

GORAN D. POPOVIĆ¹
UNIVERSITY OF EAST SARAJEVO
FACULTY OF PHILOSOPHY
DEPARTMENT OF HISTORY

MILESTONES FROM THE ROMAN ROAD DRINJAČA– SARAJEVSKO POLJE

ABSTRACT. Roman communication which connected the valley of the Drinjača River to Sarajevo field was very important during the mid III century. Many milestones from this communication testify to this. There are 30 discovered milestones in total on this communication, 12 of which are epigraphic. At the time of discovery, most of the milestones were *in situ*. The oldest of all milestones was from the period of Philip I reign (*Marcus Julius Philippus*) between 244 and 249, while the youngest one was built in honour of Marcus Claudius Tacitus, at the end of 275 or in the first half of the year 276. The milestones from this communication did not mark a reconstruction of communication, as it was believed earlier. At the time of very frequent changes on the throne, during the mid III century, the milestones gained honorary character. Their function was to express loyalty to the monarch.

KEYWORDS: milestone; Roman road; Roman province of Dalmatia; Argentaria; Drinjača river; Sirmium.

Although the researches of Roman roads in the area of the Roman province of Dalmatia started in the second half of XIX century, the first generation of researchers, among whom are the best known A. Evans (Evans, 1883), F. Ballif (Ballif, 1893) and Ć. Truhelka (Truhelka, 1891), did not show great interest for the analysis of discovered milestones and instead were satisfied by mere registration.

¹ gopopovic@gmail.com

This paper was submitted on August 29th, 2019 and accepted for publication at the meeting of the Editorial Board held on September 16th, 2019.

D. Sergejevski (Sergejevski, 1962, p. 75) was the first one who pointed out the importance of milestones in the province, especially those discovered *in situ*, for determination of ancient communication directions. Also, E. Pašalić (Pašalić, 1958) and I. Bojanovski pointed out the importance of milestones (Bojanovski, 1974). But these researchers mentioned milestones just in the context of determining the direction of Roman communication. Recently, G. Samardžić has published more significant papers related to epigraphic milestones in the area of the Roman province of Dalmatia (Самарџић, 2014в; Самарџић, 2014δ; Самарџић, 2015; Самарџић, 2018).

Most of the milestones in the Roman province of Dalmatia were discovered offshore and within its hinterland (Самарџић, 2010, pp. 51–67; Самарџић, 2014а, pp. 85–98; Самарџић, 2014δ, pp. 211–218; Самарџић, 2014г, pp. 385–408; Самарџић, 2018, pp. 179–192). On the contrary, the milestones are very rarely found inland of the mentioned province. Nevertheless, one communication outshines regarding the significant number of discovered milestones. The Roman road *Sirmium–Argentaria* divided into another road route which connected the Drina river valley to Sarajevsko polje.² The Roman road led through the valley of the Drinjača and Jadar rivers to Milići, and then through the valley of Studeni Jadar to the village of Lukavica. From this village, the road continued as serpentine, turns up to top of Sikira and reached Kraljevo polje. Leading west from Han Pijesak, the Roman road continued through Sokolac, Podromanija, and Ravna Romanija to Sarajevsko polje (Ballif, 1893, pp. 38–40; Bojanovski, 1981, pp. 165–175).

Until now, 30 milestones on 9 different sites have been discovered alongside the Roman road Drinjača – Sarajevsko polje. Northernmost milestone has been discovered in the village of Lukavica. The exact location of this milestone is unknown. Only the upper part of the milestone was preserved, with the inscription: *[I]mp(eratori) [Caes(ari)] / Volus[i] / ano / Aug(usto)* (CIL III 13316). From this inscription, we can conclude that the milestone was erected during the reign of *Gaius Vibius Volusianus*, the son and co-ruler of *Gaius Vibius Afinius Trebonianus Gallus*. Based on this, we can determine proximate time of the erection. *Terminus post quem* represents June 251, and *terminus ante quem* summer of 253. Namely, *Volusianus* was not proclaimed a ceasar before June 251, and during the summer of

² For more information about the communication *Sirmium – Argentaria*, see Bojanovski, 1981, pp. 182–184; Popović, 2018a.

253 he was killed together with his father *Trebonianus Gallus*.³ On the site of Lokva in Kraljevo polje (former Partizansko polje) three anepigraphic milestones were discovered and they were positioned just next to the trace of the Roman road (Ballif, 1893, pp. 39, 51).

Milestones discovered west from Han Pijesak, in villages Kiridžijski dol, Japaga, Stogulja, Alajbegovina, Berkovina, and Kuti represent a special group. On five sites, the milestones were discovered *in situ*. They were in smaller groups, 1 Roman mile or 1481 metres away one from another. Exceptions are milestones between Debelo brdo and Tisovac, in the village of Kuti, which are 2 Roman miles away from the milestones in Berkovina (Bojanovski, 1981, p. 138).

One whole milestone and five or six fractions were discovered on the site of Dautovac in Kiridžijski dol (Ballif, 1893, pp. 39, 51). Having in mind the fact that three inscriptions were found, it can be concluded that there were three milestones on the site. The first milestone reads *Herennius Etruscus Messius Decius: Imp(eratori) Caes(ari) Heren / nio Aetr / usco* (CIL III 13312). *Decius Herennius Etruscus* was the son and co-ruler of Emperor *Gaius Messius Quintus Decius* who ruled from 249 to June 251. According to Bojanovski and Samardžić (Bojanovski, 1981, p. 140; Самарџић, 2015, pp. 250–258; Samardžić, 2018) the milestone was erected in 251. But the inscription mentions *Decius Herennius Etruscus* with the title of Caesar. The mentioned title was given to *Herennius* in 250. According to the author, the milestone was erected very soon after *Herennius*' crowning in 250. On the other milestone from Kiridžijski dol, there is the engraved inscription: *[I]mp(erator) C[aes(ar) M. / Cl(audius) Ta]citu [s. p. f. inv] ctus / A[ug(ustus)]* (CIL III 13313). The milestone was erected in honour of Emperor *Marcus Claudius Tacitus* at the end of 275 or in the first part of 276. The inscription on the third milestone was seriously damaged, but still there are still clearly visible letters *D O AVRELIANVS* (CIL III 13314). According to Patsch (Patsch, 1893, p. 69), the inscription mentioned emperor Diocetlian or Maximilian. On the other side, Bojanovski (Bojanovski, 1981, p. 140) correctly argues that the inscription is related to Emperor Aurelian (*Lucius Domitius Aurelianus*), who ruled in the period between 270 and 275.

In Japaga, near the spring and the house of family Mitrović, there were six or seven milestones, two of which were epigraphic. At the time of discovery, the milestones were *in situ*. These milestones

³ For more information on *Volusianus*, see Bunson, 2002, p. 589.

were 1 Roman mile away from the milestones on the site of Dautovac in Kiridžijski dol. Out of two epigraphic milestones, Ballif and Patsch (Ballif, 1893, p. 39, 68) published only one: *[Imp(eratori) Caes(ari) Herennio] Etrusco* (CIL III 13311). Just as in the case of the first milestone from Kiridžijski dol, this milestone was also dedicated to Herennio Etrusco. In the area of the Roman province of Dalmatia, Herennio Etrusco, by all accounts, was mentioned in one more milestone discovered in the village of Riječani, on the Roman road *Epidaurum – Anderba* (ILJug 999; Sergejevski, 1962, p. 87; Самарџић, 2013; Самарџић, 2015, pp. 250–258; Samardžić, 2018, pp. 179–192). Reasons for not publishing the second epigraphic milestone from the mentioned location are not clear so far. The possibility that the inscription was too damaged and thus unreadable should not be eliminated (Самарџић, 2013; Самарџић, 2015, p. 257).

On the basis of form and material they were made of, as well as the craftsmanship of the text field, Bojanovski (Bojanovski, 1981, p. 140) argued that several of the five unpublished milestones in the National Museum of Bosnia and Herzegovina, without certain information regarding location they were transported from, might be from the Roman road *Drinjača – Sarajevsko polje*. According to Bojanovski, the second milestone from the village of Japaga is one fraction of the milestone with the inscription: *[Imp. Caes.] / [C. Aur.] V[al] / [Diocletia]no / [pio fel. invic]to / A[ug(usto)]* (Bojanovski, 1981, pp. 140–141). However, the assumption that the previously mentioned milestone is from Japaga is not scientifically based and accepted. Also, the transcription of this milestone is more than doubtful.

Only one fragment of an anepigraphic milestone, not *in situ* but bricked in an object, was found in the village of Stogulje. (Ballif, 1893, p. 39, 51; Bojanovski, 1981, p. 138). Two anepigraphic milestones which were found *in situ*, were discovered in the valley of the Pištice (Pištavice) brook near Alajbegovina (Ballif, 1893, p. 39, 51).

Six milestones were discovered in the village of Berkovina, one Roman mile southwest from the previous stop near Alajbegovina. Due to the fact that they were found in a poor condition, inscriptions were readable only on two milestones. On both of them is the name of the emperor *Gaius Messius Quintus Decius*. The text on the first milestone reads: *Imp(eratori) Q(uinto) / Messio / Deccio / Traian(o)* (CIL III 13309). The content of the text field on the other milestone is almost identical: *Imp(eratori) Q(uinto) / Messio / Deccio / Traiano*

(CIL III 13310). This is a unique case in the area of the Roman province of Dalmatia that in one location there are two milestones erected in honour of one ruler. One of the milestones is surely erected soon after *Quintus Decius* came to throne in 249, while the other is from 250 or 251. Patsch (Patsch, 1893, p. 68) argued that among remaining milestones from Berkovina, whose inscriptions were damaged, there were names of Decius' sons, *Herennius Etruscus* and *Hostilian* (*Gaius Valens Hostilianus Messius Quintus*).

About two Roman miles southern from the milestones in Berkovina, between Debelo brdo and Tisovac, in the village Kuti, six or seven milestones *in situ* were discovered. Text fields were preserved on four milestones (Ballif, 1893, pp. 50, 67–68). The first milestone reads Philip I (*Marcus Julius Philippus*): *I[m]p(eratori) M(arco) [Iul(io)] / Phil(ippo) Au[g(usto)]* (CIL III 13306). Based on this, erection of this milestone dated back between 244 and 249. But, Bojanovski did not manage to find this milestone in the depot of the National Museum in Sarajevo. This leads to the conclusion that the milestone was lost during transportation or that it was sent to Vienna or Budapest instead to Sarajevo. The milestones with the name of Philip I are known from other parts of the Roman province of Dalmatia, especially from the communication Naronā – Sarajevsko polje, where four milestones dedicated to this ruler were discovered. (Samardžić, 2018, pp. 181–183). On the other milestone, there is the inscription: *Imp(eratori) [C] / aes(ari) Vol / usian / no Aug(usto)* (CIL III 13307). It was erected in the honour of *Gaius Vibius Volusianus*. Having this in mind, it can be concluded that it was erected in the period between 251 and 253. The text field on the third milestone was very damaged, but it still can be read: *G[er]m(anico) / [maxim]o In/[vict]/o Aug(usto)* (CIL III 13308). However, on the basis of the text, it is impossible to ascertain the name of the ruler this milestone was dedicated to. The fourth epigraphic milestone from this location was not published. According to Bojanovski (Bojanovski, 1981, p. 140) one milestone of square, irregular shape, very similar to the milestone erected in the honour of *Volusianus*, now in the National Museum in Sarajevo, is the fourth unpublished milestone from the location of Debelo brdo – Tisovac. The milestone was dedicated to emperor *Marcus Aurelius Probus* who ruled in the period between 276 and 282: *[I]mp(eratori) d(omino) n(ostro) / Probo / Aug(usto)* (Bojanovski, 1981, p. 140).

The southernmost milestones from the road Drinjača – Sarajevsko polje are from the location Obhodaši, on Ravna Romanija.

A fragment of a milestone without inscription, 1.3 metres high, was discovered on this site. However, it is not known if the milestone was *in situ* (Ballif, 1893, p. 51; Bojanovski, 1981, p. 138). This milestone is lost today, or to be more precise, it is unknown where the milestone is.

CONCLUSION Thirty milestones in total have been discovered on the Roman road Drinjača – Sarajevsko polje. Twelve of them had inscriptions, while ten inscriptions have been published. It is not quite clear why the other two have not been published. It seems that there were much more epigraphic milestones, but their text fields were damaged and unreadable in the moment of discovery. At the end of the XIX century, all milestones were removed from their original sites. Most of them are in the National Museum in Sarajevo today, while for some others we can only assume that they are in Vienna or some other cities of former Austro-Hungarian monarchy.

Because all epigraphic milestones from the road Drinjača – Sarajevo field date back to the mid III century, Patsch (Patsch, 1893, p. 71) concluded that in that period the road route had been reconstructed. According to Bojanovski (Bojanovski, 1981, p. 191), a part of milestones was related to the road reconstruction “although their form is more of an honorary character”. However, Abramić pointed out that not all milestones were related to the road construction and reconstructions (Abramić, 1928, p. 34). “Milestones can be placed even outside of these circumstances“, argues Sergejevski, “only as a sign of loyalty of populace, i.e. municipal authorities” (Sergejevski, 1962, p. 93).

Namely, although erection of the first milestones is often related to construction and reconstruction of the communication, the function of milestones changed over time. After Severan dynasty, milestones were rarely erected in relation to road reconstruction. Their function then became expressing loyalty to a ruler (Laurence, 2004, p. 45, 56; Sauer, 2014). “This is the only way for interpretation of the large number of milestones with the names of ephemeral emperor in III century, for example on the road Romanija – Drina.” (Sergejevski, 1962, p. 93) These milestones were erected near the entrance to settlements or important cross roads as more travellers could see it.

The oldest epigraphic milestone from this location was erected during the reign of Philip I, between 244 and 249, while the latest milestone is from the period of *Marcus Claudius Tacitus* reign, and

it's dated back to the end of 275 or the first half of 276. But, most of the milestones were erected during the mid of III century, i.e. from 249 to 253. All epigraphic milestones include only the name and the title of a ruler, but no data about who erected them. According to the author, all milestones were erected soon after a new ruler would ascend to the throne. In the case of co-rulers, like Herennius Etruscus, milestones were erected just after a ruler would acquire the title of Caesar.

With the exception of one epigraphic milestone discovered in the village Lukavica, three anepigraphic milestones from Kraljevo polje and fragmented milestone from Ravna Romanija, all other milestones from the Roman road Drinjača – Sarajevo field, around twenty-five in total, were found western from Han Pijesak, in smaller groups with the distance of 1 Roman mile between them, and only in one case the distance was 2 Roman miles. For now, it is not known who had erected the milestones alongside the Roman road, especially in the area west of the town. In the surroundings of Han Pijesak, there are no records about the existence of settlements from the Roman period. However, we should not eliminate the possibility that one such smaller settlement (*vicus*) was there. For now, the only known archaeological sites in this area are from village Podžeplje, around 10 kilometres east from Han Pijesak. Roman coins were found in this village from the republican and early imperial period (Patsch, 1902, p. 6).

According to the author, the milestones west of Han Pijesak indicate the possibility that in this region there was a very important intersection of Roman roads. Namely, the remains of one old road, known as a Roman road, are found in the villages Mačkovac, Studena Gora, and Podžeplje. However, these road remains have not been researched until now by experts, so it is not known if the road is from roman period. Bojanovski (Bojanovski, 1981, p. 176) suggests the existence of local Roman road directions towards east and north. Also, there have been no field researches in this area till now. It can be suggested that one local Roman road (*viae vicinales*) connected the Roman road Drinjača – Sarajevsko polje to another major Roman road which connected the valley of the river Spreča to central Bosnia.⁴

All milestones from the Roman road Drinjača – Sarajevo field are from the period of the greatest prosperity of north-eastern parts of

⁴ For more information on this communication, see Popović, 2018⁵.

the Roman province Dalmatia. Namely, in this period, *Domavia*, the centre of the mining region *Argentaria*, was given a rank of a colony (Bojanovski, 1988, p. 197). Due to this, mining production increased, as well as a number of travellers. On the basis of all these facts, we can conclude that the Roman road Drinjača – Sarajevo field was very significant during the III century.

CIL III	LOCATION	INSCRIPTION	TERMINUS POST QUEM	TERMINUS ANTE QUEM	EMPEROR
13306	Kuti	<i>I[m]p(eratori) M(arco) [Iul(io)] / Phil(ippo) Au[g(usto)]</i>	244	249	Philippus I
13307	Kuti	<i>Imp(eratori) [C] / aes(ari) Vol / usian / no Aug(usto)</i>	251	253	Volusianus
13308	Kuti	<i>-----] / [--- G]er[m(ani- co)] / [maxim]o In/ [vict]/o Aug(usto)</i>	-	-	-
13309	Berkovina	<i>Imp(eratori) Q(uinto) / Messio / Deccio / Tra- ian(o)</i>	249	251	Decius
13310	Berkovina	<i>Imp(eratori) Q(uinto) / Messio / Deccio / Traiano</i>	249	251	Decius
13311	Japaga	<i>[Imp(eratori) Caes(ari)] / [Herennio] / Etrusco / [P(io) F(elici) Aug(usto)]</i>	250	251	Herennius Etruscus (as Caesar)
13312	Kiridžijski dol	<i>[Imp(eratori) C]aes/ s(ari) (!) Heren/nio Aetr/ usco (!) / [P(io) F(elici) Aug(usto)]</i>	250	251	Herennius Etruscus (as Caesar)
13313	Kiridžijski dol	<i>[I]mp(erator) C[aes(ar) M(arcus)] / [Cl(audius) Ta]citu[s P(ius) F(elix)] / [Invi]ctus A[ug(ustus)]</i>	275	276	Tacitus

TABLE 1: MILESTONE FROM ROMAN ROAD DRINJAČA – SARAJEVO FIELD
(ТАБЕЛА 1: МИЉОКАЗИ СА РИМСКОГ ПУТА ДРИЊАЧА – САРАЈЕВСКО ПОЉЕ)

13314	Kiridžijski dol	[Imp(erator) Caes(ar)] / [L(ucius)] D[om(itius)] / Aureli/anus / [P(ius) F(elix) Inv(ictus) Aug(ustus)]	270	275	Aurelianus
13316	Lukavica	[I]mp(eratori) [Caes(ari)] / Volus[i] / ano [P(io) F(elici)] / Aug(usto)	251	253	Volusianus

TABLE 1: MILESTONE FROM ROMAN ROAD DRINJAČA – SARAJEVO FIELD
(ТАБЕЛА 1: МИЉОКАЗИ СА РИМСКОГ ПУТА ДРИЊАЧА – САРАЈЕВСКО ПОЉЕ)

SOURCES

FIELD SURVEY Corpus Inscriptionum Latinarum, (1873). Consilio et auctoritate Academiae litterarum regiae. Berolini: Borussicae editum, ed. Th. Mommsen, Voll. III.
Šašel, A. et J. (1986). Inscriptiones Latinae quae in Iugoslavia inter annos MC-MII et MCMXL repertae et editae sunt. Ljubljana: Situla 25, Narodni muzej Slovenije.

REFERENCES Самарцић, Г. (2014а). Путна станица *Asato* у историјским изворима. *Радови Филозофској факултету*, 16 (2), 85–98.
Самарцић, Г. (2014б). Забиљешке о античким бунарима на комуникацији *Diluntum–Salluntum*. *Радови Филозофској факултету*, 16 (2), 211–218.
Самарцић, Г. (2014в). Биљешке о миљоказима са југа Далмације. У: К. Марицки-Гађански (ур.), *Антика и савремени свијет – њумачење антике: међународни њемајски зборник (357–371)*. Београд: Друштво за античке студије Србије.
Самарцић, Г. (2014г). Налази из села Градац и Убоско на комуникацији *Narona–Ad Zizio*, *Зборник радова Филозофској факултету*, XLIV (1), 385–408.
Самарцић, Г. (2015). *Истична Херцеговина у римско доба*. Косовска Митровица: Филозофски факултет.
Abramić, M. (1928). О novim miljokazima i rimskim cestama Dalmacije. *Starinar*, knj. IV, 31–44.
Ballif, P. (1893). *Römische Strassen in Bosnien und der Hercegovina*. Wien: Bosnisch-Hercegovinisches Landesmuseum.
Vojanovski, I. (1974). *Dolabelin sistem cesta u rimskoj provinciji Dalmaciji*. Sarajevo: ANUBiH, СБИ

- Bojanovski, I. (1981). Prilozi za topografiju rimskih i predrimskih komunikacija i naselja u rimskoj provinciji Dalmaciji (s posebnim obzirom na područje Bosne i Hercegovine) III - Prilog proučavanju antičkih naselja i komunikacija u istočnoj Bosni. *Godišnjak ANUBiH*, XIX, CBI knj. 17, 125–199.
- Bojanovski, I. (1988). *Bosna i Hercegovina u antičko doba*. Sarajevo: Djela knj. LXVI, ANUBiH. Centar za balkanološka ispitivanja, knj. 6.
- Evans, A. (1883). *Antiquarian researches in Illyricum*. Westminster: Nichols and sons.
- Laurence, R. (2004). Milestones, Communications and Political Stability. In: L. Ellis & F. Kidner (Eds.), *Travel, Communication and Geography in Late Antiquity* (41–58). London: Routledge.
- Pašalić, E. (1958). O hodološkim pitanjima u izučavanju antičke istorije. *Godišnjak IDBiH*, IX, 139–147.
- Popović, G. (2018a). Putna stanica Ad Drinum. *Prilozi instituta za Historiju*, 47, 11–30.
- Popović, G. (2018b). Rimske komunikacije u sjeveroistočnoj Bosni sa posebnim osvrtom na novootkrivenu dionicu puta na planini Bišini. *Acta Illyrica*, II, 193–216.
- Samardžić, G. (2010). Zu Problemen der Ubikation des römischen Straßennetzes und der Raststätten Ad Zizio-Asamo in Süddalmatien. *Београдски историјски часник*, 1, 51–67.
- Samardžić, G. (2013). Lokalität Salthua, *Радови Филозофској факултету*, 15 (2), 51–66.
- Samardžić, G. (2018). Epigrafski miljokazi i njihov značaj za proučavanje rimskih komunikacija na jugu provincije Dalmacije. *Acta Illyrica*, II, 179–191.
- Sauer, E. (2014). Milestones and Instability (Mid-Third to Early Fourth Centuries AD). *Ancient Society*, 44, 257–305.
- Sergejevski, D. (1962). Rimska cesta od Epidauruma do Anderbe. *Glasnik Zemaljskog muzeja*, n. s. XVII, 73–105.
- Truhelka, Č. (1891). Rimska cesta u kotaru Srebreničkom. *Glasnik Zemaljskog muzeja*, III, 239–245.

ГОРАН Д. ПОПОВИЋ

УНИВЕРЗИТЕТ У ИСТОЧНОМ САРАЈЕВУ

ФИЛОЗОФСКИ ФАКУЛТЕТ

КАТЕДРА ЗА ИСТОРИЈУ

РЕЗИМЕ

МИЉОКАЗИ СА РИМСКЕ КОМУНИКАЦИЈЕ ДРИЊАЧА – САРАЈЕВСКО ПОЉЕ

Римска комуникација која је повезивала долину реке Дрињаче са Сарајевским пољем била је веома значајна средином III века. О томе сведоче многобројни миљокази са ове комуникације. Укупно је откривено око тридесет миљоказа са поменуте комуникације. Од дванаест епиграфских миљоказа, натписна поља објављена су само од десет миљоказа. Нису познати разлози који су утицали на то да и преостала два миљоказа не буду објављена. У тренутку проналаска већина миљоказа налазила се *in situ*. Најстарији миљоказ потиче из периода владавине Филипа I (*Marcus Julius Philippus*) између 244. и 249. године, док је најмлађи подигнут у част Марка Клаудија Тацита (*Marcus Claudius Tacitus*), крајем 275. или у првој половини 276. године.

Изузев једног епиграфског миљоказа откривеног у селу Лукавица, три анепиграфска миљоказа са Краљевог поља и фрагментарног миљоказа са Равне Романије, као и сви преостали миљокази са римског пута Дрињача – Сарајевско поље, укупно око 25, налазили су се западно од Хан Пијеска, у мањим групама и на међусобном растојању од једне, а у једном случају две римске миље. Миљокази са римске комуникације Дрињача – Сарајевско поље нису означавали реконструкцију пута, како се то раније веровало. У тренутку честих промена на престолу, средином III века, миљокази добијају почасни карактер. Њихова функција постаје исказивање лојалности новом владару.

Кључне речи: миљокази; римски путеви; римска провинција Далмација; Аргентарија; Дрињача; Сирмијум.



Овај чланак је објављен и дистрибуира се под лиценцом Creative Commons Ауторство-Некомерцијално Међународна 4.0 (CC BY-NC 4.0 | <https://creativecommons.org/licenses/by-nc/4.0/>).

This paper is published and distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial International 4.0 licence (CC BY-NC 4.0 | <https://creativecommons.org/licenses/by-nc/4.0/>).