

# IDENTITY CATEGORIES AS BOUNDARY OBJECTS: CONFLICT AND RESISTANCE IN COLLABORATION

*Research paper*

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## Abstract

*The integration of changes into a government information infrastructure involves collaboration between stakeholders with diverse, sometimes competing, interests. Boundary objects can facilitate this by serving as shared, loosely defined tools for collaboration. Little is known, however, about cases where the interpretation of these boundary objects has consequences for wellbeing, as is the case with identity categories that shape rights and recognition. Without systematic knowledge, the use of these categories as boundary objects can adversely shape crucial cross-disciplinary collaboration, risking a breakdown in communication. To address this knowledge gap, this study draws on data from an ethnographic study of India's transgender category during the introduction of the category into government information infrastructure. It finds a partial breakdown in communication, exhibited as conflict during boundary encounters, and a resistance to the loose definition of the boundary object. The study concludes that identity categories, in their ability to include and exclude people, must be handled and managed carefully if they are to function effectively as boundary objects. The study contributes to boundary object theory by exploring conflict and resistance in the interpretive flexibility and makes recommendations to policy makers and IS practitioners.*

*Keywords: Identity Categories, Boundary Objects, Conflict, Information Infrastructures, Transgender, India*

## 1 Introduction

When governments make changes to the recognized identity categories, these changes need to be reflected across its information infrastructure, a process that is fraught with complex challenges that demand effective collaboration across stakeholder groups. Identity categories, such as those of race, gender, and national identity, are topics of ongoing debate concerning questions of rights and recognition, with conflicting views about who is to be included or excluded from category membership (Collier & Cowan, 2022). While the competing interests between these groups can create barriers to effective collaboration, boundary objects have served as tools to overcome such barriers and to facilitate communication without the need for full consensus. Boundary objects are loosely defined artifacts with a degree of interpretive flexibility. They enable a local interpretation within a stakeholder group whilst retaining sufficient overlap across groups to act as a communication bridge between diverse groups of stakeholders. While much has been written on cross-disciplinary collaboration using boundary object (Doolin & McLeod, 2012; Huvila et al., 2017), little is known of cases where the definition of the boundary object has consequences for wellbeing, as is the case with identity categories. This is a concerning gap, given how debates around identity categories have taken centre stage in recent years in many organizations, with contestation and conflict around identity categories emerging throughout the public and private sector (see Özbilgin & Erbil, 2024). There is an urgent need to build empirically grounded understanding of the use of identity categories as boundary objects, and how their use shapes cross-disciplinary collaboration in the cultivation of an information infrastructure.

To address this gap in the existing knowledge, this study is guided by the following research question: *What tensions emerge during cross-disciplinary collaborations aimed at integrating identity catego-*

*ries into government information infrastructures?* To understand this question, this study draws on boundary objects theory, a lens that explores the use of these loosely defined objects for cross-disciplinary collaboration. The theory highlights interpretive flexibility and focuses on the practices and activities by stakeholders to maintain sufficient shared interpretation across communities of practice (CoPs) whilst retaining the local interpretation within the CoP. The study is empirically grounded, based on an ethnographic investigation of India's transgender category, a category that was introduced into law by India's 2014 Supreme Court judgement to emancipate India's historically marginalized transgender and gender diverse (TGD) communities (NALSA, 2014). The category has subsequently become part of the government information infrastructure while also functioning as a boundary object to enable cross-disciplinary collaboration for the social and legal efforts.

While the study finds that the transgender category is in use across all CoPs, several boundary encounters indicate a partial breakdown in communication. These encounters exhibit conflict between adjacent CoPs, and a resistance to the loose definition of the boundary object. The conflict and resistance emerge from the potential for inclusion and exclusion that the identity category possesses and are most keenly evidenced by the CoPs whose members are part of the TGD communities. They limit the communicative capacity of the boundary object and inhibits the potential for fruitful and productive collaboration between diverse stakeholder groups. The study makes contributions to boundary objects theory by refining the theory to consider the conflict and resistance to interpretive flexibility that emerge when an identity category functions as a boundary object. While a tightly defined identity category does not have the interpretive flexibility needed to function as a boundary object, too loose a definition across CoPs limits its successful functioning as a boundary objects, risking partial breakdown of its communicative capacity. Furthermore, the study makes practical contributions for policy makers and managers engaged in projects involving the use of identity categories. The study recommends that a cross-disciplinary committee be involved in such projects to guide and steer the interpretation of the boundary object, ensuring that its interpretation across CoPs remains sufficiently aligned for productive collaboration across stakeholder groups.

## 2 Information Infrastructures and Identity Categories

To explore the research question, relevant literature is presented from the information systems (IS) discipline and related disciplines. This section presents literature on (1) cross-disciplinary collaboration in the evolution of information infrastructures, (2) identity categories as information infrastructure, and (3) the relationship between identity categories and interpretive flexibility.

While information infrastructures are composed of lists of technical specifications, numbers, and hidden mechanisms, seen as standards, categories and settings (Mongili & Pellegrino, 2014), these infrastructures are fundamentally relational (S. L. Star & Ruhleder, 1996). Viewed through an ecological lens, they are seen as engines of ontological change, standing between people, nature, and the technologies around us, and so doing shaping and reconfiguring each simultaneously (Karasti et al., 2018). These infrastructures grow and develop, building on an installed base from which they inherit strengths and limitations (Hanseth & Lyytinen, 2010). Evolving an information infrastructure is, thus, an inherently complex process and requires the collaborative relations of a range of diverse stakeholders, governing bodies, and organizations, with competing interests and priorities. During these collaborations, challenges emerge around the divergence of goals and priorities, barriers to communication, conflicts in cross-disciplinary culture, and in the power dynamics. Williams et al (2024) explore how the divergence in goals and priorities creates paradoxes in these collaborations, and a misalignment between the goals can jeopardize the success of the collaboration. Power relations play a role in the development of digital ecosystems. Hurni et al (2022) explore these power relations, focusing on the relationship between platform owner and third-party complementors. They argue that a keen understanding of the power dynamics is needed for the platform ecosystem to thrive. Singh et al (2025) propose strategies for overcoming these challenges, pointing out that a key to a successful collaboration is

clear communication across stakeholder groups to ensure that expectations, roles, and responsibilities are understood and agreed upon, and that the project plans stay aligned.

Identity categories that become part of an information infrastructures have material effects on the people who are categorized. When identities are created or changed by the State, and recategorized within an infrastructure, identity claims by individuals or groups may be subverted, or individuals may feel that their powers of, or rights to, self-definition are impinged upon (Yanow, 2003). By exploring identity categories as they become part of an information infrastructure, it provides a strong lens for discussing how the categories emerge and how they can become invisible without losing any of their power (Bowker & Star, 1999). Once the new category becomes part of the infrastructure, it operates as a classificatory mechanism that structures access to rights, resources, and recognition (Pelizza & Van Rossem, 2024), shaping information systems use down to the street level of policy implementation (Wyers & Nicholson, 2024). Within information systems research and related disciplines, many studies have explored how identity categories, inscribed into the digital and paper-based information systems, shape decision-making. While identity categories can have detrimental consequences (Bowker & Star, 1999), they can also be sites for promoting social justice, for example through financial inclusion (Diniz et al., 2024) or gender recognition (Stelmaszak et al., 2024).

Flexibility in the interpretation and use of standards has long been a topic of study in information systems (Monteiro & Hanseth, 1996). Interpretive flexibility stipulates that while, in principle, the meaning of all artifacts can be disputed, negotiated, and reinterpreted, there is a degree of irreversibility when it comes to the artifact. Such interpretive flexibility can shape how the information system is designed and used (Mousavidin & Silva, 2017). While identity categories that become part of information infrastructure fix aspects of the category into place, the materiality of these identities themselves are generally understood to be quite fluid (Hall, 2011). When such identity categories become part of government information infrastructure, they are always understood to exhibit a degree of flexibility. As Collier and Cowan (2022) show, categories of sex, sexuality, and gender are rarely accurately defined, giving a degree of flexibility to the user to interpret the category, and collapsing this flexibility in favor of a single definition would undermine the utility of the data collected. However, they also caution that the flexibility of these categories can creep into intimate aspects of medical, social, and legal history.

While cross-disciplinary collaboration has been explored in information systems and related disciplines, there is a dearth of research that explores how such collaboration takes place when an identity category is used to facilitate the communication. While these categories exhibit a degree of interpretive flexibility when they become infrastructure, their interpretation shapes the rights and recognition of people. Therefore, the gap in knowledge is concerning given that, in recent years, there has been growing contestation of identity categories within public and private sector organizations. To address this gap in knowledge, this study adopts the theoretical lens of boundary objects.

### **3 Boundary Object Theory**

Boundary objects are loosely-defined artifacts, categories, or document that facilitate partial cooperation across communities of practice (CoPs; S. Star, 2010; S. Star & Griesemer, 1989). They can be physical or abstract artifacts that both inhabit multiple CoPs and simultaneously exist in the liminal spaces between adjacent CoPs (Huvila et al., 2017). They are adaptable and flexible enough to satisfy the informational needs of each CoP while maintaining a common identity across all sites (Bowker & Star, 1999; S. Star & Griesemer, 1989). This commonality enables the boundary object to function as a bridge between CoPs by facilitating ‘collaboration without consensus’ about areas of mutual concern (Clarke & Star, 2008). They are simultaneously ‘well-structured and ill-structured’ (Griesemer, 2015; S. Star & Griesemer, 1989). Within a CoP, the boundary object can be well structured and clearly defined, and its interpretation can be shared. At the same time, the same boundary object can be ill structured at the global level, where its meaning and use can diverge across CoPs. The use of boundary objects for cross-disciplinary collaboration, then, involves the navigation of this local-global relationship,

a vacillation between the locally universal understanding of the artifact and the globally shared meaning. This vacillation, a process Leigh Star referred to as *tacking back-and-forth* (Griesemer, 2015), is an important mechanism for understanding how boundary objects are used, and how diverging meaning is negotiated during cross-disciplinary encounters at the boundaries of CoPs, referred to in this study as *boundary encounters* (Wenger, 2000).

Within the IS discipline, boundary objects have been explored within multiple different organizational contexts, from the facilitation of collaboration within agile software development teams (Huber et al., 2020), to interorganizational collaboration (Beck et al., 2024). They have also been explored to understand disagreement between social worlds during collaborative work on a large-scale technology initiative (Renwick & Gleasure, 2021). Hummel et al (2024) explores how a set of boundary objects can be developed together to form a coherent boundary infrastructure, describing the development of boundary infrastructures through the interplay of scaffolding and reconfiguring coalitions. Scaffolding involves the asynchronous development of multiple boundary objects that are iteratively constructed to support each other's development. This takes place through the reconfiguring of coalition, where organizations work in varying subgroups to develop different boundary objects, rather than engaging all CoPs in each collaboration.

As an analytical concept, boundary objects focus on the interpretive flexibility and enable the researcher to explore the visible and hidden work that takes place in tacking back-and-forth between the local and global meaning during cross-disciplinary engagement. While it is of interest to study how meaning differs between CoPs, it is more analytically useful to study how people use the object to navigate these contradictions in the liminal spaces between adjacent CoPs, developing an understanding of the materiality and infrastructural properties of the object (Nicolini et al., 2012; S. Star, 2010), and of the work arrangements and heterogeneity of its use. A study of boundary objects explores the durability and adaptability of these objects to facilitate this partial collaboration, and its ability to facilitate translation and communication across CoPs (Wakeford, 2015).

Kertcher and Coslor (2020) point out that the extant literature tends to see boundary objects as emerging 'from nowhere' (ibid p78) as stable, recognizable, and sharable, while also being plastic and flexible. Their work focuses on the early stage of boundary object development, and the period of stabilization where CoPs negotiate the meaning of the boundary objects between the global and local meaning. During this period of stabilization, the boundary object is co-created to reach sufficient shared meaning across CoPs for the boundary objects to serve as a useful tool for collaboration, while still retaining sufficient shared meaning within each CoP to be locally relevant. Kertcher and Coslor find that the successful stabilization of a boundary object requires a 'mind-set shift' where the development of the boundary object can start to exhibit the properties of flexibility, durability, and recognizability. While Star has described how boundary objects operate without an authority guiding their interpretation, achieving this state requires human and technical resources to mediate and translate the stabilizing boundary object. Kertcher and Coslor (2020) point to a need for further exploration of the early stages of boundary object development, and the role that a central authority can play in this period to guide the boundary object to a successful stabilization.

## 4 Methods

### 4.1 Context

This study explores the case of gender recategorization in India's government information infrastructure. India has a long history of indigenous gender diversity, communities who have historically performed social roles within the Hindu religion (Hinchy, 2019). Two prominent indigenous gender diverse communities in north India are the Hijra and Kinnar communities, referred to in this study as the *CultureTGD members*. These are communities who are understood to have been excluded from mainstream society and exposed to discrimination and violence, particularly through colonial-era legislation that remained after India gained independence in 1947. Following a 2014 ruling by the Indian Su-

preme Court (Dutta, 2014; NALSA, 2014; Semmalar, 2014) and subsequent enactment of the Transgender Protection of the Persons Act (Parliament of India, 2019), a series of social and legal projects were introduced to provide for India's historically marginalized transgender and gender diverse (TGD) communities. To administer these changes, the gender category in India's government information infrastructure was expanded from {male, female} to {male, female, transgender}, and this recategorization was gradually introduced across all government information systems. Through a gradual process of infrastructuring (Pipek & Wulf, 2009), the hospital information systems, the State's welfare application forms, the PAN financial services card, the Aadhaar India's national digital identity, and myriad other government information systems were updated to reflect this recategorization within the government information infrastructure. The transgender category has been widely adopted by a diverse range of stakeholder groups. However, while gender diversity has been part of Indian society for thousands of years, the transgender category itself is relatively new, first appearing in the 1980s in the USA (Valentine, 2007) and in India in 2009 during a UNDP conference titled 'Transgender and Hijra Issues' (Dutta, 2014, p. 228). While its introduction has led to many benefits for India's transgender and gender diverse populations, its introduction has led to some tensions which this study seeks to understand. Tensions have emerged across sub-groups of the TGD communities, some of whom do not identify as members of the *CultureTGD* communities, with some sub-groups seeking to distance themselves from others. Mount (2020) describes a social media campaign where middle-class members of the *Non-culture TGD* held signs foregrounding their middle-class status, and explicitly distancing their identity from the Hijra community and seeking 'intelligibility and acceptance in India' (Mount, 2020, p. 642). In one such case, a *Non-culture TGD* member held a sign stating 'I am a surgeon. I am not a Hijra'. This campaign subsequently led to members of the Hijra community experiencing further discrimination.

## 4.2 Data Collection

Given the study's interest in developing explanation from in-depth inquiry of the use of identity categories as boundary objects, a field-study approach was adopted. The study used an interpretive study (Walsham, 2006) of boundary encounters across institutional stakeholders, civil society, and two sub-groups within the broader transgender and gender diverse (TGD) populations. Data collection is based on 28 semi-structured interviews and one focus group discussion, together with fieldnotes from three months of ethnographic fieldwork (Crang & Cook, 2007). Ethnography involves immersion in the research context over an extended period and is an established IS research methodology (e.g. Myers, 1997). The data was gathered in 2023-24 in the north Indian state of Himachal Pradesh and the urban center Delhi. Participants were institutional stakeholders (doctors, welfare officers), members of the TGD communities, and members of civil society. While the State Legislators were not interviewed, their interpretation and use of the transgender category was understood through legal transcripts and legislation (NALSA, 2014; Parliament of India, 2019), together with accounts of encounters between State Legislators and other CoPs. Interviews and repeat interviews were conducted by the author in either English or Hindi. Ethnographic data was derived from direct experience of the research context, observation and informal conversations recorded in field notes following the guidance in Myers (1997) and Crang and Cook (2007). All interviews were audio recorded unless the participant requested not be recorded. The interviews ranged from 1 hour to 2.5 hours. Where the interview was conducted in Hindi, an interpreter facilitated the interview and produced a verbatim translation to English. Table 1 below provides a summary of the interviews.

| Community of Practice                | Participants # | Interviews # |
|--------------------------------------|----------------|--------------|
| Institutional (Medical, Bureaucrats) | 6              | 7            |
| Civil Society                        | 8              | 10           |
| Culture TGD members                  | 5              | 5            |
| Non-culture TGD members              | 4              | 6            |
| <b>Total</b>                         | <b>23</b>      | <b>28</b>    |

Table 1. Interview participants

### 4.3 Data Analysis

An interpretive approach to analysis was adopted that privileges the worldview of participants (Walsham, 2006). Interviews were transcribed verbatim and coded using thematic analysis (Braun & Clarke, 2006) in the NVivo qualitative analysis software package. Data coding was carried out by the author, who coded the data into themes. The emergent themes were triangulated using fieldnotes from the ethnographic fieldnotes. The analysis for this paper involved re-reading the transcripts and field notes focusing on the descriptions of the transgender category across the CoPs, and accounts of the boundary encounters between CoPs. To understand how identity categories operate when they function as boundary objects, this study sought to understand not only the interpretive flexibility of the boundary object, but also the boundary object is used to navigate contradictions in the liminal spaces between adjoined CoPs. By adopting this approach, the study sought to develop an understanding of the materiality and infrastructural properties of the object, an approach that followed the recommendations of Star (2010).

There are six CoPs engaged in this study, described in Table 2 below.

| Community of Practice      | Abbreviation         | Description                                                                                                                                                                                                |
|----------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State Legislators          | <i>StateLeg</i>      | Stakeholders who enact the legal status of members of the transgender category                                                                                                                             |
| Institutional: Medical     | <i>InstMed</i>       | Practitioners in the medical field, including doctors, nurses, and health programme managers                                                                                                               |
| Institutional: Bureaucrats | <i>InstBur</i>       | Stakeholders involved in the implementation of government policies                                                                                                                                         |
| Culture TGD members        | <i>CultureTGD</i>    | The members of the indigenous socio-cultural gender diverse communities. These include Kinnar and Hijra communities. The term 'Culture' was chosen here as a term used by the community members themselves |
| Non-culture TGD members    | <i>NonCultureTGD</i> | TGD people who are not members of the Culture. These include transgender men, some nonbinary people, some transgender women, and other gender diverse identities                                           |
| Civil society              | <i>CivilSoc</i>      | Advocates and activists who represent and advocate for the rights of the TGD communities                                                                                                                   |

Table 2. Descriptions of the Communities of Practice

Participants were involved in the study from five of these CoPs (shown in Table 3), and the remaining CoP (*StateLeg*) was understood through transcripts, publications, and accounts of boundary encounters by other CoP members. CoPs were delineated by their professional roles. Where participants could be understood to exist within multiple CoPs (for example an activist who is also a transgender person, or a medical doctor who is an advocate), their self-described role was given dominance. While the interpretation within the CoP is presented in the Findings, this is a generalization, and there are examples of people within CoPs who disagree with the dominant interpretation in the CoP, and whose intersecting social identities shape their experiences of the identity category. As this is an interpretive study, seeking to understand the multiple truths among participants, these differences and contradictions within CoP are also considered in the analysis. However, as this is a study at CoP level, rather than at individual level, the core of the analysis focused on the interplay at the boundaries of CoPs, rather than within the CoPs.

## 5 Findings

The findings of this study are now presented, first discussing the interpretations and contradictions across CoPs. Then, following the recommendations of Star (2010) to study how the boundary objects are used to navigate contradictions in the liminal spaces between adjacent CoPs, the study discusses

several boundary encounters where members of the CoPs have sought to collaborate using the transgender category. It finds conflict and resistance to the loose definition during the collaborations.

## 5.1 Interpretive Flexibility across Communities of Practice

The transgender category inhabits all CoPs, with no participants in the research unaware of the category or of the existence of people who could be categorized as ‘transgender’. Each of the CoPs has a distinct interpretation of the category. These are used as working definitions within the CoP. State Legislators (*StateLeg*) view the transgender category as a broad umbrella category, including both the *CultureTGD* and *Non-cultureTGD* members, and serving an administrative purpose of identifying people who qualify for public services. The dominant interpretation in the Hijra and Kinnar communities (*CultureTGD*) CoP is one of separation. They are closely aligned with the historical role of the Hijra and Kinnar communities in the Hindu religion, being seen as ‘neither man nor woman’ (Nanda, 1998), and interpreting the transgender category as distinct from male or female. *‘I am not a woman. I am a Hijra’* [*CultureTGD Hijra member*]. Non-culture TGD members (*Non-cultureTGD*) have a broader interpretation of the category than the dominant interpretation in *CultureTGD*, seeing it as a broadly inclusive category that transcends male and female categories. Institutional Medical professionals (*InstMed*) are predominantly concerned with the provision of medical care, and therefore focus the dominant interpretation on the physical body. They often understand the transgender category as referring to people with intersex variations. Institutional Bureaucrats (*InstBur*) interpret the transgender category more narrowly than the *StateLeg*, with a dominant interpretation of the category related to members of the *CultureTGD*. Civil society members (*CivilSoc*) integrate both the historical role of India’s gender diverse communities along with the broader definition set by the *StateLeg*. *‘I think at the end of the day it comes to what people want to call themselves. I mean, if somebody wants to call themselves a trans man, I mean, we call them a trans man. I don’t think it’s our space or any other person’s space to decide whether this is ok or this word is not ok. It’s a person’s own decision, and if they’re ok with that, they’re ok with that. And all we can do and we should do is respect what they want to be known as, and called as, and identified as’* (*CivilSoc*). They act as translators and brokers, tacking back-and-forth between global and local interpretations, pointing to the category’s potential for use in cross-disciplinary collaboration.

## 5.2 Overlaps and Contradictions

The transgender category exists within each CoP, and all participants are familiar with the transgender category. It has a shared meaning across each of the CoPs, who all understand it to refer to people who possess or exhibit some degree of gender alterity, and who therefore do not fit easily within the stable gender binary or who do not identify with the gender assigned to them at birth. Despite this overlap, there are many contradictions between the interpretations of the CoPs which are shaping collaboration. The following two central contradictions emerge across the CoPs.

### 5.2.1 Contradiction 1: Transgender as a tool for separating people into distinct groups

The dominant interpretation by *StateLeg*, *InstBur*, and *InstMed* is that the purpose of the transgender category as an administrative tool is to identify a distinct group, separated from male and female people. The category, then, is an administrative tool that serves the instrumental purpose of identifying a community and delivering targeted services to this community. The creation of *‘an option to state that you are not a male, you’re not a female, you’re a transgender... [mean that]... in healthcare, it’s acceptable’* [*InstMed: Medical professional*] ensuring that *‘there is equality. There is no discrimination, and people are free from any gender to seek healthcare’* [*InstMed: Public health policy maker*]. This view is shared by some *CultureTGD* members, stemming from the historical separation of indigenous gender diverse communities from non-TGD communities who are seen as ‘neither man nor woman’ (Nanda, 1998). This interpretation of the category as an administrative tool is contrasted sharply by the

interpretations of *CivilSoc*, *Non-cultureTGD*, and many *CultureTGD*, who tend to see the transgender category as a more expansive category, as a social identity that represents people who transcend the ternary categories of male, female, and some third gender group. *‘There are [transgender] people who would prefer to be just male [or] female and that’s it, that’s done. But there are a lot of experiences that fall outside of that’ [CivilSoc: Transgender woman]*. Here, the interpretation is one of heterogeneity. The contradiction here stems from the purpose of the category, whether it exists to provide for a community, or whether its purpose is to create a space for people with gender diverse identities to have their identities recognized.

### 5.2.2 Contradiction 2: Transgender as a temporary status or as a core persistent identity

There are contradictions among the CoPs about whether the transgender category is one that people identify with for a temporary period in their life or whether it is a core identity that they will retain throughout their whole life so that they can access the legal, health, and/or welfare services they need to progress to their target gender (either male or female). For some, the transgender category signifies a persistent core aspect of a person’s identity, an identity that they will relate to for their entire life, and they wish to have represented in their documents as such. For others, the category signifies a transient, temporary status, whereby ‘transgender’ is adopted and used as a tool to meet the requirements of accessing services and being counted as part of a population.

These two core contradictions are significant for the information systems discipline, as they shape how information systems are designed and used. The first is significant, as it factors into whether individuals should be able to select multiple options, or whether every individual can be accurately represented using one single, distinct, gender category. The second is significant for IS development because it considers the fluidity and temporality of the change, considering whether a reclassification of an individual’s gender marker is a one-off event or whether information systems need to support potentially multiple reclassifications by an individual.

## 5.3 Conflict and Resistance at the Boundaries

While the transgender category has taken on distinct interpretations within each CoP, there is evidence of conflict when these CoPs collaborate and cooperate. This is evidenced by several key boundary encounters that highlight the conflict. They show how the category’s ability to include or exclude people leads to tensions emerging between CoPs when the identity category is used as a boundary object.

### 5.3.1 StateLeg, InstBur, and CivilSoc: Category created without a central authority

The identity category was introduced without a central authority guiding its definition. This has led to wide variation in the definition of the artifact between CoPs. The *StateLeg* defined the category and mandated its inscription into the legal framework and government information infrastructure. The inscription into law used a broad definition (NALSA, 2014; Parliament of India, 2019) and the details of the implementation were left up to the *InstBur* and *CivilSoc*. *‘NALSA, when it said “yes gender identity” and it gave a broad definition of the umbrella, this thing now fell in the lap of the bureaucrats’ (CivilSoc)*. By handing over the responsibility for definition to the *InstBur* and *CivilSoc*, creating the absence of a central authority and wide variation in the boundary object’s definition and use.

### 5.3.2 CultureTGD and Non-culture TGD: Antagonism and Resistance

Divergences of interpretation of the identity category across CoPs have led to tensions between the communities whose members are represented by the identity category. *‘A lot of people who are in the Hijra community tend to view trans folk, again outside of the Culture, with a sense of antagonism. There’s a lot of in-groups, out-groups, that occur’ (CivilSoc)*. This ‘antagonism’ at the boundaries of *CultureTGD* and *Non-culture TGD* is a barrier to solidarity. Further division within the broader TGD

communities was evident between some *CultureTGD* and transgender men (*Non-cultureTGD*). The former felt that the transgender category was introduced to emancipate the transfeminine communities who were understood to have been historically oppressed. Given that transgender men are ‘entering a male space’, one of privilege, the category should not include them, as the category was understood by them to have been introduced to emancipate trans-feminine people. ‘A person who is asking for rights of assigned female at birth who wanted to ask or step into the masculine space... “The males are anyways enjoying this thing. Why do you need to now go ahead and support this male? He’s male. He’s already moving into the privileged space.”’. (*CivilSoc*). The inclusion of transgender men in the transgender category is contested here, with some *CultureTGD* members insisting that the category does not include them. The divergence between interpretations across CoPs creates tension, and this creates increased tension within the broader TGD community, in particular between the interpretations in the *CultureTGD* and *Non-cultureTGD* CoPs. This shows evidence that members of the broader TGD community are resistant to the loose definition of the category for various reasons.

### 5.3.3 InstBur, CultureTGD and Non-cultureTGD: Perceived Infighting

When tensions emerge between communities who are identified by the category (*CultureTGD* and *Non-cultureTGD*), the tensions are perceived by other CoPs as infighting, which limits the progress of the emancipatory project. ‘[The] bureaucrats’ point of view [and] the State’s point of view is that people are not ready to come to a consensus. They are feeling threatened. They don’t want to share. They want to exclude. They want to again say that “this person is transmasculine. They should not be given a part of the reservation”. And that also was something which was very much debated. Less spoken of’ (*CivilSoc*). The *InstBur* were holding back from progressing with the transgender category because its looseness was being resisted, and their perception was that the category was not yet ready to function effectively as a boundary object until there was this consensus between *CultureTGD* and *Non-cultureTGD*. The *InstBur* believed that it was the responsibility of the *CultureTGD*, *Non-cultureTGD* and *CivilSoc* to reach this consensus among themselves and enable this stabilization.

## 5.4 Summary of Findings

While it is widely used across CoPs, the interpretations of the transgender category diverge, creating several contradictions. This has resulted in conflict and in a resistance to the loose definition of the category, exhibited in this study during boundary encounters between adjacent CoPs. This conflict was most evident when the boundary encounters involved members of the TGD community, for whom the interpretation of the identity category has the potential to shape their right or recognition. However, while there are contradictions that breed this tension, the establishment of the category across CoPs and its use during cross-disciplinary collaboration has also been observed to create productive collaboration.

## 6 Discussion

There is clear evidence that the identity category is established and used in all CoPs with local interpretations, and that its use as a boundary object has enabled productive collaboration. However, there is also evidence of partial breakdown during several boundary encounters, seen as conflict and resistance to the loose definition. This breakdown limits the potential for the boundary object to facilitate productive collaboration. These findings are now discussed to explore (1) conflict and resistance, (2) the use of a boundary infrastructure, (3) the stabilization of the boundary object, and (4) interdisciplinary guidance of the interpretation. Finally, the study discusses (5) the practical implications for policy makers and managers involved in information infrastructures that engage with identity categories.

## 6.1 Conflict and Resistance

There are contradictions between CoPs who predominantly see the category as a tool for grouping people for administrative purposes, and CoPs who predominantly see it as a category to represent a social identity. These contradictions in the interpretation of the category, and its use as a boundary object, risks the emergence of a resistance to the loose definition needed for a boundary object to function effectively. The concern for loose definition of identity categories is most keenly evident within CoPs whose members are represented by the identity category, and this concern for loose definition holds when the category is used as a tool for cross-disciplinary collaboration. This manifests as conflicts during boundary encounters, where the definition of the category can become contested, risking a breakdown in communication. While the category was defined by the *StateLeg*, it was defined relatively loosely and broadly, and its interpretation was not enforced. Subsequently, there was a high degree of variation in its interpretation across CoPs. While this enables the partial collaboration between CoPs, the flexibility was a concern for the *CultureTGD*, *Non-cultureTGD*, and *CivilSoc* members, who were acutely aware of the potential for the flexibility to creep into the lives of the TGD community members. As Collier and Cowan (2022) have pointed out, identity categories in information infrastructure always have a degree of interpretive flexibility. While they are rarely accurately defined, the degree of flexibility can creep into intimate aspects of an individual's medical, legal, and personal history. This study concurs with this finding.

As identity categories become part of an evolving information infrastructure, and are adopted as boundary objects for collaboration, a keen appreciation is needed of the historical contingency of the categories, and the power relationship that shape and govern these categories. Identity categories are historically contingent. They are sites of political struggle, and they shape access to rights and recognition for people. Much of the conflict and resistance observed during these boundary encounters can be understood as emerging from the political struggle that led to the introduction of the category. The resistance to including transgender men as a response to trans-misogyny, and the antagonism between some members of the *CultureTGD* and *Non-cultureTGD* CoPs are evidence that the political struggles involved in the creation and use of the transgender category are historically contingent and cannot be understood and used without an understanding of this struggle.

## 6.2 Boundary Infrastructure

While the primary boundary object in this case is the transgender category, many identity categories operate that are related to gender diverse identities. However, the grouping together of these categories into one single boundary object has caused conflict. Within this multitude of pre-existing categories, boundary infrastructures offer a framework to support collaboration that is aligned with the context. Hummel et al (2024) suggest that multiple boundary objects can be developed together through a process of scaffolding and the reconfiguring of coalition, producing a coherent boundary infrastructure. The reconfiguring of coalition enables subgroups of CoPs to collaborate without the involvement of all CoPs. Identity categories are sites of political struggle, and the selection of identity categories to use as boundary objects must consider the context, drawing on an understand of the pre-existing categories and their historical contingency. In the case studied, there are many pre-existing categories of sex, gender, and sexuality, and these have shaped the divergence in interpretations. *Hijra* and *Kinnar* can be seen as categories that, to some extent, inhabit multiple CoPs. Similarly, the *nonbinary* category inhabits some CoPs, but not others. *Transgender* as a category is broadly understood as an umbrella category, albeit one with highly contested inclusion and exclusion criteria. While these multiple pre-existing categories operate here, their grouping under a singular boundary object contradicts the nuanced distinction between them. By developing a coherent boundary infrastructure using the pre-existing categories, there is greater potential for a reconfiguring of coalition, where subgroups can collaborate using distinct boundary objects without challenging the interpretation of other boundary objects.

### 6.3 Stabilization

When an identity category is introduced into an information infrastructure, there should be a consideration of the process of its stabilization as a boundary object. As Kertcher and Coslor (2020) state, all boundary objects undergo a process of stabilization, where their interpretation is co-developed across CoPs. This process of stabilization is important to consider within the information systems discipline. While all identity categories are, to some extent, open to interpretation when they become part of information infrastructure (Collier & Cowan, 2022), the interpretation of the boundary object can undergo significant divergence while it stabilizes. During this early period of stabilization, interpretation can vary significantly. It is important for the information systems discipline to understand whether a boundary object has successfully stabilized, and whether there is sufficient overlap across CoPs for the boundary object to function as a tool for cooperation while forming part of the infrastructure. While there is no clear measure of whether the interpretation of the boundary object has sufficiently stabilized, this can be understood through its ability to facilitate productive collaboration. This is particularly relevant when the boundary object represents an identity category that shapes inclusion and exclusion of people. While India recognizes a long history of gender diversity, the ‘transgender’ category is relatively new in the country, first appearing in the 1990s and being inscribed into the legal infrastructure in 2014 and 2019. As seen in the case studied here, this divergence in interpretation can breed conflict, particular during this initial period of stabilization while CoPs co-develop a common interpretation of the boundary object. The introduction or recategorization of an identity category in an information infrastructure should therefore be conducted with a consideration of the status of stabilization of the identity category as boundary object. If the category is fixed into place within the infrastructure while it is still undergoing this early stage of boundary object stabilization, its introduction must be managed carefully to mitigate risk of communication breakdown.

### 6.4 Interdisciplinary Guidance of the Interpretation

While boundary objects typically operate independent of a central authority guiding the interpretation (S. Star, 2015), there may be a need for such oversight and guidance when an identity category functions as a boundary object. Upon its introduction into India’s information infrastructure, the transgender category took on a wide range of diverging interpretations, which lead to unintended consequences. The findings show how this divergence has had unintended negative consequences, in part due to the absence of sufficient consensus across CoPs about what the category means, who is to be included and who should be excluded. Within the findings, the transgender category was introduced by the *StateLeg*, and its implementation was inscribed into the legal framework and the information infrastructure. However, these *StateLeg* members stopped short of providing sufficient human and technical resources that would be needed to mediate and translate the stabilization of the boundary object. They introduced the transgender category into the information infrastructure but, as 5.3.1 indicates, it became the responsibility of the *InstBur* and *CivilSoc* to determine the details of who would be included and excluded. Kertcher and Coslor (2020) have pointed to the potential role that a central authority can play in guiding the interpretation towards reaching sufficient consensus for the boundary object to be useful in collaboration. In the case of India’s transgender category, a central authority could take the form of an interdisciplinary team where its role is to consider how the historical and geographical context factors into the interpretations across CoPs. Such an interdisciplinary team guides the interpretations across the various CoPs and manages divergence that risks conflict, acting as Hummel et al.’s (2024) *strengthening people* to tack back-and-forth between the global and local interpretations across multiple CoPs. Further research is needed in this area to understand how the interpretation of an identity category can be managed in this way so as to be both loosely defined for collaboration without consensus while remaining sufficiently defined so as to avoid risk of divergence and emerging conflict.

## 6.5 Practical Implications

The findings emerging from this study have implications for policy makers, IS practitioners, and organizational managers engaging in projects involving identity categories such as race, gender, ethnicity, and other such categories. While the transgender category was introduced into India as a tool to provide for several historically marginalized communities (Hinchy, 2019), the wide divergence in the interpretation of the category has limited its potential as a tool to enable collaboration on an emancipatory initiative. When introducing an identity category as a boundary object, the study recommends a cross-disciplinary team be established with the goal of managing how the boundary object is interpreted within each CoP, guiding and steering its interpretation so that it remains sufficiently aligned across CoPs for successful, productive collaboration. This central authority should be comprised of representatives from multiple CoPs who have a deep understanding of the nuances of the pre-existing categories, and who tack back and forth between the tight definition at the local level and the loosely defined global interpretation. Building on the cross-disciplinary team's deep understanding of the pre-existing categories firmly established within the context, a set of boundary objects can be developed to create a space for collaboration that aligns with this context. By working with a cross-disciplinary team, with members who understand the various local interpretations of the many different pre-existing identity categories, a set of boundary objects can be developed using the scaffolding approach recommended by Hummel et al (2024) to develop a contextually relevant set of objects that can be used during collaboration. Key boundary encounters pose a risk of conflict due to the divergence in interpretation. During such encounters, where diverse stakeholder groups meet to collaborate, representatives from this cross-disciplinary team should act as translators. The role of the translator here is to facilitate dialogue using the boundary objects, navigating competing interpretations to manage the risk of conflict emerging from contradictions in its interpretation.

## 6.6 Further Research

This study has shown that the use of identity categories as boundary objects during the evolution of an information infrastructure can have unintended consequences that can cause a breakdown in communication. Given the debates in recent years within both public and private sector organizations around identity categories and their contestation, there is an urgent need for further IS research in this area to understand cases where identity categories function as boundary objects. As these categories become part of the information infrastructure, their introduction must be managed with care and their consequences fully understood based on an empirically grounded body of systematic knowledge. Areas for further research are in the stabilization of boundary objects and the role that an interdisciplinary team can play in acting as a central authority for this stabilization. Other areas for research are in the conflict that emerges from the use of identity categories as boundary objects, and the potential of boundary infrastructures as a contextually aligned set of identity categories to support collaboration.

## 7 Conclusion

This study explores the use of an identity category as a boundary object during a period of information infrastructure evolution. Drawing on ethnographic data from India during a period of gender recategorization, the study finds a divergence in the interpretations across CoPs, highlighting key contradictions in the use of the category as a boundary object. By exploring several boundary encounters, the study finds a partial breakdown in communication observed through the emergence of conflict between the adjacent CoPs, and a resistance to the loose definition of the boundary object. This emerging conflict is most keenly observed with the CoPs whose members are part of the TGD communities whose rights and recognition can be shaped by the interpretation of the category. While the use of the identity category as a boundary object has enabled a degree of cross-disciplinary collaboration, the conflict and resistance to the loose definition have limited its potential. The study discusses the conflict and resistance when an identity category functions as a boundary object and discusses the role of central authority and translators in the governing of interpretations. It also discusses the stabilization

of a boundary object, and the potential for boundary infrastructures as contextually aligned tools for collaboration without consensus. This study makes novel contributions to boundary objects theory by refining the lens to explore the conflict and resistance to interpretive flexibility emerging when identity categories function as boundary objects. It contributes to the information systems discipline by exploring the use of boundary objects in cross-disciplinary collaboration when evolving an information infrastructure to include or recategorize identities. Finally, the study contributes to practice by making recommendations for policy makers, IS practitioners and organizational managers engaged in projects concerning identity categories.

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