

## Technology: The Great Divider

**Abstract:** In the last few months, the COVID-19 pandemic has managed to affect our society in so many ways. The time has come when ordinary human contact has become dangerous, and the protection of our health has become a priority. This situation we find ourselves in, people began to compare to the Spanish flu pandemic of 1918, and began to ask: how is it possible that even after more than a hundred years, our society can be paralyzed by something like this? When the digital revolution at the end of the 20th century brought information to our fingertips, enabling us to make faster, better, and more efficient decisions than ever before in our history. In this connected world, innovation is happening continuously and at an enormous scale, and plays an important role in responding to the challenges posed by the pandemic. Through the last decade, work with data has increased the potential of technology dramatically, and now new technologies are able to play a crucial role during the time of crisis and disasters. Help, innovation and prevention become the main areas where new technological advancements showed their worth. Nevertheless, there are still significant legal limitations on the use of some of these new technologies that we cannot forget about. One way or another, when so many lives are at stake, there are questions to be answered.

**Keywords:** technology, Covid-19, innovation, help, prevention

# 1. Introduction

The COVID-19 pandemic has brought many challenges for our society. We believe that modern technologies are an essential tool for solving many practical issues in a more efficient way, that we have encountered recently. However, if we want to examine the legal framework for the implementation of new technologies, it is necessary to consider all the related issues of legal fields\

In this paper we set out to point out the various ways in which new technologies (just like artificial intelligence, machine learning, robotics, drones, additive manufacturing, satellite monitoring) are used during this pandemic to help our society, taking into account the legal problems associated with these new technologies.

## 1.1. How technology can help

Positioning technologies play a crucial role during the time of crisis and disasters. Government agencies and first responders require precise positions to accurately assess the situation, pinpoint the riskiest areas, and carry out tasks accordingly.<sup>1</sup>

These so-called tasks we can separate into three main categories: help, innovation, and prevention. Taking a closer look at our current situation, help came in various ways and forms, from robots disposing of disinfections, drones transporting supplies, and even monitoring systems that can predict outbreaks and track already infected individuals. Secondly, the importance of innovation is unquestionable, from new ways like nanotechnology and additive manufacturing to technologies like machine learning algorithms and supercomputing which are

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<sup>1</sup> CHATURVEDI, A: The China way: Use of technology to combat Covid-19 (2020) Available: <https://www.geospatialworld.net/article/the-sino-approach-use-of-technology-to-combat-covid-19/>

used for accelerating the process of finding a possible vaccine. Lastly, new disruptive technologies can stand as a new way of how our society can prepare and maybe prevent the next pandemic.

Due to the complexity of the whole situation, it should be noted that several of the mentioned solutions are still applied outside the EU countries, where the legal framework governing these facilities is different<sup>2</sup>. Also, we must not forget the importance of the diversity of human rights traditions between European countries and a country such as China regarding the use of technological advancements.

## 1.2. Monitoring

One of the biggest concerns of the Covid-19 virus proved to be the incubation time of the virus,<sup>3</sup> which caused that anyone could be a protentional threat. As the number of infected started to grow it was impossible for any human to keep track of the possible carriers of the virus.

Thankfully, through the last decade, work with open data<sup>4</sup> has increased the potential of new technology dramatically. This has been made possible by everything being connected and accessible online through digital devices and sensors. Today we have data from possibly every source and in every form, this potential enabled to come to the most strategic technology

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<sup>2</sup> PERNOT-LEPAY E: Data Privacy Law in China: Comparison with the EU and U.S. Approaches, (2020) available: : <https://epernot.com/data-privacy-law-china-comparison-europe-usa/>

<sup>3</sup> LAUER, S GRANTZ, K QIFANG B, JONES, F ZHENG, Q: The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application <https://www.acpjournals.org/doi/10.7326/M20-0504>

<sup>4</sup> Look closer: ANDRAŠKO, MESARČÍK: Právne aspekty otvorených údajov (2020) C. H. Beck SK, ISBN 9788089603794

of the 21. century, the artificial intelligence. Modern-day artificial intelligence-powered system<sup>5</sup> and computers with machine learning which are capable of this exact task and even more. By analyzing social platforms, and media documents, smart devices can learn how to identify and predict outbreaks.<sup>6</sup>

Google's DeepMind<sup>7</sup> division, as well as Benevolent AI (a company at the forefront of modern computing), use their latest computers as well as their drug development algorithms for finding a possible vaccine for the virus. Researchers are trying to find an existing drug that could block the infection process, they also use their artificial intelligence algorithms to search for viruses that have a coronavirus-like composition through a vast array of medical data.<sup>8</sup> With the help of data analytics and predictive models, medical professionals are able to understand more about a lot of diseases.

The legal question of the possibility of identifying people using artificial intelligence-based devices for better safety of citizens is already talked about even in the EU. The European Commission is mentioning this possibility in their document

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<sup>5</sup> To further identify Artificial Intelligence (AI) from the perspective of this paper, I will consider any device that mimics "cognitive" functions, takes steps that people associate with the human mind, such as "learning" or "problem solving"

<sup>6</sup> ORDONEZ V: Doctors using artificial intelligence to track coronavirus outbreak (2020), available: : <https://abcnews.go.com/Health/doctors-artificial-intelligence-track-coronavirus-outbreak/story?id=694444963>

<sup>7</sup> RAY T: Google DeepMind's effort on COVID-19 coronavirus rests on the shoulders of giants (2020), available: : <https://www.zdnet.com/article/google-deep-minds-effort-on-covid-19-coronavirus-rests-on-the-shoulders-of-giants/>

<sup>8</sup> HEILWEIL R: Scientists are identifying potential treatments for coronavirus via artificial intelligence (2020), available: : <https://www.vox.com/recode/2020/2/7/21125959/artificial-intelligence-coronavirus-benevolent-ai-treatment>

called “White Paper on Artificial Intelligence”.<sup>9</sup> A series of risk assessment algorithms for Covid-19 for use in healthcare settings have been developed, including an algorithm for the main actions that need to be followed for managing contacts of probable or confirmed Covid-19 cases, as developed by the European Centre for Disease Prevention and Control.<sup>10</sup>

Whilst the deployment of such systems in the EU is still being only talked about, the Chinese government has already developed a monitoring system called the “Health Code”, which was used to help in non-stop monitoring of hospital construction to identify and assess the risk of each individual based on their travel history.<sup>11</sup>

The massive use of artificial intelligence tracking and surveillance tools in the context of this outbreak, combined with the current fragmentation in the ethical governance of artificial intelligence, could pave the way for wider and more permanent use of these surveillance technologies. Nevertheless, risk assessment and strict interpretation of the terms of public

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<sup>9</sup> “AI tools can provide an opportunity for better protecting EU citizens from crime and acts of terrorism. Such tools could, for example, help identify online terrorist propaganda, discover suspicious transactions in the sales of dangerous products, identify dangerous hidden objects or illicit substances or products, offer assistance to citizens in emergencies and help guide first responders.” EUROPEAN COMMISSION: WHITE PAPER On Artificial Intelligence – A European approach to excellence and trust (2020), available: : [https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020\\_en.pdf](https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf)

<sup>10</sup> KRITIKOS, M: What if we could fight coronavirus with artificial intelligence? (2020) Available: [https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/641538/EPRS\\_ATA%282020%29641538\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/641538/EPRS_ATA%282020%29641538_EN.pdf)

<sup>11</sup> KOU L: The new normal: China's excessive coronavirus public monitoring could be here to stay (2020), available na:<https://www.theguardian.com/world/2020/mar/09/the-new-normal-chinas-excessive-coronavirus-public-monitoring-could-be-here-to-stay>

health and use of data<sup>12</sup>, such as that envisaged in Article 9 paragraph 2 letter (i) of the General Data Protection Regulation<sup>13</sup> will therefore, be key to ensuring the responsible use of this disruptive technology during public health emergencies<sup>14</sup>

### 1.3. Transport

The massive strain on the healthcare system during the pandemic meant that there was even a bigger necessity to transport medical supplies, samples, food, water etc., as fast and as safe as possible, while person-to-person contact still had to be limited because of the possibility of contamination.

This question was answered by the safest and fastest means of transport, which is by drones. Drones were transporting both medical equipment and patient samples, saving time and enhancing the speed of deliveries, while preventing contamination of medical samples.<sup>15</sup> Terra Drone used its drones to transport

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<sup>12</sup> *"In this context, it should be noted that both theory and practice tend to apply the definition of personal data quite extensively, and this leads to situations where each piece of information has the potential to appear as personal data"*. M, Mesarčík: Výkon verejnej správy prostredníctvom údajov – výzva digitálnej ekonomiky a štátu? 2018, Dostupné na :[https://www.flaw.uniba.sk/fileadmin/praf/Veda/Konferencie\\_a\\_podujatia/milniky\\_zborniky\\_2011\\_2018/Zbornik\\_Milniky\\_2018.pdf](https://www.flaw.uniba.sk/fileadmin/praf/Veda/Konferencie_a_podujatia/milniky_zborniky_2011_2018/Zbornik_Milniky_2018.pdf)

<sup>13</sup> „processing is necessary for reasons of public interest in the area of public health, such as protecting against serious cross-border threats to health or ensuring high standards of quality and safety of health care and of medicinal products or medical devices, on the basis of Union or Member State law which provides for suitable and specific measures to safeguard the rights and freedoms of the data subject, in particular professional secrecy;“ Article 9 paragraph 2 letter (i) of the General Data Protection Regulation

<sup>14</sup> European data protection board: Guidelines (04/2020) on the use of location data and contact tracing tools in the context of the COVID-19 outbreak, Available: [https://edpb.europa.eu/our-work-tools/our-documents/linee-guida/guidelines-042020-use-location-data-and-contact-tracing\\_en](https://edpb.europa.eu/our-work-tools/our-documents/linee-guida/guidelines-042020-use-location-data-and-contact-tracing_en)

<sup>15</sup> CHATURVEDI, A: The China way: Use of technology to combat Covid-19 (2020) Available: <https://www.geospatialworld.net/article/the-sino-approach-use-of-technology-to-combat-covid-19/>

medical specimens and quarantine material between the Disease Control Center and hospitals in China. The use of these unmanned drones has increased transport speeds by more than 50% compared to road transport.<sup>16</sup> Another big advantage of drones is also the fact that it can ease staff shortages by allowing medical staff and ambulances to stay in the “front line”<sup>17</sup>.

However, the usage of autonomous aircraft is not an unregulated field by the law. The legislation is not so forgiving on the drones in some countries as in others. Taking a look at the legislation in my home country (the Slovak Republic) shows that even if we would have liked, we could not have the possibility of using autonomous drones for such purposes. In accordance with the Decision of the Transport Authority no. 1/2015, which determines the conditions for the flight by an aircraft capable of flying without a pilot in the airspace of the Slovak Republic, Article 3 of the Decision provides that: “The flight by an autonomous aircraft in the airspace (Slovak Republic) is prohibited.”<sup>18</sup>

Again, just as earlier, we cannot forget about the data generated by these devices, even though, there are provisions in both Article 6 and Article 9 of the General Data Protection Regulation that allow for the collection, use and necessary sharing of personal

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<sup>16</sup> Terra-drone: Terra news (February.7.2020) Available:<https://www.terra-drone.net/global/2020/02/07/terra-drones-business-partner-antwork-helps-fighting-corona-virus-with-drones/>

<sup>17</sup> Nevertheless, transport was not the only use of drones during the pandemic, in Spain drones were used to patrol public spaces and to monitor compliance with quarantine measures, look closer: SERRANO J: Police in Spain Are Using Drones to Tell People to Stay in Their Damn Homes During Coronavirus Crisis, (2020), available: <https://gizmodo.com/police-in-spain-are-using-drones-to-tell-people-to-stay-1842350269>

<sup>18</sup> Decision No 1/2015 of (19.08.2015), which determines the conditions of flight performed by an aircraft capable of flying without a pilot in the airspace of the Slovak Republic available at: [http://nsat.sk/wp-content/uploads/2014/08/DU\\_RPAS-merged.pdf](http://nsat.sk/wp-content/uploads/2014/08/DU_RPAS-merged.pdf)

data. For ‘reasons of public interest in the area of public health, such as protecting against serious cross border threats to health’, any widespread use of drones for large-scale data collection must abide by the principles set out in a recent statement of the European Data Protection Board (EDPB) on the processing of personal data in the context of the Covid-19 outbreak.<sup>19</sup>

## 2. Innovation

In a way, innovation is all about responding to change in a creative way, by generating new ideas or improving already known processes. Innovation is a mindset, where ideas and processes can become *“instruments that endows resources with a capacity to create wealth”*<sup>20</sup>

In our connected world, innovation is happening continuously, at an enormous scale and in several forms and it is important to acknowledge that innovation is an important part of the solution and plays a crucial role in responding to the challenges posed by pandemic.<sup>21</sup>

The significance of innovation is unquestionable, through new technology like robotics, nanotechnology, additive manufacturing, machine learning algorithms and supercomputing, our society is accelerating the process of finding new ways how to tackle the challenges of this pandemic.

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<sup>19</sup> European Data Protection Board: Statement on the processing of personal data in the context of the COVID-19 outbreak Available: [https://edpb.europa.eu/our-work-tools/our-documents/outros/statement-processing-personal-data-context-covid-19-outbreak\\_en](https://edpb.europa.eu/our-work-tools/our-documents/outros/statement-processing-personal-data-context-covid-19-outbreak_en)

<sup>20</sup> DRUCKER, P: Innovation and Entrepreneurship (1993) Collins; 1st Edition, ISBN-13: 978-0887306181

<sup>21</sup> KRASADAKIS, G: Technology Innovation — Trends and Opportunities(2017) Available <https://medium.com/innovation-machine/2018-innovation-trends-and-opportunities-8a5d642fd661>

Nevertheless, with new ideas and methods, there is always the possibility of something unexpected going wrong. A question therefore is: are the current legislation ready to bear the speed of innovation?

## 2.1. Robotics

These difficult times have shown that robots are not just the future of technology but also the present, and these robots are being deployed across the globe in the fight against the pandemic.

Several Chinese companies have deployed its robots in more than 40 hospitals across China to ease the burden. From robots that disinfect whole hospitals, decontaminate public and private sites, handle biohazardous waste or deliver food and medication, to robots that take patients temperatures and act as medical assistants, robotics is being used to reduce the risk of person-to-person transmission as an intelligent solution to combat the coronavirus.<sup>22</sup>

What must be noted is that, although the special value of robotics in contributing to the fight against Covid-19 cannot be questioned, efforts must be made to ensure that in the vast application, their motions are predictable and are aligned with values such as transparency, accountability or traceability.

The lack of legislative framework in this field made it relevant that special attention needs to be paid to introduce an ethical guideline for the applications of this technology.<sup>23</sup> Even though, the Machinery Directive 42/2006<sup>24</sup> and the General Product Safety

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<sup>22</sup> JAKHAR P: Coronavirus: China's tech fights back, (2020) available: : <https://www.bbc.com/news/technology-51717164>

<sup>23</sup> KRITIKOS, M: Ten technologies to fight coronavirus (2020) available: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/641543/EPRS\\_IDA\(2020\)641543\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/641543/EPRS_IDA(2020)641543_EN.pdf)

<sup>24</sup> DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of (17.May.2006) on machinery, and amending Directive 95/16/EC (recast) available: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:157:0024:0086:EN:PDF>

Directive 95/2001<sup>25</sup> along with the standards<sup>26</sup> set out some minimum requirements regarding the operation of these robots, it seems that the accelerated rate in which these technology are used because of the pandemic, seems that it is calling for a more specific legislation.

## 2.2. Nanotechnology

Facemasks became a part of our daily lives no matter the county we live in. However, the simplest of the mask proves to be not much of a protection against the virus. Therefore, companies like Sonovia are trying to equip medical facilities with face masks made from their anti-pathogenic and antibacterial substance, which is based on oxide nanoparticles, for which academic evidence<sup>27</sup> confirms that metal nanoparticles at the core of this technology could be an effective shield against the virus.<sup>28</sup>

Notwithstanding these evidences, on the level of the European Union, we encounter the problem that nanomaterials are subject to a strict regulatory framework<sup>29</sup> that ensures the safe use of all

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<sup>25</sup> DIRECTIVE 2001/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of (3.December.2001) on general product safety available: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0095&from=EN>

<sup>26</sup> ISO/TS 15066:2016, ISO 14971 and IEC 60601, IEC 80601-2-77, IEC 80601-2-78 and IEC TR 60601-4-1

<sup>27</sup> *“Research conducted in conjunction with 10 European countries, found the one-step process to be effective. Ultrasonic irradiation causes the formation of antimicrobial metal-oxide nanoparticles and actively impregnates these nanoparticles into textile fibers”* Available: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/641543/EPRS\\_IDA\(2020\)641543\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/641543/EPRS_IDA(2020)641543_EN.pdf)

<sup>28</sup> JAFFE-HOFFMAN M: Israel to receive 120,000 coronavirus-repelling face masks (2020), available:<https://www.jpost.com/HEALTH-SCIENCE/Israeli-start-up-to-donate-120000-masks-to-stop-coronavirus-spread-621077>

<sup>29</sup> REACH and CLP regulations, valid from (2015) available at: <https://echa.europa.eu/en/regulations/reach/understanding-reach> and <https://echa.europa.eu/en/regulations/clp/understanding-clp>

chemicals and mixtures, which significantly complicates the use of this technology within the EU. In 2008, the European Commission adopted a Code of Conduct for Responsible Nanosciences and Nanotechnologies Research<sup>30</sup>, with a recommendation to use it as the basis for further initiatives, aiming to ensure the safety, and ethical and sustainable nature of research into nanosciences and nanotechnologies in the EU.

### **2.3. Additive manufacturing**

As the coronavirus continues to put a burden on hospitals around the world, additive manufacturing plays an important role as a digital manufacturing technology in sustaining the efforts in the middle of this emergency. Additive manufacturing becomes most valuable when the supply chains of critical products are strained, as in the case of the Covid-19 pandemic where hospitals and healthcare systems around the world are facing acute shortages of supplies and protective medical equipment.

As a new technology, its applications also raise questions about the exact legal nature and categorization of this technology given its custom-made character and the lack of any regulatory guidance about its use in the context of EU law.

In the context of the Covid-19 pandemic, given the urgent need to produce medical equipment, the mushrooming of manufacturing initiatives and the accessibility of the technology, special attention will have to be paid to whether these products are properly tested and approved for clinical use in accordance with the set legal requirements prior to their deployment.

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<sup>30</sup> Code of Conduct for Responsible Nanosciences and Nanotechnologies Research available:[http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/consultation-nano-sinapse-feedback\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/consultation-nano-sinapse-feedback_en.pdf)

### 3. Prevention

One of the last, but surely not the least important question is the possibility of prevention of these kinds of pandemics. Only six months after emerging, COVID-19 has cost us over 900,000 lives and billions of euros, while having a major impact on our society.<sup>31</sup>

We already discussed examples, how the society is fighting the pandemic through new emerging technologies. Therefore, it is just rational to ask the next logical question in line. Could have been all this prevented?

It needs to be said that the spread of a given virus is linked to how long it remains undetected, and identifying a new virus is the first step towards mobilizing a response and taking the right steps in the right direction.<sup>32</sup> Time is essential!

On December 30, 2019 an artificial intelligence-based platform called BlueDot highlighted and tagged a cluster of cases of “unusual pneumonia” around the market in the Chinese city of Wuhan. BlueDot noticed what became known as the start of the COVID-19 pandemic, nine days before the World Health Organization released its statement alerting people to the emergence of a new type of virus.<sup>33</sup>

With the help of artificial intelligence-based systems like BlueDot it is possible to predict where outbreaks will occur and forecast how far and fast diseases will spread. *“However, AI is not a silver bullet. The accuracy of AI systems is highly dependent*

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<sup>31</sup> ScienceDaily (July 23, 2020) available: <https://www.sciencedaily.com/releases/2020/07/200723172208.htm>

<sup>32</sup> PROSSER, M: How AI Helped Predict the Coronavirus Outbreak Before It Happened (2020) available: <https://singularityhub.com/2020/02/05/how-ai-helped-predict-the-coronavirus-outbreak-before-it-happened/>

<sup>33</sup> STEIG, C: How this Canadian start-up spotted coronavirus before everyone else knew about it (2020) available: <https://www.cnn.com/2020/03/03/bluedot-used-artificial-intelligence-to-predict-coronavirus-spread.html>

*on the amount and quality of the data they learn from. And how AI systems are designed and trained can raise ethical issues, which can be particularly troublesome when the technologies affect large swathes of a population about something as vital as public health.”<sup>34</sup>*

Nevertheless, nine days could have literally meant the difference between life and death. In light of these facts, there is an argument for the question to be corrected to: Is our mistrust in new technology still an obstacle of creating real prevention?

## 4. Conclusion

The digital revolution at the end of the 20th century brought information to our fingertips, enabling us to make faster, better and more efficient decisions than ever before in our history.

Today, in the era of new technology our lives are becoming more and more intertwined with intelligent devices, and our society is only slowly getting used to this “new normal”. With the pandemic, the world we live in is changing dramatically again and there are significant adjustments to be made.

In this paper, we tried to pinpoint the enormous improvement we made in the last hundred years, and why the comparisons between the Spanish flu and the covid-19 pandemic is entirely irrelevant. With all the technological advancements, from artificial intelligence-powered monitoring systems that can learn how to identify and predict outbreaks of viruses. Through robots that disinfect whole hospitals, decontaminate public and private sites,

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<sup>34</sup> KHAN, S: Predicting the coronavirus outbreak: How AI connects the dots to warn about disease threats, (2020) available: <https://theconversation.com/predicting-the-coronavirus-outbreak-how-ai-connects-the-dots-to-warn-about-disease-threats-130772>

handle biohazardous waste, and drones transporting medical equipment and patient samples, the possibilities of handle the situation becomes significantly improved. With the help of innovative technologies such as nanotechnology, additive manufacturing, supercomputing and machine learning our society is accelerating the process of finding new ways how to tackle the challenges of this pandemic

Nevertheless, there are still significant legal limitations of the use of some of these new technologies, we cannot forget that as with any new filed which has to be regulated, it will take time and effort to come to a satisfying end.

To end on a high note, at the beginning of the century, everyone believed that new emerging technologies will be the great equalizer (and I dare not to judge this premise), but I do believe that we can say with great confidence, based on how substantial of an impact new technologies has on fighting the pandemic, that Technology: (is) the great divider.

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ISBN 978-80-7160-551-5