

1 **Accessing Russian Culture Online: The scope of digitization in**
2 **museums across Russia**
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5

6 **Abstract**

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8 We compare the scope of museum digitization in the Russian Federation, a country with diverse
9 cultural heritage and over 2,300 museums, with the scope of digitization in Europe as measured by
10 the Enumerate Survey of 355 museums from 20 European countries initiated by the Collections
11 Trust, UK, in 2011. Our paper shows that the reach and scope of digitization in Russia is lesser
12 than that of European museums. Digitization is mainly done in Russia for inventory purposes. The
13 share of digitized objects published online is comparable to that in Europe if we consider images
14 published on museum websites, however much content from Russia is not licensed as reusable,
15 partly due to the different legal framework that exists there. The paper challenges the perceptions
16 that global heritage collections are becoming more visible and accessible. It shows that future
17 digital analysis of cultural heritage may be only possible with corpora of images provided by
18 museums that publish numerous images from their digital collections online, while pursuing the
19 policies of free image reuse alongside open licensing. Such corpora may not be found beyond a
20 limited number of Western collections, which may result in excluding many cultures from
21 humanities research.

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23

24 **Introduction**

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26 The rate and coverage of digitization throughout Europe and the Western world is
27 monitored and understood (Navarette, 2014; Europeana, 2017; Minerva EC, 2017).
28 The reach and scope of digitization across Russia, a huge country with diverse
29 heritage, is almost unknown. In this paper, we build on previous work (Kizhner *et al*
30 2016a) by using Russian Ministry of Culture statistics to calculate the percentage of
31 museum collections that have been digitized across Russia. We identify country-wide
32 patterns showing that there are huge regional variations for the scope of digitization
33 and quantity of digital images produced and that there are limited amounts of images
34 posted online. Our analysis clearly demonstrates that despite numerous local efforts
35 and state-wide programmes to build a national aggregator of museum images, there
36 are few outcomes, and Russian cultural heritage is significantly absent online,
37 compared to the average results for European museums. We suggest that studying
38 non-European digitization practices can lead to further understanding of the digital
39 canon upon which analysis of culture is based (Limb, 2007; Warwick *et al.* 2012;
40 Price, 2009; Earhart, 2012), allowing us to question the biases and online-premium
41 experienced by the cultures which are digitized and made available, either for online
42 viewing, or further open licensing.

43 Analyzing the representation of heritage collections in the online medium is the
44 first step to understanding how they contribute to international perceptions of culture
45 in the digital age. We monitor various characteristics to be able to understand the
46 complex status of digitization in Russia, including: the history of digitization in
47 Russia, assessing the number of images available in museum databases and images
48 available online; understanding the licenses and legal frameworks that govern any
49 reuse; noting the importance of multi-lingual interfaces and metadata; and noting the
50 differences between digitization in city centre and provincial collections. We discuss
51 Russian digitization as an example of complex, bottom-up, unstructured data creation
52 distinct from western approaches to content re-use, open data, linked data and
53 repurposing (Robinson, 2013; Kizhner *et al.* 2016b). We show that incomplete
54 understanding of digitization as technology and social force (Gooding *et al.* 2013)
55 can lead to a lag in undertaking digitization at scale, and ask how a potential change
56 in digitization practices, which would be inclusive of Russian culture and approaches,
57 can broaden the digital canon available to international researchers.

58 This paper provides, for the first time, data on Russian digital cultural heritage
59 collections, which are generated from museums scattered across a huge country with
60 diverse collections representing European and national heritage. By using established
61 methods from monitoring European collections, we highlight difficulties,
62 opportunities, and ramifications for online cultural heritage, in a wider European
63 context. We clearly demonstrate that future analysis of cultures for humanities
64 research may be biased toward the corpora of digitized images published online and
65 licensed for free reuse, which may have complex ramifications for the study of
66 Russian cultural heritage, and beyond.

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68 **2. Digital Collections in Russian Museums**

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70 ***2.1 Historical Background***

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72 It is never easy to build a single narrative of museum computing (Parry, 2007).
73 Conflicting forces of building inventories, providing access, managing idiosyncrasies
74 of museum descriptions and introducing standards of machine-readable metadata
75 mean that the field did not develop in a straightforward mode or a single direction
76 (ibid). However, this paper will demonstrate that Russian museum computing has
77 been more about building inventories than about developing digital collections that
78 can be accessed as large scale digital image repositories, or built on to provide more
79 advanced digital resources in the humanities, such as digital scholarly editions¹.

80 Although digitization has a long history in Russia covering the early days of
81 museum computing in the country (Sher, 1978; Sher, 2006; Nol, 2007; Mikailova,
82 2013) and creating the first Russian collection management systems (Brakker, 2013;
83 Brakker, 2017; KAMIS, 2017; Loshak, 2017), we do not have a consistent discussion
84 of the current status of digitization of Russian cultural heritage within institutional
85 settings.

86 From the 1970s, the rationale for museum digitization practices in Russia was
87 quite similar to that in many other countries, being informed by a need for
88 information and collection management so that museum objects would be catalogued
89 and properly conserved (Aseev and Sher, 1983; Williams, 2010; Chenhall and Vance,
90 1987; Navarette, 2014). The synergy (or conflict) of keeping inventories and
91 providing access continued in the late 1990s and early 2000s. An important initiative
92 of providing access to Russian museum collections stems from 1997 when The State
93 Hermitage Museum² and IBM³, a computational industry partner, launched an
94 important collaboration programme. IBM provided a scanner - then a rare and
95 expensive peripheral - and software, a web application, design, and user interface
96 design for the museum web site (Fig. 1) which was launched in 1999 (IBM,
97 2017).The State Hermitage Museum was unique in developing its digitization
98 programme and publishing collections on its web site as the museum combined the
99 advantages of having dedicated curators to provide metadata, ability to use high-
100 quality digitization technology provided by a commercial company, and IBM
101 technology to develop its web site. The interaction of this major museum with large
102 commercial companies was quite typical for a rise of digitization observed in many
103 countries in the 1990s when museums benefited from large-scale applications of
104 technologies and companies could experiment and build their reputation on the
105 achievements (Terras, 2011).

106 The balance between keeping inventory databases and providing access to
107 collections resulted in building the National Catalogue of the Russian Federation
108 (RF) Museum Collections. Russian government policy related to the need of
109 preserving collections from 1996 onwards (Federal Law number 54-FZ) was aimed at
110 building the resource (Fig. 2), first as an offline catalogue for inventory purposes,

111 later as a comprehensive open database posted online⁴ (Ministry of Culture of the
112 Russian Federation, 2017b).

113 The catalogue is supposed to be completed by 2026 when metadata and images
114 for all objects from the RF Museum Collections will be included in the registry and
115 posted online (Ministry of Culture, 2017b). Uploading the data is mandatory for all
116 public museums and the planning/timeline is supposed to be controlled by the
117 Ministry of Culture at the federal level for the most important museums (Ministry of
118 Culture, 2017c), and at the regional level for regional and local museums. The
119 National Catalogue includes three registries. The offline registry of Russian public
120 and corporate museums is maintained as a mandatory list, and private museums can
121 be included on a voluntary basis. The second registry is an offline registry of museum
122 objects for managing acquisition and accession, controlling location and movement.
123 The third registry is the online database mentioned above (Fig. 2). It was developed
124 for research in the humanities and for the general public. The guidelines available on
125 the web site of the National Catalogue inform museum professionals that the
126 mandatory data to upload are an image, title (or object type), period, dimensions,
127 accession numbers, classification field from a guideline, property type for a museum
128 object (e.g. federal property), and credit line. This means that the collection
129 management system will not allow the uploading of records without images (Ministry
130 of Culture, 2017a). It is not yet a comprehensive database as it only includes images
131 for 5% of museum objects in the RF Museum Collections so far. This indicates that,
132 in order to meet legislative requirements from the RF Ministry of Culture, a mass
133 program of digitization will need to happen across Russia. Consolidated museum
134 activities may result in providing images and metadata to be published in the
135 National Catalogue for the total number of museum objects by 2026 but the quality of
136 images and metadata may suffer (Pravdina and Loshak, 2017).

137 Beyond the RF catalogue, we analyzed the representation of Russian digital
138 collections through international aggregators of content, but there were not vast
139 amounts of Russian content available via these mechanisms, given the overall
140 number of objects contained in these content management systems⁵. In 2008-2009,
141 five Russian museums⁶ expressed their interest in contributing metadata of objects
142 from their online collections to Europeana (Brakker, 2009). Between 2009 and 2011,
143 these museums submitted metadata for 43,839 objects (Brakker and Kuibyshev,
144 2013). Metadata for more objects were added between 2011 and 2015 and their
145 number is 48,689 at the time of writing this paper (Europeana Collections, 2017).
146 Google Arts and Culture⁷ provides access to the images and metadata for 14,000
147 museum objects from Russian collections.

148 During the course of the digitization of Russian museum collections, we have
149 observed dedicated work aimed at providing metadata standards and descriptions
150 (early years of museum informatics at the State Hermitage Museum, developing first
151 Russian collection management systems, contributing metadata to Europeana
152 Collections). We have seen exciting efforts of providing access to Russian cultural
153 heritage at the very beginning of cultural heritage digitization (The State Hermitage
154 Museum web site). Further research is needed to understand various drivers of
155 digitization in the Russian history, considering that, despite obvious advances, we

156 observe a low involvement in providing access at national (National Catalogue of the
157 RF Museum Collections) and international (Europeana Collections) levels. The
158 following sections will demonstrate that access to images and metadata from separate
159 museum web sites is low at the moment of writing this paper. This means that
160 Russian cultural heritage does not have a significant potential to be used for
161 enjoyment, education and research before 2026 when museum efforts are supposed to
162 be consolidated to provide access to a major part of collections through the National
163 Catalogue of the RF Museum Collections (Ministry of Culture, 2017b). This is
164 important when we consider how the humanities develop and what collections inform
165 scholarly results/international perceptions.
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167 **3. Assessing the Spread of Digitization across Russian museums**

168 **3.1 Methodology**

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171 The National Catalogue of the RF Museum Collections (Ministry of Culture of the
172 Russian Federation, 2017a) is an initial access point in finding out the scale of
173 museum digitization in various parts of the country including its remote regions. Our
174 previous paper (Kizhner *et al.*, 2016a) demonstrated preliminary results of a survey
175 estimating the percentage of digital images for Russian museum collections. The
176 study also included web site exploration results on the percentage of museum
177 collections posted online. However, we only asked 1.2% museums in the country for
178 the percentage of digitized images, and explored 6% of museums for the images
179 posted online. The results gave initial estimates, indicating that the uptake of
180 digitization for Russia is lower than that in Europe - 18% of analogue collections
181 compared to 31% for European museums (Nauta and van den Heuvel, 2015, p. 20),
182 and that the percentage of images published online is low (1.5%) but comparable to
183 that published in Europe (7%) (*ibid.*). We studied the scope of digitization across a
184 diverse country with huge cultural and ethnic heritage. The limitation of our study
185 was that as well as being based on a small sample, we did not look at the quality of
186 collections, importance of museum objects for humanities research or the quality of
187 digitized images.

188 The present paper studies the uptake of digitization in Russian museums through
189 the statistical reports (Form 8 nk) submitted to the Ministry of Culture from 2,367
190 museums in 2015⁸. The annual statistical reports are mandatory for all museums
191 reporting to local municipalities, regional administrations and the RF Ministry of
192 Culture, in fact for all non-private and non-corporate museums. From these, we can
193 generate the average results for the country and the average results for its eight major
194 geographical regions. This will show the distribution of digitization activities and
195 content across Russia. We aim to contrast the data available with that from the
196 Enumerate project, which is a study of the uptake of digitization across Europe
197 between 2011 and 2015, funded by the European Union (Europeana, 2017), which
198 will allow us to ascertain whether Russian digitization efforts are equivalent to those
199 being undertaken elsewhere. We used the data from the Enumerate Survey of 2015

200 (Nauta and van den Heuvel, 2015) including 355 museums from 20 European
201 countries.

202 We obtained the data of the RF museums' statistical reports for 2015 from the
203 RF Ministry of Culture in summer 2016, after an enquiry submitted via email by the
204 Office of Provost, Siberian Federal University, to the RF Ministry of Culture. The
205 complete data received as an aggregated spreadsheet for the filled 8 nk Form (RF
206 Ministry of Culture Statistics, 2017) relates to 2,635 museums from every region of
207 the Russian Federation⁹. To the best of our knowledge, this data has not been
208 previously used to study the scope of digitization, either at a regional or at a national
209 level.

210 The data was received as an Excel spreadsheet. We redacted the spreadsheet
211 removing information which did not relate to the digitization of museum objects, or
212 contained data on galleries that were for temporary display: this data cleaning
213 resulted in 2,367 museums. The data in the spreadsheet was analyzed to give the total
214 number of objects for every museum, the number of database records with digital
215 images, the number of images posted online, and the availability of English interfaces
216 counted manually at a later stage (the data on English interfaces was not included in
217 the spreadsheet). The table received included data for over 2,000 museums and it was
218 too large to be added to this paper as an appendix so we chose to present the results
219 of the analysis.

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221 **4. Results**

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223 The percentage of digital images as related to the total number of museum objects
224 across Russia was 14%. This is a low uptake compared to the average numbers for
225 Europe as The Survey Report on Digitization in Europe for 2015 shows 31% digital
226 images as compared to analogue objects in museum collections (Nauta and van den
227 Heuvel, 2015). The scope of digitization varied across geographical regions (Fig. 3,
228 Table 1) declining relatively steeply in the Far East (the lowest scope), Volga Federal
229 District and Caucasus. The greatest level of museum digitization that exceeded the
230 European level was observed in Saint Petersburg. The scale of digitization across
231 major geographical regions varied between the minimum of 6% in the Far East and
232 the maximum of 25% in the regions adjacent to Saint Petersburg (Fig. 3, Table 1).
233 This means that online scholarly access and promoting cultural heritage of Russian
234 provinces is going to be more difficult even when (if) images are available online via
235 the National Catalogue (the museum objects necessary to study the cultural heritage
236 of the country have not been digitized).

237 The Survey Report on Digitization in Europe (ibid.) demonstrates the
238 perceptions of museum staff regarding the necessity to digitize museum objects.
239 Curators think that 86% of museum collections have to be digitized. This means that
240 historical and cultural information has been digitally reproduced for a third of
241 European museum collections, for the same number of collections in Saint Petersburg
242 and for a much smaller number of collections in Siberia, the Russian Far East, and
243 Volga District where ethnographic and historical museum repositories obviously
244 represent a great interest.

245 An interesting and unexpected result was the difference between the scale of
 246 digitization in two major cities, Moscow and Saint Petersburg. The percentage of
 247 analogue objects with digital images was much higher in Saint Petersburg than the
 248 average across Russia and much higher than that in Moscow. A possible explanation
 249 of the IBM/Hermitage project started in 1997 (see above) triggering digitization
 250 activity in the museum community in Saint Petersburg may be a partial explanation.
 251 In addition, a strong uptake of digitization in this region relates to the interaction of
 252 the museum community in Saint Petersburg and the Russian Academy of Sciences in
 253 the 1970s, followed by collaboration with national and international commercial
 254 companies, including IBM, at a major scale, followed by *KAMIS: Museum*
 255 *Collections* (see above) working in the region.

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Places	The percentage of the analogue collections digitally reproduced as related to the total number of objects, %	The percentage of digital images posted online as related to the total number of analogue objects, %
The average across Russia	14	1.44
Saint Petersburg	36	0.93
North-West (North-Western Federal District)	25	1.32
Ural Federal District	18	3.2
Southern Federal District	16	1.3
Centre (Central Federal District)	11	1.77
Siberian Federal District	11	0.79
Moscow	10	1.28
Caucasus (North-Caucasian Federal District)	9	1.16
Volga Federal District	8	1.18
Far Eastern Federal District	6	0.93

258
 259 Table 1 The percentage of the analogue collections digitally reproduced and available online in the
 260 museums of Saint Petersburg, Moscow, and across Russia.
 261

262 We can see that digital collections do exist across the country, but their scope
 263 varies and the level of digitization beyond the North-Western Federal District is
 264 much lower compared to the average European level of digitization.

265 It is especially important to understand a combination of digitally reproduced
 266 images and the scope of images posted online (Fig. 4, Table 1). For example, Saint
 267 Petersburg with the record level of digitization at 36% makes only 0.93% of the
 268 city's analogue collections published online and visible (Fig. 4, Table 1). The Ural
 269 Federal District with the level of digitization at 18%, the second highest in the

270 country, provides digital access to 3.2% of its analogue collections. Cultural heritage
 271 in this part of the country is the most accessible to online users, while museum
 272 collections in Siberian Federal District are least accessible (Fig. 4, Table 1) The
 273 effect of invisibility of Siberian museum collections may result in an inadequate
 274 impression regarding Siberian cultural heritage. A question ‘Do Siberian museums
 275 exist as data for the humanities researchers?’ may indeed be asked in this context.

276 We can see that digital collections of Russian museums mostly exist for
 277 inventory purposes. Visibility of Russian digital collections, consequent access to
 278 images for scholarly studies and introduction of Russian cultural heritage to the
 279 international cultural discourse depends on the combination of digitally reproduced
 280 images and images published online. With numerous international cultural collections
 281 available online, a major part of Russia’s cultural heritage may be at risk of staying
 282 inaccessible for public use and scholarly analysis at national and international levels.

283 We analyzed whether the information on Russian digital collections is provided
 284 in English¹⁰. We compare Moscow, Saint Petersburg and adjacent regions with
 285 provinces demonstrating that digital collections for museums in Siberia, Far East and
 286 the Caucasus are least accessible to international online users. As shown in Table 2,
 287 museums in Moscow, Saint Petersburg and adjacent regions in North-Western
 288 Federal District indeed provide English interfaces. Almost a half of museums in
 289 Moscow provide English interfaces but only a half of them (sixteen museums out of
 290 twenty-eight) provide several images of museum objects linked to an English
 291 interface. Fifteen museums across Russia (0.63% of the total museum number)
 292 provide metadata in English. In Moscow, metadata in English is present on the web
 293 sites of The Pushkin State Museum of Fine Arts¹¹, The State Tretyakov Gallery¹²,
 294 The Polytechnic Museum¹³, and Moscow Kremlin Museums¹⁴. A similar situation of
 295 attracting physical visitors and obvious difficulties in accessing online collections is
 296 characteristic of museums in Saint Petersburg. While twenty-five museums in Saint
 297 Petersburg provide English interfaces only three major museums (The Hermitage
 298 Museum, Museum of the History of Saint Petersburg, and The State Russian
 299 Museum) present metadata in English so that they can be retrieved as separate
 300 museum objects by non-Russian speaking users.
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Place	Number of museums in the data set	Absolute number of museums with English interfaces/metadata in English	English interfaces (% as related to the total number of museums)	Metadata in English ((% as related to the total number of museums)
Saint Petersburg	39	25/3	64.10	7.69
North-West (North-Western Federal District)	161	29/2	23.18	1.25
Ural Federal District	186	9/1	4.69	0.52
Southern Federal District	151	4/1	2.65	0.66
Centre (Central Federal District)	400	21/1	9.64	0.25

Siberian Federal District	359	5/0	1.39	0
Moscow	64	28/5	43.75	7.81
Caucasus (North-Caucasian Federal District)	122	1/0	0.82	0
Volga Federal District	448	13/2	2.42	0.44
Far Eastern Federal District	155	2/0	1.15	0
Total across Russia	2,367	137/15		
The average across Russia			5.78	0.63

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Table 2 Accessibility of online museum collections to international users. Geographical distribution of museums where web sites include an English interface and metadata in English as related to the total number of museums in a region.

Russian museums understand digitization of their collections as the necessary tool of maintaining museum registries for inventory purposes. This is demonstrated by a dramatic difference between the percentage of digitally reproduced images and images posted online, especially in an advanced region of Saint Petersburg and the North-Western Federal District.

5. Closed Collections

‘Permissions culture’ (Bielstein, 2006; Whalen, 2009; Petri, 2014; Aufderheide et al 2015) is a situation when the society expects users to ask for permissions or licenses when interacting with visual art in a digital environment. The degree of freedom for this interaction varies in different countries (see, for example, Aufderheide et al. 2016 discussing the limitations of ‘fair use’ implementation in the USA and Wallace and Deazley 2017 for real life examples from museums in a number of countries). In Russia, the ‘permissions culture’ is maintained by the legislation of the Russian Federation¹⁵. This means that museums are supported by federal or local Ministries of Culture and they can claim their rights of being asked for permissions. The State Hermitage Museum allows image reuse for student projects, educational handouts, doctoral theses, presenting research results at conferences. Publishing your conference slides online will involve asking the museum for permission as if it were a research publication or a commercial product for which a permission or license are required (The State Hermitage Museum, 2017). Previously we demonstrated that moving images across platforms and outputs for different research projects, for example to develop scholarship or digital resources in the humanities, may not be possible in Russia as a permission from a museum tends to relate to a single project and changing its use will require a new license (Kizhner *et al.* 2016b).

Russian museums are not an exception in keeping their collections ‘closed’. A recent study demonstrates that about 80% of museums in a sample of 175 institutions in English speaking countries (USA, UK, Canada, Australia, New Zealand) allow image re(use) only on the condition of requesting permissions (Esalieva, 2017). A

337 study of museum reputation (Van Riel and Heijndijk, 2017) features 18 famous art
 338 museums and relates their rankings to the awareness of their existence. When we
 339 manually checked the museum web sites for the documents on image policies, we
 340 found that two-thirds of the museums do not pursue an open access policy (Table 3).
 341

Policy type	Museums
Open access (commercial reuse allowed) for images in the public domain	Metropolitan Museum of Art, National Gallery of Art, Rijksmuseum
Non-commercial reuse allowed for images in the public domain or where copyright is cleared by a museum	The Louvre, British Museum, Van Gogh Museum
Personal and educational use, otherwise permitted use only (a fee may apply)	State Hermitage Museum, Musée d'Orsay, Museo del Prado
Permitted use upon request (a fee may apply)	National Gallery, Vatican Museums, Tate Modern, Musée National d'Art Moderne, Reina Sofia, Museum of Modern Art
Requests to provide images (no fee is applied)	National Art Centre, Japan
No information on policy type	Centro Cultural Banco do Brasil, Shanghai Museum

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 343 Table 3 A list of eighteen famous museums from a recent study of what influences museum
 344 reputation (Van Riel and Heijndijk, 2017) and their re-use policy types. Two-thirds of museums in
 345 the study do not pursue open access policy.
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347 This shows that Russian museums are not the only institutions which prevent
 348 their images from being circulated for humanities research, or contribution to a new
 349 online visual canon (Price, 2009). However, the complex legal framework within the
 350 Russian context effectively precludes involvement in the 'Open GLAM' movement¹⁶,
 351 where individual institutions within other legal cultural contexts may have a choice
 352 whether or not to engage and prioritize open licensing and online access to digitized
 353 content.
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355 6. Limitations

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 357 Russian museum collections tend to consist of two parts: the main collection of
 358 objects and a smaller 'research collection' including analogue copies of objects,
 359 supporting documentation, museum library books, plans, and maps (Ministry of
 360 Culture, 1985). While the total number of objects in Russian museum collections

361 slightly exceeds 80 million objects, the number of original objects (including
362 duplicates) is actually 60 million objects. The aggregated results of the statistical
363 surveys (RF Ministry of Culture Statistics, 2017) obtained for the study reported the
364 number of digitized objects as related to the total number of objects in a museum
365 including their 'research collections'. This did not create a methodological problem
366 when comparing the results with those from the Enumerate project where the Survey
367 Report on Digitization provided the percentage of digital images for museums'
368 analogue collections (Nauta and van den Heuvel, 2015, p. 20), but the research
369 collection aspect should be borne in mind when looking at the statistics provided
370 here. We cannot tell which objects were digitized in a given museum, and whether
371 museums preferred to include or exclude the 'research collection' from the reported
372 dataset. If they did exclude the research collection (which is logically justified), the
373 scope of digitization would be higher, if they did not (which is quite feasible because
374 they may have preferred to report all objects with images), the scope of digitization is
375 equal to that reported in the results section (for the data on the percentage of digitized
376 objects and objects published online as related to the number of original objects see
377 Table 4).
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Places	% analogue museum objects with digital images for the main collection (without library books and supporting documentation)	% for the digitized objects published online (without library books and supporting documentation)
The average across Russia	18	2,15
Saint Petersburg	44	1,10
Moscow	12	1,50
Centre (Central Federal District)	14	2,25
North-West (North-Western Federal District)	33	1,78
Southern Federal District	23	1,84
Caucasus (North-Caucasian Federal District)	12	1,50
Volga Federal District	11	1,65
Ural Federal District	25	4,60
Siberian Federal District	16	1,12
Far Eastern Federal District	8	3,16

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Table 4 The percentage of the analogue collections digitally reproduced and available online in the museums of Saint Petersburg, Moscow, and across Russia (for collections without supporting documentation and museum library books).

Another limitation of this study is that we do not consider what digitized content has been ‘cherry-picked’ for online presentation (Besser, 1997), what influences the decision making of what is being digitized or posted online and what impact it has on culture perception. We do not consider the quality of images published online, either, leaving aside the question of how low (high) quality - whether high resolution, or effective color management procedures, for example - influences image perception and contributes to maintaining a balance between keeping images under control and providing access that matches users’ expectations given the current online environment.

7. Discussion

Our findings demonstrate that digital collections in Russian museums do exist across the country, in both metadata and digitized content, but we cannot say that their online display is representative enough to cover the culture considering the variety in

400 geography and ethnography. We can roughly confirm our previous results on the
401 percentage of museum objects with corresponding digitized images across the
402 country (Kizhner et al., 2016a) to be in the region of 18% as our present data show
403 the level of digitization is on average 14% in each museum. However, our previous
404 results might have a sampling bias as the museums answering the questions of the
405 survey could be interested in digitization per se and work towards obtaining more
406 financial and administrative support to sustain this activity.

407 Comparing our data with those from the Enumerate project ‘which aimed to
408 survey the extent of digitization across Europe’ (Europeana, 2017) where some
409 survey questions were about the percentage of the analogue collection digitally
410 reproduced (Nauta and van den Heuvel, 2015, p. 20), we can say that the average
411 results of the present study at 14% are much lower than the results of the Enumerate
412 project for 2015 when the percentage of digitized collections in European museums
413 was 31%. The Enumerate project allows comparing data across museums, libraries
414 and archives and its Survey Report demonstrates a higher percentage of analogue
415 objects with digital reproductions for museums compared to libraries at 19% and
416 archives at 13% (ibid.). We cannot make a similar comparison across sectors to get a
417 full understanding of digitization activities for Russian cultural heritage due to the
418 lack of data on Russian digital collections in libraries and archives. The results for
419 Saint Petersburg museum collections are higher than the European average (Fig. 3,
420 Table 1). The percentage of images available online across Russia as related to the
421 analogue collection is 1.5% which is lower than the percentage reported by the
422 Enumerate project (24% of digital collections and 7.5% of European analogue
423 collections). However, the Enumerate results included digital collections and digitally
424 born objects available online, which complicates the comparison (Europeana, 2017).
425 A clear dominance of digital collections in the North-Western part of the country
426 may be partially explained by the existence of a skilled labour pool in this region, the
427 historical links to technical companies, infrastructure, and western influences.
428 Historical reasons of the influence of museum professionals from Saint Petersburg,
429 the centre of the North-Western District, including their links to major international
430 and national companies, such as IBM and *KAMIS: Museum Systems*, are also
431 important.

432 It would be indeed tempting to position the North-Western Federal District as an
433 island of digitization efforts. What is strikingly incompatible with this argument is
434 the ratio of images of museum objects posted online. The figure is 1.32% for the
435 North-Western Federal District and even lower (0.93%) for Saint Petersburg, almost
436 twice as low as the average across Russia at 1.44%. The figure is equal to the
437 percentage of images posted online in the Far East (Fig. 4, Table 1). While objects
438 are being digitized, those images are not being posted online, in an overturning of the
439 open data principles that we are seeing being uptaken across Europe and America
440 (Borgman, 2015; Boyle, 2010; European Commission, 2016; Terras, 2015). A
441 possible explanation could be that major museums in Moscow and Saint Petersburg
442 have huge collections with millions of objects. Another explanation might be an
443 argument of attracting visitors to physical museums. This is quite consistent with a
444 high number of web sites with English interfaces - museum administrators might

445 want an English interface to attract the international public to a physical museum¹⁷.
446 The web sites with metadata in English are available for some of the most important
447 museums with famous collections featured in printed international sources (The State
448 Tretyakov Gallery, The State Russian Museum, Moscow Kremlin Museums),
449 European paintings from the Hermitage Museum and the State Museum of Fine Arts
450 in Moscow.

451 Starting from the 1980s, influencing content selection for what can be digitized
452 and included in a database was an issue that significantly affected this early work.
453 The Hermitage Museum's senior management was much interested in building a
454 collection management system for the museum's collection of European paintings
455 (Sher, 2006). Their intention to transfer famous works from printed materials to
456 digital collections can be easily explained and understood in terms of promoting the
457 State Hermitage Museum as an institution that keeps and maintains European core
458 values. Another possible explanation of keeping online museum images within a
459 printed canon may be the feeling of control, a concept discussed in the context of
460 licensing images by American museums in the early twenty first century (Kelly,
461 2013). The feeling may be quite common all over the world and Russian museums
462 may not be an exception. Challenging 'permissions culture' in visual art (Bielstein,
463 2006) and relying on public domain images to be published without restrictions
464 (Petri, 2014) as it happens in several museums across the world (Aufderheide *et al.*,
465 2016) has been complicated by a strong opposition of museum gatekeepers when
466 museums assume that 'permissions are inevitably required' (Aufderheide *et al.*, 2016,
467 p. 3). Russian museums are supported in these assumptions by the RF legislation¹⁸
468 (Kizhner *et al.*, 2016b).

469 The National Catalogue of the RF Museum Collections is supposed to include
470 records with images from all museum collections in the Russian Federation except
471 private museums by 2026 (Ministry of Culture, 2017b). We can only hope that the
472 Catalogue can meet its planned target figures within a reasonable period. If it does so
473 and if Russian digital policies change to allow openly licensed content and content
474 repurposing, then Russian cultural heritage will be accessible to a wider national and
475 international user base. If it does not, then Russian cultural heritage will not have
476 adequate representation in online cultural heritage resources, and this could lead to
477 insufficient knowledge about the country's cultural heritage on a global scale in an
478 age when countries compete for better visibility through digital media.

479

480 **8. Conclusion**

481

482 Our novel contribution is in comparing the scope of museum digitization in Russia
483 with the scale of digitization in Europe (using Nauta and van den Heuvel, 2015 as an
484 example). Our findings clearly demonstrate that the scope of digitization is lower
485 than in Europe: the number of images posted online does not contribute to building a
486 clear picture of Russian cultural heritage and the information on Russian museum
487 collections is not accessible to the international audience as very few museums
488 publish metadata in English or have English interfaces beyond a few famous
489 museums. This is the case despite important historical developments and significant

490 initiatives in museum computing scattered across the country. Our results challenge
491 the perception of museum collections across the world as ‘visible and easily
492 accessible’ (Salamon-Cindori et al., 2014). Increased access at a European level
493 prevented only by technical or copyright issues (Taylor and Gibson, 2016) does not
494 mean it has been achieved worldwide. Although much is known about a group of
495 museums with a large share of their collections published online (Aufderheide et al.,
496 2016) or European museums that have digital collections (Nauta and van den Heuvel,
497 2015), further research is needed to find out the share of museums at an international
498 scale that are indeed able to contribute to disseminating the information on cultural
499 heritage through their digital platforms.

500 If non-Western collections will continue to stay invisible and inaccessible,
501 building an art historical corpus (Drucker, 2013) and applying ‘data science’ to visual
502 analysis in art history (Manovich, 2015) will be restricted to Western museum data.
503 Further steps of data simulation, dimension reduction and extracting new, unexpected
504 dimensions from large sets of visual data (Manovich, 2016) will be limited by
505 accessible data sets and the analysis will be, obviously, biased towards the
506 represented heritage characteristics of the Western culture.

507 The sheer magnitude of digitization efforts in creating open archives, a road
508 taken in Europe and elsewhere, demands intertwining digitization efforts and
509 research on artistic canon evolution in a digital era. Eventually, the cultural biases of
510 the twentieth century that are rooted in the colonial and political attitude of the
511 nineteenth century (Said, 1993) will be substituted by the attitudes of the generations
512 from the twenty first century. Harnessing the culture of remix (Lessig, 2008),
513 introducing careful attitudes to what is used and re-used to build a new perception of
514 culture suggests that further research is needed on how a future digital canon is
515 created or how it may differ from printed publications. Who decides what is being
516 digitized, posted online, easily retrieved, linked to further knowledge is an important
517 research question to arm further studies (and, indeed, it would be useful to carry out
518 equivalent studies comparing the results of the Enumerate study to museum
519 digitization activity in other geographical areas, to be able to assess the predicted
520 dominance of European and North American digital culture online).

521 This paper presents the first view on the state of Russian digital collections on a
522 national scale and regional scales, reporting on the scale of digitization for major
523 geographical regions within Russia. By doing so we can challenge the concept of the
524 digital canon, and claim that the printed canon should be essentially extended within
525 the digital space. Our research supports recent criticism of digitization that is not
526 accompanied by thematic context that is strong enough to generate added knowledge
527 in the humanities (Hitchcock, 2013, Gregory *et al.*, 2016). In the Russian context the
528 delay of digitization and online publishing may be exploited to build a network of
529 historically meaningful context that gradually introduces masterpieces and artworks
530 from a variety of regional/social contexts and links them together. National programs
531 are needed to introduce recommendations on how Russian museum web sites and/or
532 the National Catalogue of the RF Museum Collections should host images for
533 searching and browsing to provide infrastructure that can assist humanities research,
534 and what the ramifications of not meeting the deadlines for providing a Russian-wide

535 catalogue of museum objects will be, given no mass digitization program exists, or is
536 resourced, there. Future research may be also needed to find out the scope and reach
537 of digitization in the library and archive sector in the Russian Federation to further
538 understand how the national cultural heritage may be accessed by a wider audience.
539 The task of building inventory databases to get rid of the burden of clerical chores
540 may be just an initial step towards reaching significant economic, social and cultural
541 impact (Drucker, 1967, Gooding *et al.*, 2013). Only by extending the scope and reach
542 of digitization of cultural and heritage collections in Russia, can they become
543 accessible to both national and international audiences.

544

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546

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548 providing the data on Russian museum collections for analysis. We are also grateful
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550 and Jakob Sher for valuable discussions.

551

552 **Notes**

553

554 1. A complicated task that has been rarely achieved for textual materials and requires
555 sophisticated training in editing skills and knowledge of the history of book
556 (McGann, 2013). A recent study shows that there are only about 300 digital
557 scholarly editions worldwide (Franzini et al. 2015).

558 2. <https://www.hermitagemuseum.org/wps/portal/hermitage/>

559 3. <https://www.ibm.com/us-en/>

560 4. At the time of writing, the catalogue is available in Russian at

561 <http://goskatalog.ru/portal/#/>

562 5. At the time of writing there are fifty one million objects in Europeana Collections
563 (Europeana Collections, 2017).

564 6. The State Tretyakov Gallery <https://www.tretyakovgallery.ru/en/>, Saratov State
565 Museum of Fine Art <http://artkatalog.radmuseumart.ru/en/>, Rybinsk Museum (near
566 Yaroslavl) <http://www.rybmuseum.ru/en/>, Chuvash State Museum of Fine Art
567 <http://www.artmuseum.ru/museumexpo/>, Kazan University Museum
568 [http://kpfu.ru/eng/about-the-university/museums-and-library/the-museum-of-](http://kpfu.ru/eng/about-the-university/museums-and-library/the-museum-of-history-of-kazan-university/exhibition-halls)
569 [history-of-kazan-university/exhibition-halls](http://kpfu.ru/eng/about-the-university/museums-and-library/the-museum-of-history-of-kazan-university/exhibition-halls). It should be noted that four museums

570 on the list provide interfaces in the English language, and are obviously interested
571 in visibility/access to their collections at an international level.

572 7. <https://www.google.com/culturalinstitute/beta/?hl=ru> Google Arts and Culture is a
573 digital collection of museum objects initiated by Google and launched in 2011 as
574 an online platform to provide access to high-resolution images of artworks.

575 8. The RF Ministry of Culture introduced national statistics related to museums
576 (Form 8 nk) in 2003. Form 8 nk for 2017-2018 is available on the web site of the
577 RF Ministry of Culture Statistics (RF Ministry of Culture Statistics, 2017).

578 9. The form includes 36 fields, the data is annually submitted to the RF Ministry of
579 Culture. The fields cover the information on the type of museum (public or
580 private), the type of museum object property (federal, regional or municipal), the
581 number of objects exhibited in the museum space, the number of objects that can
582 be physically accessed by the blind and visually impaired, the number of museum
583 objects requiring conservation, the number of objects cleaned, repaired and
584 stabilized in the reported year, the number of museums with electronic inventories,
585 the number of museums with the Internet access, etc.

586 10. English has been long considered a global language (Crystal, 1997) or ‘today’s
587 dominant language of science’ (Ammon, 2001, p.v). There is some evidence
588 supporting the claim that search engines favor pages in English giving them a
589 priority in rankings (Al-Eroud et al, 2011).

590 11. <http://www.arts-museum.ru/?lang=en>

591 12. <https://www.tretyakovgallery.ru/en/>

592 13. <https://polymus.ru/eng/>

593 14. <http://www.kreml.ru/en-US/museums-moscow-kremlin/>

594 15. Federal Law number 54-F3, 26 May 1996 on Museums and Museum Collections
595 in the RF, amended in 1996, 2003, 2004, 2008, 2010, 2011, 2014, 2016. Article No
596 36 states that copying museum products is impossible without a written permission
597 from museum administration. The second law regulating, in particular, image reuse

598 is 'Basic Legislation of the Russian Federation on Culture' number 3612-1, 9
599 October 1992, amended in 2017. Article No 53 states that companies and public
600 institutions can use the images of cultural heritage objects only with the permission
601 of an object owner. Because the owner is either the Russian Federation or a region
602 within the Russian Federation in the case of public museums, the owners' rights
603 are looked after by either federal or regional Ministries of Culture (Federal Law
604 number 54-F3, 26 May 1996, Article No 4).

605 16. <https://openglam.org>

606 17. Of course, major British and USA galleries, libraries, archives and museums do
607 not provide interfaces in languages other than English. See, for example, the
608 website of the Metropolitan Museum <https://www.metmuseum.org> or Tate Britain
609 <http://www.tate.org.uk/visit/tate-britain>

610 18. Federal Law number 54-F3, 26 May 1996 on Museums and Museum Collections
611 in the RF, amended in 1996, 2003, 2004, 2008, 2010, 2011, 2014, 2016.

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857

858 **List of Figures with Legends**

859

860 **Fig. 1**

861

862 The interface developed in 1999 included the options of viewing collection highlights
863 and browsing the State Hermitage Museum's digital collection. The museum web site
864 with a new interface was launched in 2014. Courtesy of State Hermitage Museum.

865

866 **Fig. 2**

867

868 At the time of writing, the National Catalogue of the RF Museum Collections
869 includes images and metadata for 4,129,149 objects, 5% of Russian analogue
870 museum collections.

871

872 **Fig. 3**

873

874 The percentage of images in the digital collections (databases) of Russian museums
875 as related to the number of analogue objects in a museum (the average value across
876 Russia is 14%). This clearly shows a difference between the advanced regions in the
877 North-West, with the scope of digitization almost reaching the European level of
878 31%, and the rest of the country.

879

880 **Fig. 4**

881

882 The percentage of digital images posted online as related to the total number of
883 analogue objects. The lowest percentage is observed in Siberia, Far East and Saint
884 Petersburg. Images of analogue museum objects are underrepresented online even in
885 the case they have been digitized. This shows that digitization is mainly conducted
886 for inventory purposes.

887

888 **List of Tables s with Legends**

889

890 **Table 1**

891

892 The percentage of the analogue collections digitally reproduced and available online
893 in the museums of Saint Petersburg, Moscow, and across Russia.

894

895 **Table 2**

896

897 Accessibility of online museum collections to international users. Geographical
898 distribution of museums where web sites include an English interface and metadata in
899 English as related to the total number of museums in a region.

900

901 **Table 3**

902

903 A list of eighteen famous museums from a recent study of what influences museum
904 reputation (Van Riel and Heijndijk, 2017) and their re-use policy types. Two-thirds of
905 museums in the study do not pursue open access policy.

906

907 **Table 4**

908 The percentage of the analogue collections digitally reproduced and available online
909 in the museums of Saint Petersburg, Moscow, and across Russia (for collections
910 without supporting documentation and museum library books).

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