Boundary Crossing through Text and Image on Instagram in an Online Community of Practice

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Abstract

During COVID-19 lockdown many social media challenges captured the attention of users all around the world, and many online communities of practice used social media platforms for their daily interactions. On Instagram these communities gather around common interests through the platform's sociotechnical affordances. We examined the role that these features play in boundary maintenance processes and boundary crossing practices, analyzing posts from four online communities of practice (CoPs), who were bounded by their hashtags and shared an art recreation challenge that was popular on Instagram at the start of COVID-19 lockdown. We found that while some practices are shared across CoPs, boundary maintenance processes sometimes are not, and the boundaries of some of these CoPs are more permeable than others. Cultural differences, language, and script were critical for boundary maintenance regardless of the platform's visual affordances that served the boundary crossing practices.

Keywords: Communities of Practice, Instagram, Cultural Differences, COVID-19 lockdown, Boundary crossing.

1. Introduction

When the COVID 19 pandemic forced people all over the world into lockdown, the role of technology shifted from optional to essential. While countries imposed travel bans across national boundaries — to curtail the transfer of the pandemic — people enforced a sense of one global village, using technology to connect with other like-minded individuals within imagined online communities. During the COVID-19 lockdown, while visitors could not physically visit art collections in museums, the museums' use of digital art collections increased. Museum employees devised alternative means of reaching out to their constituencies by enhancing online interactions with their communities, offering new ways to consume,

interpret, share, and interact with art through social media. Inspired by the Rijksmuseum (the national museum of the Netherlands in Amsterdam), the Getty Museum started a social media challenge on March 25, 2020, for Instagram, Facebook, and Twitter users. In this challenge, they asked users to recreate works of art from the Getty Museum's online collection using three household items, and to post their recreations on social media, along with the hashtag #gettymuseumchallenge (Waldorf & Stephan, 2020). As a result, many social media users posted their creations, tagging these museums or using hashtags such as #tussenkunstenquarantaine in Dutch, #изоизоляция in Russian, and #gettymuseumchallenge or #betweenartandquarantine in English (Figure 1).

Figure 1 Example of an Instagram post for "between art and quarantine challenge" (https://www.instagram.com/p/B_-HB0lDitQ/).

We approach the exploration of this challenge by interpreting it as an online community of practice (CoP), bounded by the four hashtags. We then examine the boundaries and overlap of these four CoPs, focusing on users that act as "boundary spanners" or "brokers", and on users' art recreation posts that act as "boundary objects." Boundary spanners are individuals who are engaged in information and knowledge dissemination, as well as in relationship and capacity building; Lave and Wenger (1991) suggest that this is a leader's role in a CoP. Boundary objects are entities that can link communities together as they allow different groups to collaborate on a common task (Wenger, 1998); these

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boundary objects are shared within and across these four CoPs. Online CoPs are composed of members that share common interests and interact with each other to discuss topics, exchange ideas, and seek support (Rosenbaum & Shachaf, 2010). We argue that this challenge is a social activity that involves people with a shared interest in art recreation on social media platforms, who utilize the platforms' unique affordances (e.g., hashtag and following) for their shared social practice and identity. Four common hashtags in three languages were utilized as part of this Instagram challenge, with each constituting one CoP, with more than 50,000 posts: #betweenartandquarantine, #gettymuseumchallenge, #tussenkunstenquarantaine, and #изоизоляция. Many posts included more than one of these hashtags, crossing CoPs boundaries.

We use Wenger's (1998) theoretical framework of CoPs, and respond to the need for more research boundary maintenance proposed by Hara and Fichman (2014). While there is a lot of discussion about boundaries in the CoP literature, our objective is to investigate Instagram's textual and visual affordances in relation to boundary maintenance and to observe the role that these textual and visual practices play across the four different CoPs. Specifically, we explore the overlap between these CoPs as it relates to their social practice (as it is manifested through text, image, and other social media features, such as hashtags), and to their identity (as it is manifested through their nationality, language, and community hashtags). To gain a better understanding of boundary maintenance, we have compared the posts that serve as boundary objects, and have been shared across the boundaries of a single community, with those that have not. Thus, we aim to address the following research questions:

1) What is the overlap between the four online CoPs?

2) What are the differences between posts that belong to a single community and those that cross community boundaries?

2. Background

Using Wenger's (1998) CoP framework, we describe the ways in which our case study of the art recreation challenge serves as a good example when studying boundary maintenance in online CoPs.

2.1. The Instagram Art Recreation Challenge as an Online Community of Practice.

Online CoPs are composed of members that share common interests and interact regularly with each

other to discuss topics, exchange ideas, seek support, and learn how to do things better. The concept of a CoP was introduced by Lave and Wenger (1991), and Wenger (1998) further developed it, discussing the two axes of relevant tradition. The horizontal axis connects theories of social practice and theories of identity. He explains that, "Theories of social practice address the production and reproduction of specific ways of engaging with the world…[and] Theories of identity are concerned with the social formation of the person, the cultural interpretation of the body, and the creation and use of markers of membership such as rites of passage and social categories…[that help us] understand the person as formed through complex relations of mutual constitution between individuals and groups" (1998, p. 13). Online CoPs are phenomena that have attracted social informatics scholars (e.g., Hara & Fichman, 2014; Rosenbaum & Shachaf, 2010), and as such we choose to approach the Instagram challenge as an online CoP. In the context of our CoPs, practice involves posting unique art recreations along with text and relevant hashtags on Instagram, as well as commenting on, liking and sharing these posts. More specifically, a piece of art is chosen, and then materials and methods for the recreation are selected. Finally, the recreation is captured in a digital photo and shared along with an image of the original. The level of appropriateness of the piece of art, the use of tools and materials, and how people capture and share the recreations are crucial elements of the CoP. Then, the type of text the post includes, and the kinds of comments CoP members post are added to the mix, constituting a shared practice.

Wenger (1998) suggests that practice is the source of not only coherence in a community, but also defines the boundaries of the community. He then argues that identity can be understood through the inherent characteristics of practice, and that membership of a community can be achieved through engagement or other modes of belonging, such as alignment and imagination (Wenger, 1998). In the context of our CoPs, identity is expressed first through the shared practice of the art recreation challenge, and then on the specific hashtag for each of the CoPs. Language can serve as the basis for group identity and can define membership in a particular CoP and can be used for boundary maintenance. This doesn't seem to be an issue in this study's CoPs; the language of the posts and hashtags used for each CoPs are not limited to English, but rather includes languages such as Dutch and Russian. In addition to engagement through posting, liking, and commenting, using Instagram features, such as following a particular hashtag, can be interpreted as belonging to a community. Wenger's

(1998) two main concepts, *identity* and *practice*, have since been further discussed and developed. For example, Murillo (2008) adopted five constitutive dimensions as key characteristics of virtual communities of practice: mutual engagement, joint enterprise, shared repertoire, community, and learning or identity acquisition. We describe the #betweenartandquarantine Instagram challenge as an online CoP, using these five dimensions.

Mutual engagement among a group of people will form a community of practice. The #betweenartandquarantine challenge consists of members' practice-related interactions to produce artifacts, provide feedback, and discuss other topics. From the beginning, the shared artifacts that were posted were joined by textual posts and hashtags, the latter of which linked the posts to the community of those who shared the same interest. People used household items to recreate or replicate the artwork, and posted them on social media platforms using similar hashtags. The posts' comments involved supportive text and emojis, and discussions about the technique and materials used, composition of the artifact and/or its recreation, in addition to other contextual comments. Many posters described the story behind the original artwork or elaborated on the process of making the recreation work, and they also replied to comments made on their original posts. Mutual engagement is one of the most critical building blocks of an online CoP. Over time, sustained mutual engagement results in the development of resources and repertoire that the community shares with its members, "includ[ing] routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts that the community has produced or adopted." (Wenger, 1998, p.83)

This *shared repertoire*, included the use of specific hashtags or even more outrageous ways of replicating artwork. For example, many members paired up with their pets (dogs or cats) or their siblings and used food or fabrics they found at home; some participants used COVID-19 related items, such as toilet paper or masks, adding a satirical flavor to their recreations. This type of artwork was found easily, given the name of the hashtags. The #betweenartandquarantine challenge has become one of the most popular hashtags, just one example of the affordance Instagram provides for the online community (Bryant, Forte, & Bruckman, 2005). Adding to the creation of the shared repertoire, from which participants could draw tools and inspiration were two institutional Instagram accounts: The Getty Museum and the Rijksmuseum—the initiator of this challenge (user_id: tussenkunstenquarantaine). Both have been collecting recreation and replication work

for other online users. These institutional accounts contributed to another important aspect of a community of practice, *joint enterprise,* which involves building a shared understanding of the nature of the community's activities, as well as creating a differentiated atmosphere for the community. The Getty Museum and Rijksmuseum accounts played major roles in creating and disseminating the challenge from the start, announcing it and encouraging their followers to take part in this joint endeavor, while the museums were closed to the public.

The #betweenartandquarantine challenge enabled the formation of a stable and persistent virtual community. The members of the community started to develop strong personal interrelationships online, following or tagging other members in their posts. In this community of like-minded peers, members started to feel valued by other participants, through likes and comments. Many who appreciate fine art found a welcoming and supportive community to release their creativity and relieve their stress and/or boredom from social isolation during COVID-19. This outlet provided members with temporary relief from the isolation and boredom of the pandemic. *Learning or identity acquisition* took several paths in these CoPs, manifesting different ways of belonging, including identity in practice (Wenger, 1998), where participants identify with the community by sharing recreations or utilizing other socio-technical affordances of the platform. Some individuals who posted frequently became leaders of the CoP, setting up the tone for what are acceptable behavior and posts, and for some of these individuals it became their professional identities as artists. As for other participants, rather than sharing recreations, they identified with the community solely by liking, following, sharing, and commenting on those posts, demonstrating other modes of belonging to the CoP.

2.2. Boundary Maintenance and Boundary Crossing.

One of the building blocks of online CoPs is their boundary maintenance, upheld by boundary-crossing and boundary brokers (Wenger, 1998). Often boundary objects are the technology that connect CoPs members — Instagram hashtags, in our case — and facilitate boundary-crossing among different CoPs, while enforcing the boundaries of each CoP. Boundary brokers are members of more than one CoP, who make effective connections between them (Brown & Duguid, 1998). Wenger (1998, p. 109) describes the broker's role in the following way: "It requires the ability to link practices by facilitating transactions

between them and to cause learning by introducing into a practice, elements of another". Brokers are CoP leaders (Lave & Wenger, 1991). In our case, these are users who utilized multiple hashtags, posted their recreations regularly, and typically engaged with the CoPs more frequently than others with their posts, comments, likes, and follows. CoPs' boundary maintenance processes have received some attention, but scholars call for the need for further research on boundary-crossing (Hara & Fichman, 2014). For example, Akkerman and Bruining (2016) found that boundary crossing can lead to a process of mutual identification when studying professional development school partnerships. In a recent study conducted in teacher education during COVID-19, results showed that crossing a cultural boundary can be self-brokered by individuals on either side of the boundary but relies on existing networks (Thomson et al., 2021). When language barriers between communities are evident, unpacking the role of boundary brokers and boundary objects is necessary; it is particularly important to understand the boundary-crossing that occurs on Instagram's CoPs, given the platform's visual affordances. Thus, we examine the overlap across four CoPs that were part of the same art recreation challenge during COVID-19 lockdown. We also compare posts that were part of one of the four CoPs with those that are part of more than one CoP.

3. Methodology

We conducted this study on Instagram, because of its visual affordance, hashtags, and tagging features. We collected and analyzed data from four CoPs that were formed around four common hashtags (in three languages) that have been used during the COVID-19 pandemic for art recreation and replication.

3.1. Data collection

On April 2 and 4, 2021, using Phantombuster's Instagram Hashtag Collector, we collected the Instagram posts with each of the hashtags #betweenartandquarantine, #gettymuseumchallenge, #tussenkunstenquarantaine, and #изоизоляция. These four hashtags attracted thousands of posts each, around the art recreation challenge on Instagram, during the COVID-19 lockdown. Screening the hashtags of the posts that we have collected did not reveal additional hashtags for this art recreation challenge that were as popular; we identified hashtags in languages (e.g., French, German), but these attracted a much lower participation. The data included URL, published date, description, comments count, like count, and account username per post.

While there were 233,876 posts on Instagram with these four hashtags, the crawler agent stopped when it hit Instagram's maximum rate limit of 5,000 posts per hour (Lam, 2015), thereby collecting 107,698 rather than the 233,876 posts. After cleaning the data and removing empty, damaged or unformatted posts, our included dataset went from 107,698 to 107,517 posts (Table 1). #tussenkunstenquarantaine, the first hashtag in the challenge, is the most popular hashtag with 71,009 posts.

CoP	Posts (Number)	Comment (Mean)	Like (Mean)
#betweenartandquarantine	22,158	9.9	282
#tussenkunstenquarantaine	29,361	9.5	272
#gettymuseumchallenge	27,948	8.3	171
#изоизоляция	28,050	11.8	208
Total	107,517	9.9	233

Table 1. Posts collected from each CoP.

To further understand the overlap between the four online CoPs, we sampled 400 posts, 100 posts from each CoP. We excluded some posts during the sampling stage based on the following criteria: 1) Posts from institutional accounts (for example, museums and media outlets) were excluded, as institutional accounts may be more influential than others; 2) Posts that didn't include images of art recreation or included more than one recreation were excluded to simplify the coding interpretation; 3) Posts that included recreations of scenes from films or magazine covers were excluded to allow for systematic analysis and contextualization within fine art. Furthermore, because we wanted to ensure the inclusion of a more representative sample rather than a sample biased towards less 4 popular posts, we limited our sample to posts with at least 50 comments.

3.2. Data analysis

To gain a better knowledge of the boundary-crossing process, a coding scheme was developed from the data (Table 2). The coding scheme was refined and iterated by two authors in accordance with the data from the "between art and quarantine" hashtag. Coding was done at the individual post level, and inter-coder reliability reached 87.5%, with Cohen's kappa at 0.60. For the analysis of the social media features, averages were calculated for the number of the user's followers, the number of hashtags used in each post, and the amount of tagging used in each post at the time of coding, along with the number of comments and likes per post.

Category	Code	Description
Use of community relevant hashtags	Single community	Post includes only one out of the 4 hashtags
	Multiple communities	Post includes more than one out of the 4 hashtags
Use of language	Single language or script	Post written in only one language or script
	Multiple language and script	Post written in more than one language and script
Nationality	The nationality of the user	The location in the user's profile
	The nationality of the artist of original artwork	Google information about the original artwork
	The country of the collection/museum of original artwork	Google information about the collection/museum of original artwork
Post norms in the text	Info about original masterpiece	The text of the posts includes information about original artwork, for example, name of artist, and name of picture, year, collection, style and so on
	Personal motivation/story with original/recreation work	The text of the posts includes something personal about the user
Recreation norms in the image	Recreation of composition	Recreation artwork replaces objects/people/pets compared to original artwork
	Recreation iconography goes beyond the original	The iconography of recreation artwork goes beyond original artwork, for example, use of COVID-19 items, change main character's race/gender, use of modern technology and so on
Social media features	Hashtag	The number of hashtags used in the posts
	Tagging	The number of tagging used in the posts
	Followers	The number of followers of posting users
	Comment	The number of comments the posts get
	Like	The number of likes the posts get

Table 2. Codebook.

To answer our research questions, we conducted a comparative content analysis, as well as statistical analysis to test if the code frequency variations between and within the four groups of posts we identified were significant. Using SPSS 28, we performed Chi-Square tests, Gamma coefficient, and One-way and Two-way ANOVA.

4. Findings

We answer the research questions by first describing the overlap between the four CoPs in terms of their social practice and identity, and then by comparing posts that cross single community boundaries with those that do not. We achieve this by first describing the findings in the sample as a whole, and then following up with an examination of each of the CoPs.

4.1. The overlap between the four CoPs

We start by describing the overlap among the four CoPs in our sample, illustrating it with a Venn diagram (Figure 2). We found that only three posts in our sample included all four hashtags (1%), while 143 posts (36%) included only one hashtag. Further, most of the posts with the Russian hashtag (74%) were unique to the Russian CoP, and only one quarter of the posts with the Russian hashtag included hashtags in other languages. In each of the other CoPs, only about one quarter or fewer of the posts were unique to one of the other communities. We also found that the overlap between the Russian CoP and the other CoPs was smaller (fewer than five posts with each combination of hashtags included the Russian hashtag) than the overlap between each of the other CoPs (more than 15 posts in each combination of hashtags excluded the Russian hashtag).Thus, it is clear that 1) the boundaries of the Russian online CoP were less permeable than the three other CoPs; 2) the overlap across all four CoPs is significant, with only one third of the posts (36%) in our sample including a single hashtag. Yet only four posts (1%) were common to all four CoPs.

Figure 1. The overlap between the four CoPs.

While there is some overlap between the four CoPs, we examined if and how the use of various Instagram social media features also varies across the four CoPs. As shown in Table 3, the highest average

number of hashtags were seen in the two English CoPs, while posts in the Russian CoP included half as many hashtags. A similar pattern was observed for the average tagging in each CoP measure. Interestingly, posts in the Russian CoP resulted in more likes, more comments, and had an average of almost five times more followers than did posts in the English CoPs. The variations across the four CoPs were statistically significant for tagging, according to the one-way ANOVA statistic (Table 4). Despite the common practice of posting art recreations on Instagram, users in each of these four CoPs demonstrated significantly different social media behaviors.

CoPs	Hashtag	Tag	Follower	Comment	Like
#betweenartandquarantine	13.37	1.60	23,942	88	1,826
#tussenkunstenquarantaine	10.39	1.62	77,071	111	3,458
#gettymuseumchallenge	12.77	1.68	27,491	100	2,423
#изоизоляция	5.71	0.79	154,392	168	4,326

Table 3. Average numbers of social media features in each of the four CoPs.

Social media features	One-way ANOVA across four CoPs		Two-way ANOVA between single/multiple community across four CoPs	
	Levene's Statistic	F (N=3)	Levene Statistic	F (N=3)
Hashtag	14.140***	12.291***	7.923***	2.302
Tagging	2.135	2.347	2.419*	3.417
Follower	6.575***	2.582	4.627***	2.304
Comment	19.694***	10.642***	9.707***	4.371**
Like	4.336**	3.117*	2.596*	2.061
Sig. (*<.05; **<.01; ***<.001)				

Table 4. ANOVA results across 4 CoPs for social media features and between single and multiple communities.

In the Russian CoP, the use of only one of the four CoPs hashtags was significantly higher than in any other CoPs ($\chi2$=85.538, p<0.001) (Figure 3). The Russian hashtag was more likely to be used in a post without any of the other three hashtags. Interestingly, as can be seen in Figure 3, posts in all four communities were mostly written in one language (87%) and we didn't find any significant differences between the four when comparing the use of single or multiple languages.
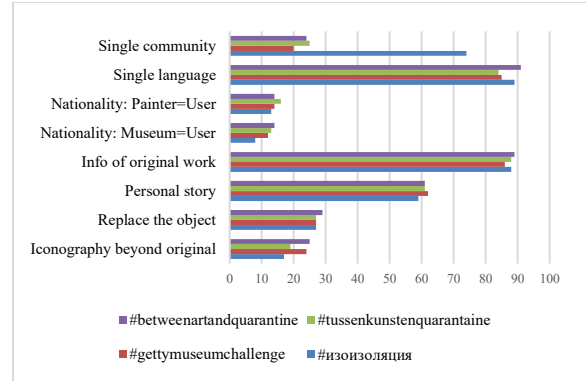

Figure 2. Percent of Codes per CoP.

In all four CoPs, more often than not (86%), the nationality of the original painter and the user did not match, nor did the location/museum of the original art and user's nationality (88%). The frequency of disclosure of information about the original artwork was at about the same level (88%), and the inclusion of a personal story in posts was similar across the four communities (61%). The frequency of the use of objects varying from those in the original artwork was as common across the four CoPs (28%). Posting recreations with iconography that went beyond the original was low overall (21%), yet was slightly higher in the two English CoPs compared with the other two (25% and 24% compared with 19% and 17%, respectively).

4.2. The difference between posts in single and multiple communities.

To answer our second research question, we compared posts that belong to a single community — those that include only one of the four hashtags — with those that bridge CoPs boundaries — they include more than one hashtag. The frequency of each of the codes is higher in posts with multiple communities (Figure 4).
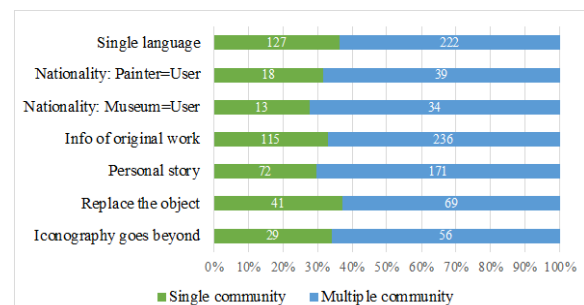

Figure 4. Code frequency in single and multiple communities.

However, these differences between single and multiple communities were statistically significant for only two codes, the inclusion of a personal story ($\chi2$=11.126, p<0.001) and information about the original work ($\chi2$=10.097, p<0.001). Posts in multiple communities were significantly more likely to include a personal story and information about the original work than posts in a single community (236 vs. 115 and 171 vs. 72, respectively).

In a follow up analysis we found that the percentage of Russian hashtags accompanying posts divulging information about the original work was the same in posts in single communities as in multiple communities (88%); yet, for the other three hashtags, the percentage of posts in multiple communities including such information was higher compared with posts in each single community (92% vs. 79%, 92% vs. 76%, and 93% vs. 60%, respectively) (Table 5). This was significant in only one of the CoPs, the #gettymuseumchallenge (G=-0.783, p<0.01). Although for each CoP, the percentage of posts that included a personal story was higher for posts in multiple communities than in single community, these differences were significant in only two CoPs,

#betweenartandquarantine (G=-0.481, p<0.01) and #gettymuseumchallenge (G=-0.607, p<0.01).

We also found variations between the posts in single and multiple communities, including the average number of hashtags, tags, followers, and comments per post (Table 6). We found a higher average number of hashtags and tags for posts in multiple communities than in single communities (13.44 vs. 5.38 and 1.83 vs. 0.69, respectively), but we found a higher average number of followers, comments and likes on posts in single communities than in multiple communities (91,754 vs. 59,022, 150 vs. 97, and 3,706 vs. 2,628, respectively). The difference between the average number of hashtags (F=37.531, p<0.001), tags (14.068, p<0.001), and comments (F=36.209, p<0.001) were statistically significant. We conducted a follow-up analysis in each of the CoPs to examine if these differences follow the same pattern (Table 6). We found that in each of the CoPs, all of the compared social media features significantly varied between posts in both single and multiple communities and followed the same pattern as we had identified in the sample as a whole (Table 4).

Code/Single and multiple community per CoP	#betweenartandquarantine		#tussenkunstenquarantaine		#gettymuseumchallenge		#изоизоляция	
	Single (N=24)	Multiple (N=76)	Single (N=25)	Multiple (N=75)	Single (N=20)	Multiple (N=80)	Single (N=74)	Multiple (N=26)
Single language	21 (88%)	70 (92%)	21 (84%)	63 (84%)	18 (90%)	67 (84%)	67 (91%)	22 (85%)
Nationality: Painter=User	3 (13%)	11 (14%)	4 (16%)	12 (16%)	3 (15%)	11 (14%)	8 (11%)	5 (19%)
Nationality: Museum=User	3 (13%)	11 (14%)	2 (8%)	11 (15%)	3 (15%)	9 (11%)	5 (7%)	3 (12%)
Info of original work	19 (79%)	70 (92%)	19 (76%)	69 (92%)	12 (60%)	74 (93%)	65 (88%)	23 (88%)
Personal story	10 (42%)	51 (67%)	12 (48%)	49 (65%)	7 (35%)	55 (69%)	43 (58%)	16 (62%)
Replace the object	6 (25%)	23 (30%)	10 (40%)	17 (23%)	7 (35%)	20 (25%)	18 (24%)	9 (35%)
Iconography beyond original	6 (25%)	19 (25%)	6 (24%)	13 (17%)	6 (30%)	18 (23%)	11 (15%)	6 (23%)
Total	24 (100%)	76 (100%)	25 (100%)	75 (100%)	20 (100%)	80 (100%)	74 (100%)	26 (100%)

Table 5. Codes frequency and percentage of single and multiple communities per CoP.

Average per post for single and multiple community in each CoP		Hashtag	Tagging	Follower	Comment	Like
#betweenartandquarantine	Single	5.92	1.04	63,304	112	3,282
	Multiple	15.72	1.78	11,512	80	1,366
#tussenkunstenquarantaine	Single	7.28	0.60	37,304	116	3,812
	Multiple	11.43	1.96	90,327	110	3,366
#gettymuseumchallenge	Single	7.05	0.45	53,435	130	3,304
	Multiple	14.20	1.99	21,005	92	2,203
#изоизоляция	Single	4.12	0.66	129,734	180	3,916
	Multiple	10.23	1.15	224,573	133	5,495
Overall	Single	5.38	0.69	91,754	150	3,706
	Multiple	13.44	1.83	59,022	97	2,628

Table 6. Average numbers of social media features in single and multiple community across four CoPs.

5. Discussion

We discuss and explain our findings about CoPs boundary maintenance and boundary crossing in light of existing knowledge on CoPs and within the specific socio-cultural context of the four observed CoPs, drawing on cross-cultural communication theories (Barna, 1994; Hall, 1989; Hofstede et al., 2010; and Trompenaars & Hampden-Turner, 2012).

In our attempt to understand if and how Instagram's visual affordances play a role in boundary maintenance processes (Dedema & Fichman, 2021), we have identified practices that aim at maintaining the boundaries of a given CoP, consequently creating a homogeneity within the CoP and strengthening its members' identities in practice. The hashtag use practices were critical both as a boundary maintenance tool, especially when the Cyrillic script in the Russian hashtag was used, and in facilitating boundary crossing practices, when the Latin script was utilized in the three other hashtags. The use of different scripts seems to enforce boundaries that are the least permeable. This Instagram feature, the hashtag's script, aligns strongly with the separation and overlap between the four CoPs; the vast majority of the posts in the Russian CoP did not overlap with any of the three other CoPs, while the vast majority of the posts in each of the three other CoPs overlapped with at least one other CoP. The differences between the Russian CoP and the other three CoPs were evident in other Instagram social media features besides hashtag use, but not in art recreation practices, which were common to all four CoPs. Despite the common practice of posting visual images of art recreations on Instagram, users' social media behaviors differed between these four CoPs. On average, the Russian posts received more likes and comments, and had many more followers, yet fewer hashtags than did posts in each of the three Latin-script CoPs. While art recreations were shared across CoPs boundaries, the posts were shared almost exclusively among those that used the same script. The hashtag, which is a textual representation of the post's topic, serves as a stronger form of identity in practice than do the images of art recreation.

It is perhaps not a surprise that the script used to write a language creates barriers between the four observed CoPs, given that language barrier is one of the six most basic stumbling blocks in intercultural communication (Barna, 1994). What is noteworthy here is the extent to which chosen script dictates the permeability of a community even on Instagram, a platform known for its visual affordances, and within the context of a challenge that focuses on fine art. While an image is worth a thousand words and the art recreation practice was shared across CoPs, the least

permeable boundaries between the CoPs have been maintained through the different hashtags' scripts. Future research should further explore and compare the extent of the textual versus the visual boundary maintenance practices.

As far as boundary crossing practices, most of the posts in our dataset were common to multiple CoPs, demonstrating permeable boundaries where boundary-crossing practices are common. These posts that facilitated the boundary-crossing process and belonged to more than one CoP (multiple communities) differed from those that did not facilitate the boundary-crossing process and only belonged to one CoP (single community). In general, posts that crossed boundaries employed the Latin script while the majority of the posts that used the Cyrillic script did not cross the boundaries of a single CoP.

The ways in which the platform's social media features were utilized for boundary-crossing were often expected. Posts that crossed CoP boundaries had, on average, a significantly larger number of hashtags and tags. However, posts in more than one CoP had significantly lower average numbers of followers, comments and likes compared with posts that did not cross boundaries. This suggests that perhaps brokers function at the periphery of each CoP. Boundary brokers are "members who are particularly adept at maintaining a presence at the boundary of their community, while sustaining their own engagement in practice" (Thommons, 2017, p.12). Lave and Wenger (1991) describe how newcomers become experienced members of a CoP, starting with low-risk contributions at the margin of the community, in what the authors call legitimate peripheral participation. In a similar way, art historians have frequently traced deviations and innovations in style and techniques at the margins of masterpieces; these margins were often left to the artist's students and apprentices, some of whom later became established artists, pushing art forward through a continued chain of development (Gombrich, 1995). Social media practices differed between posts that served for boundary-crossing and those that did not, placing the Russian CoP as an outlier again.

The differences between the boundary-crossing posts and non-boundary-crossing posts were also noticeable in our content analysis. Boundary-crossing posts were significantly more likely to include information about the original work and/or to include a personal story than were posts in single communities that did not cross boundaries. Yet again, this boundary-crossing practice was not as common in posts within the Russian CoP, where posts were equally likely to include information of the original work in the Russian CoP, whether they were posted to

one or more CoPs. Furthermore, while the percentage of posts that included a personal story was higher in boundary-crossing posts in each CoP, there was a significant difference when comparing them with the English non-boundary-crossing posts. This may suggest that the language of the post, besides scripts, plays an important role in boundary-crossing practices.

Other cultural norms may affect this inclusion of a personal story as a boundary crossing practice, making it more common in Anglo-Saxon cultures than in other cultures. It is possible that in Anglo-Saxon cultures, sharing personal information with strangers in online CoPs is more common; in these individualistic cultures, people are more likely to trust strangers enough to share with them their personal stories in order to connect and gain sympathy. This practice of sharing information with strangers varies across cultures (e.g., Trompenaars & Hampden-Turner, 2012). For example, small talk across cultural barriers between Russians (coconut culture) and Americans (peach culture) is tricky in part because of their cultural differences; Meyer (2014) explains that in peach cultures, "people tend to be friendly ("soft") with new acquaintances… share information about themselves and ask personal questions of those they hardly know.… [then] they suddenly get to the hard shell of the pit where the peach protects his real self, and the relationship suddenly stops… [but in contrast, in coconut cultures] …people are initially more closed off from those they don't have friendships with. They rarely smile at strangers, ask casual acquaintances personal questions, or offer personal information to those they don't know intimately. But over time, as coconuts get to know you, they become gradually warmer and friendlier. And while relationships are built up slowly, they also tend to last longer."

Meyer's (2014) idea comes from the difference between cultures based on the diffuse-specific dimension of culture (Trompenaars & Hampden-Turner, 2017) or the differences between high-low context cultures (Hall, 1989). Russian's diffuse and high context culture impact their communication pattern as they don't speak with strangers and are more conservative in general, whereas individuals from Anglo-Saxon cultures are less conservative and more likely to speak with strangers. These cultural differences can explain why the Russians' CoPs posts included less personal information than posts in the three other CoPs, and also why sharing personal information in posts in the Russian CoP was low in boundary-crossing and non-boundary-crossing posts.

It is important to note here, however, that the frequency of sharing personal information in posts in the art recreation challenge may further be intensified online, compared with offline information sharing due to the disinhibition effect (Suler, 2004). When people communicate on social media platforms, they are more likely to open up and share personal information than they would be offline. As a result of benign online disinhibition (Suler, 2004), people might self-disclose more on the internet than they would in real life, or go out of their way to help someone or show kindness online. The effect of cultural variations in toxic online disinhibition have been documented (Fichman & Rathi, 2022), but the impact of culture on benign disinhibition has yet to be explored.

As far as the Dutch CoP, we found most of the time, that practices of boundary maintenance and boundary crossing were similar to the two English CoPs, and frequently in between the Russian and English CoPs; this might be explained by the relative rank of the countries on Hofstede's six dimension of national culture (Hofstede et al., 2010). Russia differs from the Dutch and Anglo-Saxon cultures also on each of Hofstede's cultural dimensions (Hofstede et al., 2010). This can explain the similarity between the three (English and Dutch) CoPs, and the differences between the Russian CoP and these three CoPs. These cultural differences can explain not only why the Russian CoP boundaries were generally less permeable, but also why we found different boundary maintenance practices between the Russian CoP and the three other CoPs. Future research may benefit from a more thorough exploration of variations across cultures in other CoPs beyond the specific cultures that we cover here.

6. Conclusion

We contribute a nuanced understanding of CoP boundary maintenance within the context of Instagram's art recreation challenge during the COVID-19 crisis, emphasizing the socio-technical affordances of the platform. We explain our findings in light of existing knowledge on CoPs and within the specific socio-cultural context of the four observed CoPs, drawing on cross-cultural communication theories (Barna, 1994; Hall, 1989; Hofstede et al., 2010; and Trompenaars & Hampden-Turner, 2012).

The study bears implications for creators and moderators of online communities of practice, suggesting that textual affordances are more likely to support boundary maintenance, while visual affordances may facilitate boundary crossing. The visual affordances aim at maintaining the boundaries of a given CoP, enforcing homogeneity within the CoP, and strengthening its members' identities in practice. Despite the common practice of posting visual images of art recreations on Instagram, users'

social media behaviors differed between these four CoPs. The hashtag, which is a textual representation of the post's topic, serves as a stronger form of identity in practice than do the images of art recreation.

Among the limitations of our study are the use of a single case of one art recreation challenge (with four CoPs' hashtags) on one platform (Instagram), the relatively small sample of posts analyzed (400 posts), and the limited variability in practices and languages. Thus, the transferability of findings should be made with great caution. Still, our analysis allows for a better understanding of boundary maintenance and boundary-crossing processes that involve the unique sociotechnical visual and textual affordances of Instagram.

Future research may examine how boundary maintenance processes that utilize visual and textual affordances on Instagram impact brokers and boundary objects in other types of CoP and during times that are not as turbulent as the COVID-19 lockdown in 2020.

7. References

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