Routledge.
- Dusi, Nicola 2015. Intersemiotic translation: Theories, problems, analysis. *Semiotica* 206, 181-205.
- Eastman, Charles 2001. New Directions in Design Cognition: Studies of Representation and Recall. In: Eastman, Charles; McCracken, Mike; Newstetter, Wendy (eds.),



- Design Knowing and Learning: Cognition in Design Education*. Oxford: Elsevier Science Ltd., 147–198.
- Eco, Umberto; Siri Nergaard 2001[1998]. Semiotic approaches. In: Baker, M (ed.), *Routledge Encyclopedia of Translation*. London: Routledge, 218–222
- Edwards, Keith; Gilbert, Eric; Grevet, Catherine; Grinter, Rebecca; Masden, Christina 2014. Tensions in Scaling-up Community Social Media: A Multi-Neighborhood Study of Nextdoor. *CHI' 14: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. New York: Association for Computing Machinery, 3239-3248.
- Efimova, Lilia; Hendrick, Stephanie 2005. In Search for a Virtual Settlement: An Exploration of Weblog Community Boundaries. *Proceedings of the Communities & Technologies 2005 Conference*.
- Effrat, Marcia 1974. Approaches to community: conflicts and complementarities. *The Community: Approaches and Applications*. New York: Collier Macmillan Publishers, 1–32.
- Eghtesadi, Zahra; Salmani, Bahloul 2015. An Intersemiotic Approach towards Translation of Cover Designs in Retranslated Classic Novels. *Theory and Practice in Language Studies* 5(6): 1185-1191.
- Eikenes, Jon Olav; Morrison, Andrew 2010. Navimation: Exploring Time, Space & Motion in the Design of Screen-based Interfaces. *International Journal of Design* 4(1): 1-16.
- Ellwood, Charles 1909. The Origin of Society. *American Journal of Sociology* 15(3): 394-404.
- Ernest, Paul 2006. A Semiotic Perspective of Mathematical Activity: The Case of Number. *Educational Studies in Mathematics* 61 (1/ 2): 67-101.
- Eshkol, Alon; Eshkol, Batel 2017. Participatory planning in Israel: from theory to practice. *Planning in Israel*, 213-239.
- Fang. Yanqing 2019. The Realization of Mood through Interpersonal Metaphor in English Public Service Advertising Texts. *Advances in Social Science, Education and Humanities Research* 332, 136-140.

- Fernback, Jan; Thompson, Brad 1995. Virtual communities: abort, retry, failure? *Rheingold*. Retrieved from: <https://www.rheingold.com/texts/techpolitix/VCCivil.html>. 16.03.2021.
- Ferlander, Sara; Timms, Duncan 2007. Social capital and community building through the internet: A Swedish case study in a disadvantaged suburban area. *Sociological Research Online* 12(5): 1-17.
- Ferreira, Daniel Peixoto 2015. The Meaning Potential of Procedurality: initial considerations on procedural semiotic resources. *DARE: Collaborative at the London Knowledge Lab (UCL)*.
- Freitag, Sandria 1989. Introduction: local communities and the state historiography and methodology. *Collective Action and Community: Public arenas and the emergence of communalism in North India*. Berkeley: University of California Press, 3-18.
- Flap, Henk 2004. Creation and returns of social capital: A new research program. In: Flap, Henk; Volker, Beate (eds.), *Creation and Returns of Social Capital: A New Research Program*. New York: Routledge, 2-17.
- Fonseca, Valencia; Hogan, Joanne; Olsen, Marvin; Perlstadt, Harry 1989. Participation in neighborhood organizations. *Sociological Focus* 22(1).
- Gaeke, Melissa; Kitsuse, Alicia; Lincove, Evan; Musso, Juliet Ann; Salazar, Patricia 2002. Issues and Practices in Neighborhood Council Organizing: Community Case Studies. *The Neighborhood Participation Project*.
- Peter Gärdenfors 2004. Conceptual spaces as a framework for knowledge representation. *Mind and Matter* 2(2): 9-27.
- Gelders, Dave; Rotthier, Sabine; van der Meer, Toni G.L.A 2014. E-democracy: exploring the current stage of e-government. *Journal of Information Policy* 4, 489-506.
- Gerot, Linda; Wignell, Peter 1995. *Making Sense of Functional Grammar*. Cammeray: Antipodean Educational Enterprises.
- Ghoshal, Sumantra; Nahapiet, Janine 1998. Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review* 23(2): 242-266.
- Gibbons, Joseph 2020. Placing the relation of social media participation to neighborhood community connection. *Journal of Urban Affairs* 42(8): 1262-1277.

- Gibson, James 1979. *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.
- Gips, James; Stiny, George 1971. Shape Grammars and the Generative Specification of Painting and Sculpture. In: Petrocelli, O.R (ed.), *The Best Computer Papers of 1971*, 125-135.
- Girvan, Carina 2018. What is a virtual world? Definition and classification. *Education Tech Research Dev* 66:1087–1100.
- Goist, Park Dixon 1971. City and "Community": The Urban Theory of Robert Park. *American Quarterly* 23(1): 46-59.
- Gottlieb, Henrik 2017. Semiotics and translation. In: Malmkjær, Kirsten (ed.), *The Routledge Handbook of Translation Studies and Linguistics*. New York: Routledge, 45-63.
- Gourley, James 2013. *Terrorism and Temporality in the Works of Thomas Pynchon and Don DeLillo*. New York: Bloomsbury Publishing.
- Graif, Corina; Sampson, Robert 2009. Neighborhood Social Capital as Differential Social Organization Resident and Leadership Dimensions. *American Behavioral Scientist* 52(11): 1579-1605.
- Grootaert, Christiaan; Serageldin, Ismail 2000 [1999]. Defining social capital: an integrating view. In: Dasgupta, Partha; Serageldin, Ismail (eds.), *Social Capital: A Multifaceted Perspective*. Washington D.C: The International Bank of Reconstruction and Development, 40-59.
- Guo, Hang 2016. Lean but not mean UX: towards a spiral UX design model. In: Marcus, A (ed.), *Design, User Experience, and Usability: Design Thinking and Methods (DUXU 2016 Lecture Notes in Computer Science)* 9746, 26-33.
- Gurzick, David; Lutters, Wayne 2009. Towards a Design Theory for Online Communities. *DESRIST'09, May 7-8*.
- Hale, Sylvia 1995. *Controversies in Sociology: A Canadian Introduction 2*. Toronto: Pitman.
- Halliday, Michael 1973. *Explorations in the functions of language*. London: Edward Arnold.

- 1978. *Language as Social Semiotic: the social interpretation of language and meaning*. London: Arnold
- 2004 [1985]. *An introduction to functional grammar*. London: Hodder Arnold.
- Hampton, Keith; Wellman, Barry 1999. Netville online and offline: observing and surveying a wired suburb. *American Behavioral Scientist* 43(3): 475–492.
- Hepp, Andreas 2013 [2011]. In: Tribe, Keith (trans.), *Cultures of Mediatization*. Cambridge: Polity Press.
- Hillery, George 1955. Definitions of Community: Areas of Agreement. *Rural Sociology* 20, 111-123.
- Hirschman, Albert 1984. *Getting Ahead Collectively: Grassroots Experience in Latin America*. New York: Pergamon Press.
- Hodge, Robert; Kress, Gunther 1988. *Social Semiotics*. New York: Cornell University Press.
- Holman, Alison; Zimbardo, Philip 2009. The Social Language of Time: The Time Perspective–Social Network Connection. *Basic and Applied Social Psychology*.
- Horelli, Liisa 2002. A Methodology of Participatory Planning. In: Bechtel, Robert; Churchman, Azra (eds.), *Handbook of Environmental Psychology*. New York: John Wiley, 607-628.
- Hyde, Cheryl; Meyer, Megan 2004. Too Much of a “Good” Thing? Insular Neighborhood Associations, Nonreciprocal Civility, and the Promotion of Civic Health. *Nonprofit and Voluntary Sector Quarterly* 33(3): 77-96.
- Hyypä, Markku 2010. *Healthy Ties: Social Capital, Population Health and Survival*. New York: Springer.
- Iedema, Rick 2003. Multimodality, resemiotization: extending the analysis of discourse as multi-semiotic practice. *Visual Communication* 2(1), 29-57.
- Jagannath, J 2020. Celebs, RWA WhatsApp groups find place in Centre's Covid-19 vaccine rollout strategy. *Livemint*. Retrieved from: <https://www.livemint.com/news/india/celebs-rwa-whatsapp-groups-find-place-in-centre-s-covid-19-vaccine-rollout-strategy-11609421660473.html>. 03.01.2021.

- Jakobson, Roman 1959. On linguistic aspects of translation. In: Brower, Reuben (ed.), *On Translation*. Cambridge: Harvard University Press, 232-239.
- Jansma, Judith 2019. Culture in the Name of the People? Towards a typology of populism and culture. *Journal on Culture: Power and Society* 4, 119-132.
- Jankowski, Jakub 2015. How can culturally infused portuguese words be translated into polish/english? *Białostockie Archiwum Językowe*, 213-231.
- Johnson, Jeff 2021. Our perception is biased. *Designing with the Mind in Mind, third edition: Simple Guide to Understanding User Interface Design Guidelines*. Cambridge: Morgan Kaufmann, 1-15.
- Jones, Millermaier 1995. Understanding community in the information age. *CyberSociety: Computer-mediated communication and community*. California: Sage, 10-35.
- Jones, Quinton 1997. Virtual-Communities, Virtual Settlements & Cyber-Archaeology: a Theoretical Outline. *Journal of Computer-Mediated Communication* 3(3). Retrieved from:  
<https://academic.oup.com/jcmc/article/3/3/JCMC331/4584363#99398017>.  
 16.03.2021.
- Jones, Matt; Marsden, Gary 2006. Developing effective mobile applications. *Mobile Interaction Design*. Wiley, 91-120.
- Jurgenson, Nathan 2012. When atoms meet bits: social media, the mobile web and augmented revolution. *Future Internet* 4(1): 83–91.
- Kao, Grace 2004. Social Capital and Its Relevance to Minority and Immigrant Populations. *Sociology of Education* 77, 172-183.
- Kaviraj, Sudipta 2010. *The imaginary institution of India: Politics and Ideas*. New York: Columbia University Press.
- Kayahara, Jennifer 2006. Community and Communication: A Rounded Perspective. In: Purcell, Patrick (ed.), *Networked Neighbourhoods: The Connected Community in Context*. London: Springer, 127-158.
- Kersting, Norbert 2012. The future of electronic democracy. In: Kersting, Norbert (ed.), *Electronic Democracy*. Berlin: Barbara Budrich Publishers, 11-54
- Kilpatrick, Sue; Bell, Rowena; Falk, Ian 1999. The role of group learning in building social capital. *Journal of Vocational Education and Training* 51(1): 129-144.

- Kimmel, Michael 2013. Intersubjectivity at Close Quarters: How Dancers of Tango Argentino Use Imagery for Interaction and Improvisation. *Journal of Cognitive Semiotics* IV(1): 76-124.
- Klandermans, Bert 1984. Mobilization and Participation: Social - Psychological Expansions of Resource Mobilization Theory. *American Sociological Review* 49(5): 583-600.
- Knoke, David; Wood, James 1981. *Organized for Action: Commitment in Voluntary Associations*. New Brunswick: Rutgers University Press.
- Koeze, Ella; Popper, Nathaniel 2020. The virus changed the way we internet. *New York Times*. Retrieved from:  
<https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html>. 12.04.2021.
- Korn, Matthias; Mosconi, Gaia; Pipek, Volkmar; Reuter, Christian; Telia, Maurizio; Tolmie, Peter 2017. From Facebook to the Neighbourhood: Infrastructuring of Hybrid Community Engagement. *Computer Supported Cooperative Work* 26, 959-1003.
- Kollock, Peter; Smith, Marc 1996. Managing the Virtual Commons: Cooperation and Conflict in Computer Communities. In: Benjamins, John (ed.), *Computer-Mediated Communication: Linguistic, Social, and Cross-Cultural Perspectives*, 109-128. --1999. *Communities in Cyberspace*. London: Routledge.
- Kourdis, Evangelos. Semiotics of Translation: An Interdisciplinary Approach to Translation. *International Handbook of Semiotics*, 303-320.
- Krek, Alenka 2005. Rational Ignorance of the Citizens in Public Participatory Planning. *Conference proceedings of CORP 2005*.
- Krishna, Anirudh 2000 [1999]. Creating and harnessing social capital. In: Dasgupta, Partha; Serageldin, Ismail (eds.), *Social Capital: A Multifaceted Perspective*. Washington D.C: The International Bank of Reconstruction and Development, 71-94.
- Kraut, Robert; Resnick, Paul 2011. *Building Successful Online Communities: Evidence-Based Social Design*. Cambridge: MIT Press.

- Kunde, Brian 1986. A brief history of word processing. *Stanford University*. Retrieved From: <https://web.stanford.edu/~bkunde/fb-press/articles/wdprhist.html>. 06.04.2021.
- Kunkhet, Arus 2015. *Harmonized Shape Grammar in Design Practice*. Lambert Academic Publishing.
- Kurwa, Rahim 2019. Building the Digitally Gated Community: The Case of Nextdoor. *Surveillance & Society* 17(½): 111-117.
- Lakoff, George 1993. The contemporary theory of metaphor. In: Ortony, Andrew (ed.), *Metaphor and Thought 2ed*. Cambridge: Cambridge University Press, 202-251.
- Lambright, Katie 2019. Digital Redlining: The Nextdoor App and the Neighborhood of Make-Believe. *Cultural Critique* 103, 84-90.
- Lausen, Georg; Ziegler, Cai-Nicolas 2004. Paradigms for Decentralized Social Filtering Exploiting Trust Network Structure. In: Meersman, Robert; Tari, Zahir (eds.), *On the Move to Meaningful Internet Systems 2004: CoopIS, DOA, and ODBASE. Lecture notes in Computer Science* 3291. Berlin: Springer, 840-859.
- Lave, Jean; Wenger, Etienne 1991. Legitimate Peripheral Participation in Communities of Practice. *Situated Learning: Legitimate Peripheral Participation*. New York: Cambridge University Press, 89-118.
- Lawson, Bryan 1990. Introduction *How Designers Think: The Design Process Demystified 2ed*. Oxford: Butterworth Architecture, 1-10.
- Lawson, Clive 2017. *Technology and Isolation*. New Delhi: Cambridge University Press.
- Lelieveldt, Herman 2004. Helping citizens help themselves: Neighborhood Improvement Programs and the Impact of Social Networks, Trust, and Norms on Neighborhood Oriented Forms of Participation. *Urban Affairs Review* 39(5): 531-551.
- Lemke, Jay 2002. Travels in hypermodality. *Visual Communication* 1(3): 299-325.  
 -- 2005. Place, pace & meaning: Multimedia chronotopes. In: Jones, Rodney; Norris, Sigrid (eds.), *Discourse in action: Introducing Mediated Discourse Analysis*. London: Routledge, 110-112.
- Levý, Jiří 2018 [1967]. Translation as a decision process. *To honor Roman Jakobson : essays on the occasion of his 70. birthday, 11. October 1966*. Berlin, Boston: De Gruyter Mouton, 1171-1182.

- Lewis, Clayton; Reiman, John 1993. *Task-Centered User Interface Design*. Retrieved from: <http://hcibib.org/tcuid/tcuid.pdf>. 04.04.2021.
- Li, Hui; Cooper, Terry L; Wen, Bo 2019. What Makes Neighborhood Associations Effective in Urban Governance? Evidence From Neighborhood Council Boards in Los Angeles. *American Review of Public Administration* 49(8): 931–943.
- Lisowski, Craig 2020. Welcoming Neighborland to the Nextdoor family. *Nextdoor*. Retrieved from: <https://blog.nextdoor.com/2020/04/14/welcoming-neighborland-to-the-nextdoor-family/>. 17.05.2021.
- Liu, Geoffrey 2006 [1999]. Virtual community presence in internet relay chatting. *Computer Mediated Communication* 5(1).
- Liu, Jiang; Tang, Jian; Zhao, Yuxiang; Zhu, Qinghua 2013. Conceptualizing perceived affordances in social media interaction design. *ASLIB Proceedings* 65(3): 289-302.
- Lockard, J. 1997. Progressive politics, electronic individualism and the myth of the virtual community. *Internet culture*. New York: Routledge, 219-232.
- Lotman, Yuri M. 1990. *Universe of the Mind: A Semiotic Theory of Culture*. London: I. B. Tauris.
- Louhema, Karoliina; Zlatev, Jordan; Graziano, Maria; van de Weijer, Joost 2019. Translating from monosemiotic to polysemiotic narratives: A study of Finnish speech and gestures. *Sign Systems Studies* 47(3/4): 480–525.
- Lowgren, Jonas; Stolterman, Eric 2004. *Thoughtful Interaction Design*. Cambridge: MIT Press, 1-30.
- Lukes, Steven 1985 [1973]. Introduction. *Emile Durkheim, His Life and Work: A Historical and Critical Study*. Stanford: Stanford University Press, 1-34.
- Makridis, Christos; Wu, Cary 2021. How social capital helps communities weather the COVID-19 pandemic. *PLoS ONE* 16(1).
- Manning, Paul 2019. Free the code, free the world: The chronotopic “worldness” of the virtual world of Ryzom. *Language and Communication*, 1-14.
- Marbun; Yanti, Lidia April 2017. Process Types of Transitivity System in the National Geographic’s Articles. *The Episteme Journal Of Linguistic*, 1-25.



- Markiewicz, Ewa 2019. Third Places in the era of virtual communities. *Studia Periegetica* 4(28): 9-21.
- Masden, Christina; Grevet, Catherine; Grinter, Rebecca; Gilbert, Eric; Edwards, Keith 2014. Tensions in Scaling-up Community Social Media: A Multi-Neighborhood Study of Nextdoor. *CHI 2014*, 3239-3248.
- Massey, Douglas; Denton, Nancy 1993. *American Apartheid*. Cambridge: Harvard University Press.
- Mattessich, Paul 2009. Social capital and community building. In: Phillips, Rhonda; Pittman, Robert (eds.), *An Introduction to Community Development*. New York: Routledge, 49-52.
- Matthiessen, Christian 1989. Introduction to Functional Grammar by M. A. K. Halliday. *Language* 65(4): 862-871.
- May, J 2001. Human-computer interaction. *International Encyclopedia of the Social & Behavioral Sciences*, 7031-7035.
- Mehawesh, Mohammad Issa 2014. The Socio-Semiotic Theory of Language and Translation: An overview. *International Journal of Languages and Literatures* 2(2): 251-269.
- Mergel, Ines 2013. A framework for interpreting social media interactions in the public sector. *Government Information Quarterly* 30(4): 327-334.
- Millen, David; Patterson, John 2003. Identity disclosure and the creation of social capital. *CHI '03 extended abstracts*.
- Miller, Carolyn 1984. Genre as Social Action. *Quarterly Journal of Speech* 70, 151–167.
- Mosconi, Gaia; Korn, Matthias; Reuter, Christian; Tolmie, Peter; Teli, Maurizio; Pipek, Volkmar 2017. From Facebook to the Neighbourhood: Infrastructuring of Hybrid Community Engagement. *Computer Supported Cooperative Work (CSCW)* 26, 959-1003.
- Nadin, Mihai 1988. Interface design: a semiotic paradigm. *Semiotica* 69(¾): 269-302.
- Narula, Smita 2008. Equal by Law, Unequal by Caste: The Untouchable Condition in Critical Race Perspective. *Wis. Int'l L.J* 26(255).
- Newman, Oscar 1996. Defensible space principles. *Creating defensible space*. Washington DC: U.S. Department of Housing and Urban Development, 9-28.

- Norman, Don 2013. The complexity of modern devices. *The Design of Everyday Things*. New York: Basic Books, 4-8.
- Nurhayati, Iis Kurnia; Rahmasari, Gartika 2019. Implicit participants in mental process: a functional grammar analysis. *Journal of Applied Linguistics and Literacy* 3(2): 153-160.
- Obsiye, Mohamed; Tili, Anwar 2013. What Is Coleman's social capital the name of? A critique of a not very social capital. *Critical Sociology* 40(4): 551-574.
- O'Halloran, Kay; Tan, Sabine; Wignell, Peter 2016. Intersemiotic translation as resemiotization: a multimodal perspective. *Signata: Annals of Semiotics*. Retrieved from: <https://journals.openedition.org/signata/1223?lang=en>. 08.04.2021.
- Oldenburg, Ray 1999. The character of third places. *The great good place: Cafes, coffee shops, bookstores, bars, hair salons, and other hangouts at the heart of a community* 3rd ed. New York: Marlowe & Company, 20-43.
- Olson, Mancur 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Harvard University Press.
- Olteanu, Constanta 2017. Reflection-for-action and the choice or design of examples in the teaching of mathematics. *Mathematics Education Research Journal* 29:349–367.
- Osatuyi, Babajide 2013. Information sharing on social media sites. *Computers in Human Behavior* 29(6), 2622–2631.
- Oxman, Rivka 2000. Design media for the cognitive designer. *Automation in Construction* 9, 337–346.
- Parikh, Jay; Schultz, Alex 2020. Keeping our services stable during the covid-19 outbreak. *Facebook*. Retrieved from: <https://about.fb.com/news/2020/03/keeping-our-apps-stable-during-covid-19/> . 03.05.2021.
- Payne, Will 2017. Welcome to the polygon: Contested digital neighborhoods and spatialized segregation on Nextdoor. *Computational Culture: A Journal of Software Studies* 6, 1-43.
- Peters, Bernhard 2005. Public discourse, identity and the problem of democratic legitimacy. In: Eriksen, Erik Oddvar (ed.), *Making the European Polity: Reflexive integration in the EU*. New York: Routledge, 84-124.

- Peterson, Jon 2017. User research when you can't talk to your users. *A List Apart*  
Retrieved from:  
<https://alistapart.com/article/user-research-when-you-cant-talk-to-your-users/>.  
17.05.2021.
- Petrilli, Susan; Ponzio, Augusto 2012. Iconicity, otherness and translation. *Chinese Semiotic Studies* 7(1): 11-26.
- Pierroux, Palmyre 2018. Learning and engagement in museum mediascapes.
- Pontikakis, Elissavet; Navratil, Gerhard 2006. Physical vs. Web space -- similarities and differences. In: Elmes, Gregory; Kainz, Wolfgang; Riedel, Andreas (eds.), *Progress in Spatial Data Handling*, 17-26.
- Popow, Victor 2018. *A Conceptual Application of Bakhtin's Dialogic Discourse to Information and Interaction Design of Social Media*. [PHD Thesis] Baltimore: University of Baltimore.
- Popping, Roel 2017. Online tools for content analysis. In: Blank, Grant; Fielding, Nigel; Lee, Raymond (eds.), *The Sage Handbook of Online Research Methods*. London: Sage, 329-343.
- Putnam, Robert 1993. *Making Democracy Work. Civic Tradition in Modern Italy*. Princeton: Princeton University Press.
- 1995. Bowling alone: America's declining social capital. *Journal of Democracy* 6(1): 65-78.
- 1996. The Strange Disappearance of Civic America. *Policy: A Journal of Public Policy and Ideas* 12(1): 3-15.
- 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.
- Reiß, Katharina 2000 [1981]. Type, kind and individuality of text: decision making in translation. In: Kitron, Suzan. *Poetics Today* 2(4): 121-131.
- Reiß, Katharina; Vermeer, Hans J 2014 [1984]. The priority of purpose. In: Dudenhöfer, Marina; Nord, Christiane (trans.), *Towards a General Theory of Translational Action: Skopos Theory Explained*. New York: Routledge, 85-93.

- Riesman, David; Glazer, Nathan; Denney, Reuel 1969. Some types of character and society. *The Lonely Crowd A study of the changing American character*. New York: Yale University Press, 3-28.
- Remm, Tiit 2017. Semiotic Space and Boundaries Between Social Constructions and Semiotic Universals. *New Semiotics Between Tradition and Innovation (Proceedings of the 12th World Congress of the IASS/AIS. New Bulgarian University, 16-20 September 2014)*. NBU Publishing House, 517-525.
- Rheingold, Howard 1993. *The Virtual Community: Homesteading on The Electronic Frontier*. Reading: Addison-Wesley.
- 2006. Social Networks and the Nature of Communities. In: Purcell, Patrick (ed.), *Networked Neighbourhoods: The Connected Community in Context*, 47-76.
- Riss, Uwe; Magenheim, Johannes; Reinhardt, Wolfgang; Nelkner, Tobias; Hinkelmann, Knut 2011. Added Value of Sociofact Analysis for Business Agility. *Artificial Intelligence for Business Agility — Papers from the AAAI 2011 Spring Symposium (SS-11-03)*, 54-66.
- Rocco, Lorenzo; Suhrcke, Marc 2012. Is social capital good for health? A European perspective. *WHO Regional Office for Europe*.
- Romania, Vincenzo 2020. Interactional anomie? Imaging social distance after covid-19: A Goffmanian perspective. *Sociological: Society after Covid-19* 14(1): 51-66.
- Rothstein, Bo; Stolle, Dietlind 2008. The State and Social Capital: An Institutional Theory of Generalized Trust. *Comparative Politics* 40(4): 441-459.
- Rothschild-Whitt, Joyce 1979. The Collectivist Organization: An Alternative to Rational-Bureaucratic Models. *American Sociological Review* 44(4): 509-527.
- Schäffner, Christina 2003. Third ways and new centres: Ideological unity or difference? In: Calzada-Pérez, Perez (ed.) *Apropos of ideology*. Manchester: St. Jerome, 23-42.
- Scheller, Daniel; Yerena, Anaid 2018. Neighborhood Concerns and Mobilization Patterns of Homeowners and Neighborhood Associations. *Journal of Public Management & Social Policy*. 82-121.
- Schneider, Jo Anne 2017. *Social Capital, Community and Place: A Primer*. Chrysalis Collaborations.

- Schmidt, Albrecht 2000. Implicit computer interaction through context. *Personal Technologies* 4, 191-199.
- Schön, Donald 1983. *The Reflective Practitioner*. New York: Ashgate.
- Sharples, Mike 1996. An Introduction to Human-Computer Interaction. In: Boden, M (ed.), *Artificial Intelligence*, Academic Press, 293–323.
- Shibutani, Tomatsu 1955. Reference groups as perspectives. *American Journal of Sociology* 60(6): 562-569.
- Simmel, Georg 1949. The sociology of sociability. *American Journal of Sociology*, 254-261.
- 1950 [1917]. In: Wolff, K (ed.), *The Metropolis and Mental Life*. Glencoe: Free Press.
- 1955. The web of group affiliations. In: Bendix, Reinhard; Wolff, Kurt (trans.), *Conflict and the web of group-affiliations*. New York: Free Press.
- Singh, Manish 2020. Google to shut down its India-focused Q&A app Neighbourly. *TechCrunch*. Retrieved from: <https://techcrunch.com/2020/04/01/google-to-shut-down-its-india-focused-qa-app-neighbourly/>. 12.04.2021.
- Skjaeveland, Oddvar; Garling, Tommy; Maeland, John 1996. A multi-dimensional measure of neighbouring, *American Journal of Community Psychology* 24, 413–435.
- Smith, David 1997. Grassroots associations are important: Some theory and a review of the impact literature. *Nonprofit and Voluntary Sector Quarterly* 26(3): 269-306.
- Sonntag, Daniel; Deru, Matthieu; Bergweiler, Simon 2009. Design and Implementation of Combined Mobile and Touchscreen-based Multimodal Web 3.0 Interfaces. *Proceedings of the 2009 International Conference on Artificial Intelligence, ICAI July 13-16, 2009, Las Vegas Nevada, USA*, 2, 974-979.
- Stillar, Glenn 1998. *Analyzing Everyday Texts*. New Delhi: Sage Publications.
- Tacon, Richard 2016. The Organizational Embeddedness of Social Capital: A Comparative Case Study of Two Voluntary Organizations. *Journal of Economic Issues*.

- Tang, Kok Sing; Delgado, Cesar; Moje, Elizabeth 2014. An integrative framework for the analysis of multiple and multimodal representations for meaning-making in science education. *Science Education* 98(2): 305-326.
- Thompson, E.P 1966. *The Making of the English Working Class*. New York: Vintage Books.
- Tiwari, Sanjib; Lane, M; Alam; Khorshed 2019. Do social networking sites build and maintain social capital online in rural communities. *Journal of Rural Studies* 66, 1-10.
- Tönnies, Ferdinand 1957 [1887a]. In: Loomis, Charles (ed., trans.), *Community and Society: Gemeinschaft und Gesellschaft*. Lansing: Michigan State Press.  
-- 1887b [2001]. In: Harris, Jose (ed.) Harris, Jose; Hollis, Margaret (trans.), *Community and Civil Society*. Cambridge: Cambridge University Press, 15-176.
- Torop, Peeter 2000. Intersemiosis and intersemiotic translation. *European Journal for Semiotic Studies* 12. 71–100.
- Torsvik, Gaute 2000. Social capital and development: a plea for the mechanisms. *Rationality and Society* 12(4): 451-476.
- Toury, Gideon 1986. Translation. In: Sebeok, Thomas (ed.), *Encyclopedic Dictionary of Semiotics, vol. 2*. Berlin: Mouton de Gruyter, 1107–1124.
- Trætteberg, Hallvard; van Weile, Martijn 2000. Interaction patterns in user interfaces. *PLoP Conference*. Retrieved from:  
<http://www.uml.org.cn/jiaohu/pdf/PLoP2k-Weile.pdf>. 04.04.2021.
- Trocchianesi, Raffaella; Pirola, Matteo 2017. Metaphorical spaces. The art used by designers to explore, experiment and express concepts of Interiors. *The Design Journal* 20, 261-272.
- Upadhyya, Carol 1998. Conceptualising the Concept of Community in Indian Social Science: An anthropological perspective. *National Workshop on Community and Identities: Interrogating contemporary discourses in India*.
- Unruh, David 1980. The nature of social worlds. *The Pacific Sociological Review* 23(3): 271-296.

- Van Deth, Jan 2003. Measuring social capital: orthodoxies and continuing controversies. *International Journal of Social Research Methodology: Theory and Practice* 6(1): 79-92.
- Van der Veer, Gerrit C; van Welie, Martijn; Ellens, Anton. Patterns as Tools for UserInterface Design. In: Vanderdonckt, Jean; Farenc, Christelle (eds.), *Tools for Working with Guidelines*. London: Springer-Verlag, 313-314.
- Van Leuwen, Theo 2005. *Introducing Social Semiotics*. New York: Routledge.
- Vannini, Phillip 2007. Social Semiotics and Fieldwork Method and Analytics. *Qualitative Inquiry* 13(1): 113-140.
- Veinot, Tiffany; Williams, Kate 2012. Following the “Community” Thread From Sociology to Information Behavior and Informatics: Uncovering Theoretical Continuities and Research Opportunities. *Journal of The American Society for Information Science and Technology* 63(5): 847-864.
- Vogel, Pascal; Jurcevic, Natalija; Meyer-Blankart, Corvin 2019. Healthy, active and connected: towards designing an age-friendly digital neighborhood platform. *Twenty-Seventh European Conference on Information Systems (ECIS2019)*.
- Volosinov, Valentin 1973. *Marxism and the philosophy of language*. New York: Seminar Press.
- Wade, Robert 1994. The social response to irrigation. *Village Republics: Economic Conditions for Collective Action in South India*. San Francisco: Institute for Contemporary Studies Press, 72-96.
- Weber, Max 1978. *Economy and Society: An Outline of Interpretive Sociology*. Berkeley: University of California Press.
- Weinreich, Frank 1997. Establishing a point of view toward virtual communities. *Computer-Mediated Communication* 3(2). Retrieved from: <https://www.december.com/cmc/mag/1997/feb/wein.html>. 21.10.2020.
- Weibelzahl, Stephan; Weber, Gerhard 2002. Advantages, Opportunities, and Limits of Empirical Evaluations: Evaluating Adaptive Systems.
- Wellman, Barry 1999. In: Wellman, Barry (ed.), *Networks in the GlobalVillage: Life in Contemporary Communities*. Boulder: Westview Press, xi–xxiv.

- Williams, Jo 2006. Designing Neighbourhoods for Social Interaction: The Case of Cohousing. *Journal of Urban Design* 10(2): 195-227.
- Woolcock, Michael 1998. Social capital and economic development: toward a theoretical synthesis and policy framework. *Theory and Society* 27, 151–208.
- Wu, Cary; Wilkes, Rima; Fairbrother, Malcolm; Giordano Giuseppe 2020. Social capital, trust, and state coronavirus testing. *Contexts*.
- Ye, Qiang; Fang, Bin; He, Wei; Hsieh, J.J. Po-An 2012. Can Social Capital be Transferred Cross the Boundary of the Real Can Social Capital be Transferred Cross the Boundary of the Real and Virtual Worlds? An Empirical Investigation of Twitter. *Journal of Electronic Commerce Research* 13(2): 145-156.
- Yair, Gad 2008. Insecurity, Conformity and Community James Coleman’s Latent Theoretical Model of Action. *European Journal of Social Theory* 11(1): 51–70.
2011. *Street Fight Mag*. Retrieved from:  
<https://streetfightmag.com/2011/08/03/neighborland-helps-citizens-share-ideas-and-shape-their-community/#.YKIEYagzbiU>. 17.05.2021.
2013. Social Street: from virtual to real to virtuous. *Social Street*. Retrieved from:  
<http://www.socialstreet.it/>. 15.05.2021.
- 2020a. Vital surveillances: the epidemiological characteristics of an outbreak of 2019 Novel Coronavirus Diseases (COVID-19) - China. *CCDC Weekly*. Retrieved from:  
<http://weekly.chinacdc.cn/en/article/id/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51>. 21.02.2021.
- 2020b. Covid-19 barometer: consumer attitudes, media habits and expectations. *Kantar*. Retrieved from:  
<https://www.kantar.com/Inspiration/Coronavirus/COVID-19-Barometer-Consumer-attitudes-media-habits-and-expectations> . 05.03.2021.
- 2020c. WhatsApp sees 40% increase in usage in time of Coronavirus pandemic. *India TV News*. Retrieved from:  
<https://www.indiatvnews.com/technology/news-whatsapp-usage-surges-amid-coronavirus-lockdown-602266>. 15.05.2021.



**Annex 1: Table 2. summary of identified design claims**

<b>Design Claim Library: lexical rules</b>	
1	By fostering democracy through participatory planning, a neighborhood can build social capital.
2	To ensure a quality of democracy be maintained, there must be transparency in decisions, alternative sources of information provided, and a sense of accountability.
3	Revealing different dimensions of an individual’s real identity can lead to more trustworthy exchanges of social capital.
4	A medium sized neighborhood is most likely to promote social interactions, as residents will know other residents, but also have privacy.
5	To create a space for communication and interaction between members, the conditions for being considered a third place must be fulfilled.
6	Building semi-private spaces can act as buffer zones to create interaction with a higher degree of privacy and territorial control than the public place.
7	Opportunities for surveillance allows neighbors to see who they would like to interact with.
8	Defining a social goal with common objectives can lead to more cooperation
9	Insecurity or uncertainty can lead to more goal-oriented interaction
<b>Design Claim Library: grammar rules</b>	
10	If some users have more power than others then more trustworthy relationships will form, and the community will know how to function.
11	If partnerships with institutions exist then more trustworthy actions will occur and the community will know how to function.
12	Formal rules enforced by an external authority increase willingness to exchange messages of social capital.
13	If all members can view an individual’s actions, they are more likely to conduct trustworthy actions due to informal rules.
14	If mutual acquaintances observe actions through a reputation system then a user is more likely to conduct interactions appropriately.

15	Presence of role models can facilitate messages of social capital being exchanged.
16	Expertise of community members must be made visible to facilitate messages of social capital.

**Annex 2: Table 3. organizing alternatives found for Nextdoor**

Type	Design Alternatives	Design Claims
Selection, sorting and highlighting	<ul style="list-style-type: none"> <li>● Sorting and selection of content based on:               <ul style="list-style-type: none"> <li>○ General message to neighbors</li> <li>○ Informing neighbors about crime</li> <li>○ Informing neighbours about safety-related</li> <li>○ Buy and selling of goods and services</li> <li>○ Urgent alerts in case of emergencies</li> <li>○ Lost and found related messages</li> <li>○ Providing or requesting recommendations</li> <li>○ Hosting of events</li> </ul> </li> <li>● Users can tag their posts according to a topic.</li> <li>● Users can tag their posts with a location pinned to the map.</li> <li>● Can filter local content topics based on individual interest.</li> <li>● A user can view other users' profiles</li> </ul>	<ul style="list-style-type: none"> <li>● 5</li> <li>● 7</li> </ul>
External communication	<ul style="list-style-type: none"> <li>● Partnerships with institutions               <ul style="list-style-type: none"> <li>○ Law enforcement</li> <li>○ Fire/EMS</li> <li>○ Emergency management agencies</li> <li>○ Local/regional administrative agencies</li> </ul> </li> <li>● Invite other neighbors to the app               <ul style="list-style-type: none"> <li>○ Use email addresses.</li> <li>○ Send letters with code to the physical address.</li> <li>○ Invite neighbors on Facebook.</li> </ul> </li> <li>● Integrations with local business platforms Handy, Homeadvisor, Thumbtack.</li> </ul>	<ul style="list-style-type: none"> <li>● 11</li> </ul>
Content, tasks and activities	<ul style="list-style-type: none"> <li>● Users can post on the public forum or message another user privately.</li> <li>● Users can post text, images, video &amp; documents in a discussion forum, but must provide following content:               <ul style="list-style-type: none"> <li>○ Subject</li> <li>○ Message</li> <li>○ Category</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● 2</li> <li>● 16</li> </ul>

	<ul style="list-style-type: none"> <li>○ Attachments if required.</li> <li>● Users can comment on other users' posts.</li> <li>● Users can like, react (like, thank, agree, laugh, wow, sad) on other users' posts.</li> <li>● Ability for neighborhood map to reflect context-based changes varying on situation (Halloween, Christmas, Covid help map).</li> <li>● Users can send an urgent alert to the entire neighborhood if they consider a situation to be affecting the safety of the neighborhood.</li> <li>● Receive local news occurring in the neighborhood through local news organizations.</li> </ul>	
Feedback	<ul style="list-style-type: none"> <li>● To survey sentiments of an issue, a poll can be created (upto 10 answers).</li> </ul>	<ul style="list-style-type: none"> <li>● 1</li> </ul>
Procedures and rules	<ul style="list-style-type: none"> <li>● Users must be verified to join a neighborhood.</li> <li>● To verify an applicant as a neighbor: <ul style="list-style-type: none"> <li>○ Phone billing address</li> <li>○ Invitation letter with code sent to physical address.</li> <li>○ Statement from bank, government agency, authorized insurer.</li> <li>○ Valid government issued identification.</li> <li>○ Rental or house agreement.</li> <li>○ Utility bill associated with address.</li> </ul> </li> <li>● Users cannot utilise aliases or pseudonymous</li> <li>● Users must display they real names</li> <li>● Users can choose to display address</li> <li>● Mutual acquaintances can observe all public interactions.</li> </ul>	<ul style="list-style-type: none"> <li>● 3</li> <li>● 14</li> </ul>
Community structure	<ul style="list-style-type: none"> <li>● Age 13 and over can join as members.</li> <li>● Medium community size based on geographical boundary drawn by distance-based algorithm through Google Maps.</li> <li>● Recommended maximum amount of households range between 750-1000.</li> <li>● Minimum amount of 10 members required in 21 days to become a permanently 'launched' neighborhood on the site.</li> <li>● Clustering into public subgroups based on an identified common interest.</li> <li>● Clustering into private subgroups based on moderator</li> </ul>	<ul style="list-style-type: none"> <li>● 4</li> </ul>

	<p>approval.</p> <ul style="list-style-type: none"> <li>● Degree of homogeneity dependent on the physical neighborhood.</li> </ul>	
Roles	<ul style="list-style-type: none"> <li>● Founding members of a new neighborhood on the app are given special capabilities, and become ‘leads’</li> <li>● Lead maintains and grows a neighbourhood.</li> <li>● Lead moderates conversations in a neighborhood.</li> <li>● Community reviewers as a set of members who create norms for their neighborhood. <ul style="list-style-type: none"> <li>○ Provided subset of capabilities leads have.</li> <li>○ Vote whether to keep or remove certain content.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● 10</li> </ul>
Access Controls	<ul style="list-style-type: none"> <li>● Leads have the power to: Vote to remove guideline violating messages. <ul style="list-style-type: none"> <li>○ Adjust neighborhood boundaries.</li> <li>○ Verify applicants as neighbors.</li> <li>○ Edit ‘about’ section of the neighborhood.</li> <li>○ Promote another member as ‘lead’.</li> </ul> </li> <li>● Most committed users can be made ‘lead’ and given the same special capabilities as founding members.</li> <li>● Not following Nextdoor guidelines can be grounds to remove a user.</li> </ul>	<ul style="list-style-type: none"> <li>● 10</li> </ul>
Framing	<ul style="list-style-type: none"> <li>● Boundary of neighborhood.</li> <li>● Naming of neighborhood.</li> <li>● Map design of the neighborhood.</li> <li>● Creation of unique neighborhood pages through US census data (open to public) indicating partnerships with institutions.</li> </ul>	

**Annex 3: Table 4. organizing alternatives found for Neighborland**

Type	Design Alternatives	Design Claims
Content, tasks and activities in the community	<ul style="list-style-type: none"> <li>● Ability to see all projects listed in their city by a public organization.</li> <li>● Detailed information of projects can be accessed by all.</li> <li>● Users provided the option to share ideas for projects.</li> <li>● Users can post text, images, video &amp; documents in a discussion forum.</li> <li>● Users can vote and comment on ideas they support.</li> <li>● Users can host and inform other users about events relating to a project.</li> <li>● All users are provided information from workshops and events held offline for a project.</li> <li>● Users can access all ideas relating to the question.</li> <li>● Users can search for ideas relating to a User ID.</li> <li>● Users can view detailed information about all actions for a selected idea.</li> <li>● Users can view detailed information about all comments about an idea.</li> <li>● Donations for projects can be collected.</li> <li>● Users can view other users' detailed information.</li> <li>● Users can view a list of friends of other members.</li> <li>● Ability to engage with all users through Google translations of available languages.</li> </ul>	<ul style="list-style-type: none"> <li>● 1</li> <li>● 2</li> <li>● 11</li> </ul>
Feedback	<ul style="list-style-type: none"> <li>● Civic-minded organizations can collect feedback from members based on ideas, votes, or comments.</li> <li>● Civic-minded organizations can create and publish single and multiple choice surveys.</li> <li>● Civic-minded organizations can use automated sentiment analysis tools, Google Analytics and Facebook Analytics.</li> </ul>	<ul style="list-style-type: none"> <li>● 1</li> <li>● 2</li> <li>● 11</li> </ul>
Roles, rules and procedures	<ul style="list-style-type: none"> <li>● Provide written rules and guidelines for interacting.</li> <li>● Civic-minded organization facilitates and moderates conversations.</li> </ul>	<ul style="list-style-type: none"> <li>● 12</li> </ul>

Access Controls	<ul style="list-style-type: none"> <li>● Civic-minded organizations create projects to improve a community.</li> <li>● Civic-minded organizations set goals and objectives of the projects.</li> <li>● Select feedback tools necessary for the project.</li> </ul>	● 10
Selection, sorting and highlighting	<ul style="list-style-type: none"> <li>● Projects, ideas and actions sorted based on map renders within a specific radius or nearest point of location.</li> <li>● Projects, ideas and actions sorted by topic of interest.</li> <li>● Users select projects they want to participate in.</li> </ul>	● 8
Community structure	<ul style="list-style-type: none"> <li>● To access the site users must identify their pincode, city and neighbourhood name.</li> <li>● Base map of google used to determine boundaries.</li> <li>● Users must be over the age of 13.</li> <li>● Clustering into groups based on an identified common goal in a neighbourhood defined by civic-organization.</li> <li>● Clustering into subgroups in a project based on interest in a particular idea of another community member.</li> <li>● Degree of homogeneity dependent on the city/county/region and respective project.</li> </ul>	● 4
External communication	<ul style="list-style-type: none"> <li>● Projects, ideas, and actions can be shared through other social media sites (Facebook, Twitter).</li> <li>● Feedback can be shared through Facebook, Twitter, Google.</li> <li>● Users can receive phone calls and text messages for further insight collection.</li> <li>● Automated email notifications for all project-following members about milestone achievement updates.</li> </ul>	● 4
Framing	<ul style="list-style-type: none"> <li>● Visualization tool of map</li> <li>● Different projects through distinctly identified (name, visual logo, description) civic-minded organizations.</li> <li>● Theme pages available to visually reflect the project's identity.</li> </ul>	

	<ul style="list-style-type: none"><li>• Summary of the project described.</li></ul>	
--	---	--

#### **Annex 4: Content-analysis results**

Figure 2: Pie chart indicating percentage of tags identified per category



## Annex 4: Content-analysis results

Figure 2: Pie chart indicating percentage of tags identified per category

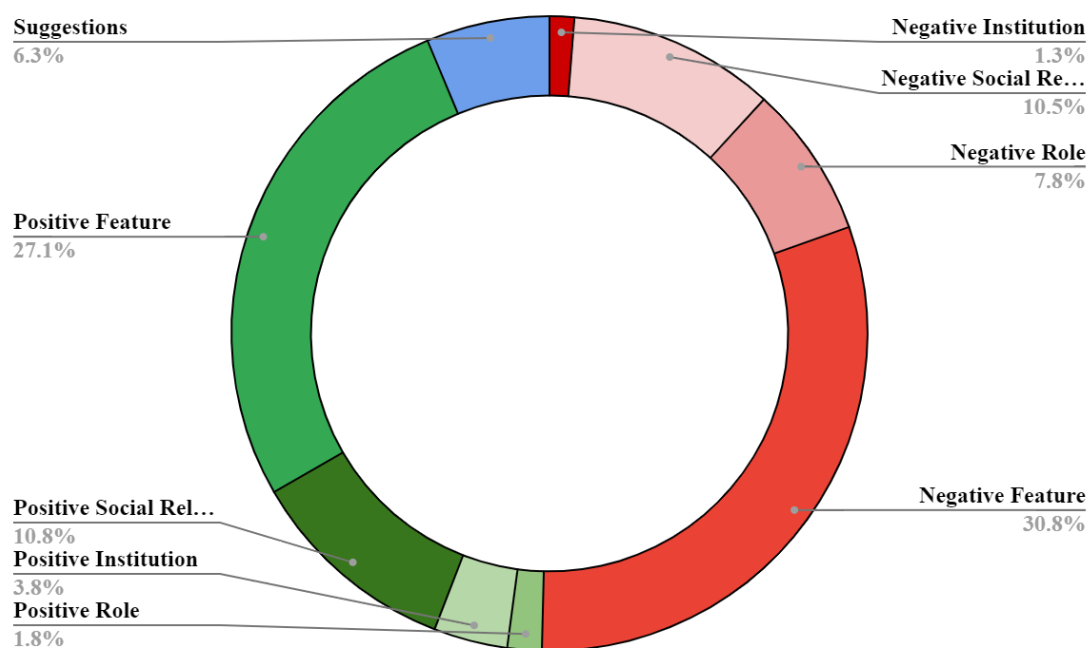


Table 5: Total positive and negative tags identified per category.

Category Tag	Positive	Negative	Total
Feature	108	123	231
Social Relations	43	42	85
Role	7	31	38
Partnership with institution	15	5	20
Suggestions	25 ( <i>considered as neutral</i> )		25
Total	173 ( <i>excluding suggestions</i> )	201 ( <i>excluding suggestions</i> )	399

## **Luues naabruskonnale kogukonda: intersemiootilise tõlke kasutamine rakendusepõhises interaktsioonidisainis**

### **Kokkuvõte**

Selle lõputöö kaugem eesmärk on luua India naabruskondadele suhtlemiseks ja läbi käimiseks virtuaalne asula. Selle eesmärk on aidata füüsilistel naabruskondadel muutuda sotsiaalset kapitali loovateks kogukondadeks, kus on tihedad suhted naabrite vahel. Selle saavutamiseks rekonstrueerin kahe naabruskondadele ja kogukonnaloomele keskenduva juba olemasoleva virtuaalse asula kujundusprotsessid. Uurides disainerite valikuid, loodan luua kavandi oma loodava rakenduse jaoks.

Lõputöö koosneb neljast põhilisest sisuosast: (1) uurin, kuidas disainerid saavad tuua mustreid füüsilisest maailmast virtuaalsesse maailma, (2) tuvastan füüsilisest maailmast pärinevad suhtlemismustrid, mis viivad sotsiaalse kapitali tootmisele, (3) määran meetodid Neighborland'i ja Nextdoor'i disainiprotsessi rekonstrueerimiseks ja hindamiseks ning (4) rekonstrueerin ja hindad mõlema rakenduse kujundusprotsessi, et luua oma rakenduse kavand.

Esimese osa 'kuidas' vastamiseks uurin disainiprotsessi väitest-mustriks lähenemist. Selles teeb disainer esmalt kindlaks rakenduse eesmärgi ja koostab visiooni selle põhjal, kuidas see eesmärk füüsilises ruumis saavutatakse. Seejärel loob ta grammatiliste reeglite kogumi, mis põhineb füüsilisest ruumist pärit ennustavatel väidetest. Lõpuks täpsustatakse väidete lahendusi varem virtuaalses ruumis kasutatud mustrite kaudu. Selle protsessi igas etapis kasutab disainer intersemiootilist tõlget nii ennetava tööriistana virtuaalses maailmas liikumiseks kui ka generatiivse vahendina füüsilises maailmas tekkinud lünkade täitmiseks.

Järgmises osas uurin sotsiaalset kapitali ning kogukonnaga tegelevaid teooriaid ja empiirilisi uurimusi, et välja selgitada ennustavaid väiteid: (1) elemendid, mis muudavad asula kogukonnamoodustamist soosivamaks, (2) nn kolmandate kohtade roll naabritevaheliste suhete loomisel ja (3) kuidas asula või kogukond saab toota sotsiaalset kapitali. Valitud väited põhinevad protseduurilisuse lähenemisel – et tuvastada

suhtlusreeglid, mis viivad sotsiaalse kapitali või kogukonna loomiseni. Väited jagunevad leksikaalseteks ja grammatilisteks reegliteks. Selle eesmärk on luua tulevastele kasutajatele logonoomiline süsteem, mõistmaks, kuidas luua või vastu võtta sotsiaalse kapitali ja kogukonna loomise sõnumeid.

Kolmas osa annab kaks meetodit Nextdoor'i ja Neighborland'i rekonstrueerimisprotsessiks. Esimene on Paul Resnicki ja Robert Krauti disaini alternatiivtüüpide kategoriseerimine, mille saab valida virtuaalse kogukonna loomiseks. Tüüpide põhjal valitakse väidetele vastamiseks alternatiivide kogumid. Teine meetod keskendub disaineri protsessi ja valitud alternatiivide hindamisele. Selleks tegin kasutajate tagasiside sisuanalüüs, kasutades tekstianalüüsivahendit Monkey Learn. Analüüsil keskendusin arvustuste positiivsusele/negatiivsusele, rollidele, partnerinstitutsioonidele ja mõjudele sotsiaalsetele suhetele.

Tulemuste põhjal rekonstrueerisin ja hindasin disainiprotsessi ja intersemiootilist tõlget ja kaht rakendust eristades. Nextdoor'i lähenemine põhineb naabrus-ühenduse ideel, Neighborland seevastu naabrus-nõukogu ideel. Seejärel määrab visioon mõlema rakenduse logonoomiliste süsteemide loomiseks valitud väited ning virtuaalse ruumi mustrid. Lisaks sai tuvastatud disaineri-dominant - kus intersemiootiline tõlge toimub *gesellschaft*'ile orienteeritud füüsilisest maailmast *gemeinschaft*'ile orienteeritud rakendusse.

## **License**

### **Non-exclusive licence to reproduce thesis and make thesis public**

I, Rhea Colaso

1. herewith grant the University of Tartu a free permit (non-exclusive licence) to reproduce, for the purpose of preservation, including for adding to the DSpace digital archives until the expiry of the term of copyright,

### **BUILDING COMMUNITY FOR NEIGHBORHOOD: USING INTERSEMIOTIC TRANSLATION FOR APP-BASED INTERACTION DESIGN**

supervised by Tiit Remm

2. I grant the University of Tartu a permit to make the work specified in p. 1 available to the public via the web environment of the University of Tartu, including via the DSpace digital archives, under the Creative Commons licence CC BY NC ND 3.0, which allows, by giving appropriate credit to the author, to reproduce, distribute the work and communicate it to the public, and prohibits the creation of derivative works and any commercial use of the work until the expiry of the term of copyright.

3. I am aware of the fact that the author retains the rights specified in p. 1 and 2.

4. I certify that granting the non-exclusive licence does not infringe other persons' intellectual property rights or rights arising from the personal data protection legislation.

Rhea Colaso  
**17/05/2021**