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Scholarly communication of early career researchers – organisation of international research with the participation of Poles and its Polish follow-up*

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Introduction

The turbulent years marked by the COVID-19 pandemic, the war in Ukraine and the global energy crisis also affected the functioning of the scientific community. Changes in scholarly communication had already occurred. In times before the aforementioned crises, they related mainly to the development of information technology, the popularisation of open access or the widespread use of social media in science. All of these phenomena have affected the global academic environment, as confirmed, among other things, by international studies in eight countries, including Poland, and different continents, carried out as part of the Harbingers 1 (2015–2019) and Harbingers 2 (2020–2022) projects, funded by the Publishing Research Consortium, CIBER Research Ltd. and SLOAN Foundation.

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Moreover, these developments constitute an important context for further research on science communication planned by members of an international team led by Prof. David Nicholas of CIBER Research Ltd. In Poland, this research is being conducted by Prof. Marzena Świgoń as part of the National Science Centre in Poland Grant No. 2022/45/B/HS2/00041 (between 2023 and 2025), the Polish continuation of international research mentioned in the title of this article.

The focus of these research projects, both completed and in progress, places early career researchers from different scientific fields in the centre of attention – as future professors who will shape scientific systems in different countries and global science communication. While the international projects (2016–2022) concerned the sciences, natural sciences and social sciences, the Polish continuation (2023–2025) relates to the humanities, theology and the arts

In the wake of the pandemic, voices were raised in the public space about the “lost” generation, not only with regard to young researchers but also to other groups learning at different levels of education (e.g. in primary and secondary schools). Subsequent events (the war in Ukraine and the economic crisis) have also taken their toll on the important and vulnerable group of scientists who are just embarking on their scientific careers. This was reflected in the findings of the second Harbingers 2 project carried out over the two years of the pandemic. Furthermore, when referring to the turbulent environment affecting scholarly communication in Poland, the reform of science and higher education, which has been underway for a number of years, also seems to play a significant role. Among other things, these reforms include new career paths determined by new regulations (changes in the classification of scientific fields and disciplines, replacing doctoral studies with doctoral schools), as well as new requirements for attaining successive levels of an academic career (changes to the list of journals with an impact factor, new rules for parameterisation of scientific units, new requirements for scientific promotions at universities). The most recent of these “external crises” providing the context for up to date study into scholarly communication is the development of artificial intelligence, which has been drawing the attention of the scientific community, among others, since November 2022. ChatGPT, which was then released for widespread testing, is an artificial intelligence developed by OpenAI that not only enables natural conversation but also produces scientific texts.

This article seeks to familiarise readers with the methodological assumptions and organisation of the several years of research conducted on early career researcher by an international team led by Prof. D. Nicholas, as well as to outline future analyses of the phenomenon of scholarly communication as seen through the eyes of early career researchers, including the Polish follow-up NCN project led by Prof. M. Świgoń.

Research design and organisation

The Harbingers 1 and Harbingers 2 projects employed mixed methodology and are described in detail in papers that have appeared in foreign journals (e.g. Nicholas et al. 2019, 2020) and partially in Polish journals (Świgoń, Nicholas, 2017, 2021). The research methodology is also described in the reports of CIBER Research Ltd., available on the website of this independent research centre headed by Prof. D. Nicholas.

A mixed methodology is used for research aligned with a pragmatic, problem-focused view of the world and research conducted within specific contexts, e.g. geopolitical, historical, social and economic.

In both international projects (Harbingers 1 and Harbingers 2) data triangulation was applied, i.e. by using: 1) an analysis of relevant literature, 2) longitudinal in-depth interviews with researchers conducted at intervals of several months or a year, and 3) online surveys, made available after the completion of each of the two interview cycles.

A study of scholarly communication was carried out by Prof. D. Nicholas' team before and during the pandemic, i.e. between 2015 and 2022. The identification of the SARS-CoV-2 virus in late 2019 and early 2020 marked the time-point, dividing line between the two projects and prompted the initiation of another. In other words, the second project was launched as a follow-up to the first project to explore scholarly communication issues in the new pandemic context.

Both projects are referred to in the media and scientific literature under the abbreviated title *Harbingers*, which refers to harbingers of change in the sphere of scholarly communication. With regard to the research focus of the projects cited above, scholarly communication is understood as the entire range of behaviours such as seeking scientific information, evaluating information, reviewing, publishing, sharing and disseminating it. In eight countries, the members (senior academics) of the international team sought to identify changes in the different types of activities of early career researchers, developments first caused, among other things, by the development of technology and social media (Harbingers 1 from 2015–2019) and then by the pandemic (Harbingers 2 from 2020–2022). In the course of the second project in case of Poland, some new crises also came into play, i.e. those related to the ongoing war in Ukraine, which were also reflected in the Polish data collected.

Future changes are to be expected in connection with the global economic crisis, inflation, the evolution of artificial intelligence and, in Poland, also in connection with the introduction of science reforms, which together provide the context for this research under NCN, as mentioned previously.

A central element of the research methodology of the Harbingers and its Polish follow-up projects are longitudinal interviews, i.e. interviews conducted with the same respondents at intervals of one year or several months (typically six months). Longitudinal interviews make it possible to observe changes in the phenomena being analysed. A total of six in-depth longitudinal interviews were conducted under the two Harbingers projects in the years: 2016, 2017, and 2018

(under the first project) and 2020, 2021, and 2022 (under the second Harbingers project during the pandemic). In contrast, global surveys were made available twice, in 2019, i.e. following the conclusion of the first project, and in 2022, i.e. at the end of the second project. As part of the National Science Centre in Poland grant (the follow-up project to the two international Harbingers projects), two rounds of longitudinal interviews are scheduled, the first in 2023 and the second in 2024. The questionnaire surveys, on the other hand, are envisaged for a later date once analogous studies in other countries have been completed.

The first project was funded by publishers, The Publishing Research Consortium; the second was conducted in collaboration with the University of Tennessee and funded by the Alfred Sloan Foundation. Prof. D. Nicholas of CIBER Research Ltd. was the lead for the international projects. In turn, Prof. M. Świgoń is the leader of the Polish project nr 2022/45/B/HS2/00041 funded by the National Science Centre. On 16 January 2023, the Scientific Research Ethics Committee of the University of Warmia and Mazury in Olsztyn issued a positive opinion for the implementation of the project.

The Harbingers projects as well as the Polish follow-up focus on early career researchers, or more specifically, early career researchers, i.e. both PhD students and doctorate degree candidates. No strict age criteria was adopted in these surveys, but respondents in their thirties comprise the predominant group, although there were also respondents in their twenties and forties. The average age of respondents in the first Harbingers project was lower than in Harbingers 2. Moreover, some early career researchers participated as respondents in both projects. Since the definition of novice researchers differs between countries (e.g. age or the number of years after the PhD is taken into account), when selecting respondents, attention was paid to ensure that they were not established researchers. Therefore, under Polish conditions, these include doctorate degree candidates from doctoral studies and, in the second project and in the Polish follow-up, also from doctoral schools, as well as doctoral students who obtained this degree no more than seven years before the launch of the first project (the period of parental leave was added here). It is worth adding that, job status emerged as a key factor in determining respondents' attitudes in both Harbingers projects.

As stated above, the candidates had to meet certain requirements; first and foremost, they had to be involved in research, already hold a doctoral degree or be working on their doctoral thesis, and be at different stages of this work. The members of the international research teams sought to gather a similar representation of early career researchers in the participating countries, not only in terms of status, gender, and age but also in terms of the fields and disciplines they represent.

In view of differences in the classification of sciences around the world, it was agreed to include as many fields of science as possible, with the exception of the humanities and arts, which, due to their specificities, were to be the subject of a separate study.

Consequently (and because the past funders were only interested in these areas), both Harbingers projects focused on science, life sciences and social sciences (the abbreviation applied in the English publications is SSC – science and social sciences). It was assumed in the first project that the group representing social sciences would make up no more than a quarter of the total group of respondents, while three-quarters were representatives of life sciences, medical sciences, engineering and technical sciences. In total, 116 respondents participated in the Harbingers project and were interviewed longitudinally at one-year intervals. In the second project, on the other hand, each representative of the eight countries tried to find two or three candidates from the following research areas: 1) mathematics and computer science; 2) physics, engineering and technology; 3) life sciences, biology and agriculture; 4) medicine and health sciences (this was prioritised because of the pandemic); 5) environmental sciences; 6) chemical sciences; and 7) social sciences. Thereby, a group of 20–24 early career researchers was assembled in each country. At the beginning of the second project, there were 177 respondents, and 167 individuals lasted until the end of the study (after two years of the pandemic).

Humanities and arts representatives were not taken into consideration in the Harbingers projects. For this reason, interviews are being planned to be held in several countries over the next few years with early researchers from the arts and humanities (abbreviated A&H). In Poland, due to the specific nature of the adopted classification of sciences, these are to be representatives of the art, humanities and theological fields. During the preparatory stage of the grant application to the National Science Centre (spring 2022), there were a total of 11 disciplines in these three fields, but the new ministerial decree of November 2022¹ introduced three additional disciplines within them. In other words, the following nine disciplines are distinguished within the humanities: archaeology, ethnology and cultural anthropology, philosophy, history, linguistics, literary studies, cultural and religious studies, art sciences and Polish studies. In the field of theological sciences, there are two disciplines: biblical sciences and theological sciences. Meanwhile, in the field of the arts, there are three disciplines: film and theatre arts, musical arts, fine arts and art conservation.

Respondents for the interviews are recruited by eight members of the research team (known as national researchers) across eight countries: France, Spain, China, Malaysia, the United States, the United Kingdom, Russia and Poland. It should be added that Russia participated in the project, starting only with the 2019 surveys and ended its cooperation early, in the wake of the war in Ukraine. Thus, the Harbingers project team comprised the following researchers: David Nicholas – lead, CIBER Research Ltd., Anthony Watkinson (interviews in the UK and the USA), Blanca Rodríguez-Bravo (interviews in Spain), Chérifa Boukacem-Zeghmouri (interviews in France), Jie Xu (interviews in China), Abdullah Abrizah (interviews in Malaysia), Marzena Świgoń (interviews in Poland) with

¹ Regulation of the Minister of Science and Higher Education of 11 October 2022 on the fields of science, scientific disciplines and artistic disciplines (Journal of Laws of 2022, item 2202).

the additional collaboration of Eti Herman (Israel) Hamid Jamali (Australia). In turn, in the Harbingers 2 project, the group was also joined by: David Sims (interviews in the United States), Galina Serbina (interviews in Russia before the war in Ukraine) and, additionally, colleagues from the University of Tennessee: Suzie Allard, Carol Tenopir. The broad assumption is that the same interviewers will seek respondents from the arts and humanities from 2023 onwards.

As far as the Polish respondents are concerned, ten young researchers were interviewed in the first project and 22 in the second, five of whom participated in both projects, i.e. in all six interviews. Accordingly, this provided a unique opportunity to follow the scholarly communication behaviour but also the professional paths of young Polish researchers over a total of seven years, which makes it unprecedented in the relevant literature.

The first interview with Polish researchers representing the sciences and social sciences was conducted by the co-author of this paper in 2016, and the final interview, the sixth, in 2022. The subsequent interviews will involve completely new respondents from fields not previously covered.

Interviews in individual countries were conducted in native languages (with the exception of Malaysia, where English is widely spoken), and only at the time of compilation and coding of responses were they translated into English. Interviews lasted 75–120 minutes and were conducted face-to-face during the first project and online during the pandemic (in some countries, e.g. China and the USA, certain interviews from the first round were also conducted online due to the long distance between the national researchers and the location of the respondents at the time). The interviews in the first project were annotated in real-time and were then completed by the respondents, whereas in the second project, they were recorded (Zoom, Skype, Teams), and the interview transcription was sent to the respondents to verify or clarify doubts. In other words, email communication with respondents over the course of both projects was essential.

Also in the third project, the Polish follow-up to the Harbingers projects under the NCN grant, interviews with respondents are recorded and the transcript is sent out for additions and modifications.

The duration of the interviews depended on the availability and conversational ability of the respondents. Nevertheless, the extensive questionnaire required at least one hour; some interviews were slightly shorter, while others took as long as about two hours. By averaging this aspect of the research organisation, it can be said that the lead-author of this article spent approximately 100 hours interviewing young Polish researchers from the sciences and social sciences over a period of seven years. And in the spring of 2023, and then in the spring of 2024, there will be dozens more hours of talks with representatives from the humanities, theology and the arts.

Following each round of interviews in both international projects, each national researcher prepared a summary that included:

- a coded classification of the answers to the questions, sometimes in a general form: *yes/no/don't know*, and in other cases, containing sample statements; a five-point Likert scale was used (from 1 – *strongly disagree* to 5 – *strongly agree*);
- direct quotations or paraphrases of respondents' answers to specific questions;
- the researchers-interviewers' comments and explanations, which take into account the domestic context of the respondents' statements.

The coding sheets (prepared in tables in Excel or Word files) were multifaceted, containing both quantitative and qualitative data. Frequently, the questionnaire questions produced quantitative-qualitative data, which provided a degree of triangulation and allowed for cross-checking of the resulting data. The respondents' answers were translated from national languages into English in the coding sheets, allowing them to be used by members of the international team in their joint publications.

The coding sheets from the individual interviews were then combined into a single matrix for each of the three rounds of interviews, which together formed the entire database for these two international projects.

It is important to observe that the research in Harbingers' projects covers countries that are dominant players in global scholarly communication (UK and USA), as well as the most populous country in the world (China), countries from three continents (Asia, Europe and North America), and includes both large countries (USA, Russia) and medium-sized countries (Poland and Malaysia).

Given this context, the fact that this research continues in the aforementioned countries with representatives of disciplines not previously analysed, i.e. the humanities and the arts, seems of great importance.

Interview questionnaire

The interview questionnaire used throughout the study in the Harbingers projects consists of more than 50 questions, both closed and open-ended. The questions in Harbingers 2 essentially addressed the same issues as the first Harbingers project, i.e. scholarly communication, collecting information, evaluating, reviewing, publishing, building reputation, etc. They were supplemented by questions on the impact of the pandemic on the different communication activities of researchers, as well as on their daily work and career prospects.

The questionnaire "Art & Humanities & Theology Early Career Researchers – scholarly communication" in the Polish continuation of the study under the NCN project has been somewhat modified, i.e. adapted to the specificities of the humanities, theology and the arts. In addition, the questions take into account different external conditions prevailing in the world in the first half

of 2023, i.e. new external and internal crises. Nevertheless, the main focus of the interview has remained unchanged since 2016, making it possible to follow the signals of change in scholarly communication over the years and to compare the results obtained in several countries.

The first part of the questionnaire (with a total of five groups of questions) concerns the work and status of the respondents, as well as membership in research teams and the financing of ongoing research projects. This part is complemented by data from the young researchers' scientific resumes, e.g. the number of publications or social media presence. Additional questions in the first part, which were added in the second project, focused on conducting pandemic-related research and workplace reorganisation related to lockdowns and remote work, as well as a sense of job security in times of pandemic. The next round of questions in both questionnaires dealt with the issue of evaluating scientific work and mentoring, with questions added in the second project regarding the changes brought about by the pandemic in this area. The section concerning knowledge sharing and collaboration included questions on how to network with other scientists, as well as about obstacles that respondents encountered during the pandemic.

The second part of the questionnaire contains a set of questions about the respondents' research careers and their assessment of the researcher's reputation, including, among other things, the importance of citation rates and altmetrics, plus how they achieve visibility for their research findings. In the second project, additional questions were included about the impact of the pandemic on the views of young researchers in this respect.

The third part of the questionnaire deals with general communication practices, including, for example, how to search for and find scientific information, how to disseminate research findings on social media or at scientific conferences, as well as how to evaluate information, the relevance of factors related to scientific journals (editors, title, abstract, IF etc.) and scientific integrity. At the time of the pandemic, questions were added about the changes it had triggered.

The fourth part of the interview questionnaire is devoted to authorship and publishing one's scientific output. It includes questions about the role of traditional journals as well as new communication channels such as preprint services, blogs and tweets, among others. Furthermore, it contains questions about the most important factors considered by young researchers when deciding on a journal to publish their research (e.g. database indexing, quick publishing, open access, IF, and high standards of peer review). Several questions were related to respondents' experiences of peer review, both as an author and as a reviewer, and their preference for the type of review (blind reviews versus open reports). Considerable space is devoted in the questionnaire to the issue of publishing under open access, whether it is raw data or finished papers, as well as preprints. Questions related to the reach and impact of a scientific study occupy a separate place in this section. All of these questions were expanded to include the context of the pandemic in the second project.

The fifth set of questions, the final one in the longitudinal interview questionnaire, concerns transformations and transitions in respondents' scholarly communication attitudes and behaviours, as well as perceptions of changes taking place in the scholarly communication system both domestically and internationally. It further includes questions about the future of scholarly journals, scholarly publishers and the future of libraries. It also asks about the changes caused by the pandemic, as well as young researchers' predictions related to the spread of remote forms of collaboration and teaching.

As mentioned previously, research in the fields of arts, humanities and theology can basically use the same questionnaire, with the exception that certain parts of the questionnaire have been adapted to the specificities of these fields, among others, to the leading role of monographs in scholarly communication in humanities and other works of art in the artistic fields. In addition, the Polish questionnaire added questions about the impact of various external crises on the respondents' research work, i.e. not only the pandemic, but also the war in Ukraine, inflation in Poland, reforms at Polish universities or artificial intelligence entering the daily work of scientists. Moreover, the questions in the questionnaire need to be agreed upon among the international team of researchers from the Harbingers projects, which will allow the results from different countries to be compared in the future.

Respondents in Poland

The Poles who were interviewed in the two past projects (Harbingers and Harbingers 2) comprised a total of 27 people, 10 of whom took part in the first project and 22 in the second, including five people who were correspondents in both projects.

Interviews for the Harbingers 1 project in Poland were conducted at annual intervals, i.e. in spring 2016, 2017 and 2018, and in the Harbingers 2 project: in winter 2020, summer 2021 and spring 2022, i.e. at 6–7 monthly intervals during the two years of the pandemic.

Early career Polish researchers represented the following scientific fields and disciplines (according to the conventional division of sciences adopted by international teams): mathematics and computer science – three persons, physical and engineering sciences (e.g. geodesy, electrical engineering, mechanical engineering) – four persons (two of whom participated in both projects), life sciences and agriculture (food science, forestry and animal production science) – seven persons (two of whom contributed to all six interviews), medical and health sciences – three persons, environmental sciences (environmental engineering, geography) – three persons, social sciences (economics, pedagogy, sociology, law) – five persons (one of whom participated in both projects) and chemical sciences – two persons.

Polish respondents were born between 1983 and 1997, and among the 27 respondents there were 11 women (three were respondents in both projects) and 16 men (two contributed to both projects). In terms of status at the start of the projects, the participants in the longitudinal interviews were, respectively: at the time of the first interview in 2016, five PhD holders and five PhD candidates, and at the time of the fourth interview in 2020: 15 PhD candidates and seven PhD holders. During the course of the projects, two people defended their doctoral theses; none of the doctoral students obtained a postdoctoral degree (habilitation). Hence, in total, at the end of the study, i.e. in mid-2022, there were still more PhD candidates (16 people) than PhD holders (11 people). Some individuals were employed as assistant lecturers or assistant professors (14 people), and some were part-time. During the course of the projects, some respondents were given employment after defending their doctoral thesis, and some had their employment contract extended (sometimes for a second time for a definite period), but virtually no one employed at a university lost their job, and this was also true during the two years of the pandemic. In comparison, other countries participating in the Harbingers projects reported departures or dismissals from the university (e.g. France).

Polish respondents were recruited from a variety of universities, but the largest number (specific numbers and university names have been omitted to ensure anonymity) represented the home institution of the co-author of this paper – the University of Warmia and Mazury in Olsztyn. Other affiliations included universities of technology, public universities, non-public universities and the Polish Academy of Sciences.

In the course of the study, young Polish scientists were employed both as heads and executors in projects financed by the National Science Centre, the National Centre for Research and Development, the Ministry of Education and Science (formerly the Ministry of Science and Higher Education), as well as through funds granted to young researchers by their parent universities or various Polish and foreign foundations.

The respondents included recipients of rectors' grants and ministerial scholarships for outstanding young scientists or awards for the best doctoral theses.

In general, Polish respondents published much, with an average of 3–4 papers each year, although some actually published considerably more than others; there were cases, for instance, of ten publications per year versus years with no publication at all. Some young Polish scientists also authored patents.

The overwhelming majority of them combined research work with teaching, with occasional cases of people focused on research work only (e.g. affiliated to the Polish Academy of Sciences or having a doctoral programme extension according to the previous procedure, i.e. not teaching students) or people combining research work with work in other sectors (e.g. industry).

Noteworthy changes in the private lives of Polish participants were observed during the six interviews conducted between 2016 and 2022. Among these

changes, six out of the 27 participants became parents or experienced changes in their marital status.

It should be added that, in the light of the results obtained from the Harbingers projects the Polish ECRs were more traditional than others in the international group in terms of attitude and behaviour and this is put down to their very centralised and regulated academic system.

The current NCN project assumes that the group of Polish humanists, theologians and artist-scientists would consist of twenty five respondents, mainly PhDs up to seven years post-doctoral (irrespective of age) and doctoral students. At the revision stage of this article (in May 2023), it is already known that representatives of all the constituent disciplines of the three sciences have been reached with the exception of two new disciplines introduced in Poland at the end of 2022.

Conclusion

The findings obtained from international studies conducted in eight countries have been published in the form of dozens of collaborative analyses in English-language and foreign journals. A list of these scientific and popular science publications is provided in the bibliography for this paper (Nicholas et al., 2017–2023). Meanwhile, two papers focusing on Polish respondents have been published in the Polish literature. These included the report of the first 2016 interview, which was published in “Zagadnienia Informacji Naukowej” in 2017 (Świgoń and Nicholas, 2017), and the findings of the 2019 survey (after the first three interviews), which was published in the annual “Media – Kultura – Komunikacja Społeczna” (Świgoń and Nicholas, 2021). This paper is only the third written in Polish, so it fills this peculiar gap in the domestic literature.

An international team led by Prof. David Nicholas has plans to conduct further research on scholarly communication, as seen through the eyes of future professors and policymakers who are just embarking on their academic careers in different countries on different continents. The same team has the opportunity to explore the attitudes and behaviour of young scientists in the context of rapidly developing artificial intelligence.

As already mentioned, this research is primarily intended to focus on previously unanalysed fields and disciplines, i.e. the humanities and the arts sciences and, in Poland only, also theology (due to the existence of such a distinct category). Given the challenges of finding potential grantors willing to fund joint international research in the fields of arts and humanities, the members of Prof. Nicholas’ team decided to seek funding for research in each country separately. So this time, each respective domestic researcher is independently seeking funding from their national funders. At the time of writing, only the lead-author of this paper has received a grant from the National Science Centre’s OPUS 23 funding programme. It is, therefore, difficult to predict the

fate of collaborative analyses in the future. Will it be possible to synchronise the longitudinal interviews in several countries? Either way, the Polish continuation of international projects on signs of change in scholarly communication has begun in 2023.

OPEN DATA :

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Summary

This paper discusses the central assumptions as well as the organisation of studies into scholarly communication as seen through the eyes of early career researchers, which have been conducted for several years in eight countries, i.e. the United States, the United Kingdom, Spain, France, Malaysia, China, Russia and Poland. The research projects carried out between 2016 and 2022 (funded by Publishing Research Consortium, CIBER Research Ltd. and Sloan Foundation) involved conducting longitudinal interviews with scholars representing the fields of engineering and technology, medical and health sciences, science and life sciences, as well as social sciences. On the other hand, 2023 (National Science Centre project no. 2022/45/B/HS2/00041) saw the introduction of interviews with Polish early career researchers from previously unanalysed fields, namely the humanities, theological sciences and the fields of arts.

**Komunikacja naukowa badaczy na wczesnym etapie kariery –
organizacja międzynarodowych badań
z udziałem Polaków oraz ich polskiej kontynuacji**

Streszczenie

W artykule omówiono główne założenia oraz organizację badań nad komunikacją naukową widzianą oczami początkujących naukowców, które prowadzone są od kilku lat w ośmiu krajach, tzn. w Stanach Zjednoczonych, Wielkiej Brytanii, Hiszpanii, Francji, Malezji, Chinach, Rosji oraz Polsce. Zrealizowane w latach 2016–2022 projekty badawcze (finansowane przez Publishing Research Consortium, CIBER Research Ltd. oraz Sloan Foundation) polegały na prowadzeniu wywiadów podłużnych z reprezentantami dziedzin nauk inżynieryjno-technicznych, medycznych i o zdrowiu, ścisłych i przyrodniczych, a także społecznych. Natomiast w roku 2023 (projekt NCN nr 2022/45/B/HS2/00041) rozpoczęto wywiady z polskimi młodymi badaczami z wcześniej nieanalizowanych dziedzin, czyli nauk humanistycznych, teologicznych oraz dziedzin sztuki.