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Organizational and Occupational Innovation when Implementing a Covid-19 Live Tracker in VG Newsroom

Maria Konow-Lund^a, Junai Mtchedlidze ^b and Jens Barland^b

^aDepartment of Journalism and Media Studies, Oslo Metropolitan University, Oslo, Norway; ^bDepartment of Communication, School of Communication, Leadership, and Marketing, Kristiania University College, Oslo, Norway


ABSTRACT

Academic research on whether and how innovation during crises results in durable changes in practice remains scant. The Covid-19 pandemic brought with it new opportunities to look at both innovation and transformations in news work during coverage of the breaking news or monster stories related to it. Through semi-structured qualitative interviews at three different times during the pandemic lock down year of 2021, we engaged with a core group (or “heavyweight team”) of editorial managers, digital managers, and an editor-in-chief to generate unique data on this topic. For this inquiry, we enjoyed unique access to the Schibsted-owned VG newsroom in Norway, which was already known for its innovative means of handling disruptive changes and improving practices and routines. Our findings related to VG’s Covid-19 Live Tracker initiative in particular suggest that occupational and organizational discourses of professionalism work together to produce altered roles and tasks, empowered interdepartmental teams, and ultimately the trust of both the audience and the authorities.

KEYWORDS

Organizational innovation; occupational innovation; professionalism; transformation; COVID-19; data journalism; cross disciplinary collaboration

One of the challenges to making sense of the pandemic-related digital transformation and innovation in journalism is distinguishing what changed *due* to the pandemic from what changed *during* the pandemic, as part of the ongoing digital shift in society (Quandt and Wahl-Jorgensen 2021; Negroed et al. 2020). This is particularly true when one is asking, as we do in this article, how news workers perceived transformational initiatives and process innovation in the newsroom during Covid-19. Was the pandemic a turning point wherein the need for new strategies generated new prospects and innovative endeavours, or was an ongoing transformation toward a more virtual working environment and distance-based collaborations already underway (García-Avilés 2021)? Or, alternatively, did the pandemic serve to accelerate or amplify tendencies or processes such as staff layoffs or changing business strategies (Dawson et al. 2021; Appelgren 2021)? In this article, we draw upon a case taken from Norway’s most-read online newspaper, VG,

CONTACT Maria Konow-Lund  mkl@oslomet.no

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involving its newsroom's implementation of a Covid-19 live tracker¹ between 2020 and 2022, and the changes to internal production processes that came with it. Those new processes meant that the established roles of developer, journalist, editor, and manager had to adapt in turn. How did actual news workers perceive these shifts, especially during such a stressful time? This article explores the actual and perceived challenges of crisis-prompted transformation and innovation in the newsroom.

Approaching Transformation and Innovation during Critical Moments

Existing perspectives on both business innovation and public-service-focused innovation fail to account for the conditions of a huge crisis such as the Covid-19 pandemic, when top-down organisational and bottom-up occupational positions are often forced (or enabled) to converge. Research has also already uncovered an interplay between the discourse of innovation (which assumes something new is emerging) and the discourse of transformation (which focuses on the legacy behind media development) as well as the practice perspective (which considers structural factors such as technology as well as the role of agency of practitioners) (Steensen 2013). One abiding view state that crises rarely produce actual "newness"; in what follows, we will test that view by looking at the ways in which these various discourses are negotiated *during the crisis itself* (Perreault and Perreault 2021). Our case study involves *Verdens Gang* (VG.no), the most-read online newspaper in Norway (news outlet owned by Schibsted), which is committed to experimentation during crises. In particular, we will show how this newsroom's establishment of a Covid-19 live tracker on its website impacted the professional relationships between breaking-news journalists and their digital developer colleagues over eighteen months and, along the way, introduced related innovations to other processes, practices, and services at the online newspaper in question. Due to this focus, we interviewed 19 informants over three different phases during the pandemic (see the list of informants in the appendix). The informants range from a CEO and editor-in-chief to managers, breaking-news reporters, editorial developers, regular news reporters, and designers. This extended scope of professional capacity emerges from the fact that crises demand cross-disciplinary adaptation, so many different positions are involved in this work.

Given journalism's dependence upon relatively basic skills such as sourcing, production and collaboration, Carlson et al. (2018) stress that journalism studies must cultivate the "empirically driven inquiry into understanding and explaining ways in which journalism reifies power structures, social identities and hierarchies" (9). That is, the academic fascination with "change" may bring with it "unintended negative consequences" (Peters and Carlson 2019, 639). This perspective is echoed in the seminal work on journalism during crises by Zelizer (2015), who also calls for a more all-encompassing perspective upon crises, risk and uncertainty in journalism, as well as the change that is associated with these conditions of practice. While recent scholarly contributions address change in journalism (Deuze 2007; Deuze and Witschge 2018; Peters and Carlson 2019), including those attributing that change exclusively to crisis moments, there are few projects that engage with examples of new or affected practices arising *in the midst of such an event*.

This is understandable in the sense that researchers need time to negotiate access to the relevant newsroom or journalists—something that is challenging enough during

normal times but almost impossible when media organisations are at their most vulnerable and unbalanced. For the present study, we did manage to gather empirical data on roles, routines, and the application of technology during the global pandemic, and it is this data which informs our discussions and conclusions below. Consequently, transformation and innovation during crises come with various complexities and tensions. Such tensions need not be antagonistic as such but do consist of ongoing negotiations in the newsroom (Örnebring 2010, 6). Our research question therefore focuses on innovation and transformation during crises when initiated and led by a dedicated group in the newsroom. In this case, we looked at how news workers and management in the VG newsroom negotiated work practices and organizational structure while implementing a Covid-19 live tracker during the pandemic.

Business-inspired Innovation in the Newsroom

In his article on the future of journalism, John Pavlik (2013) reflects on the common definition of innovation in business literature: "The process by which an idea or invention is translated into a good or service for which people will pay, or something that results from this process. To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need" (Pavlik 2013, 183). He notes that innovation is the key to creating a "viable revenue model for the twenty-first century" (2013, 183) and continues, "[Innovation in news is] defined . . . as the process of taking new approaches to media practices and forms while maintaining a commitment to quality and high ethical standards. Addressing this sort of business innovation from an organisational perspective, Christensen and Overdorf (2000) suggest that disruptive change places demand upon the organisation's resources, processes and values. While resources range from staff to technology, money, branding, information and so on, processes include interaction, communication, and decision making. Finally, values are understood by Christensen and Overdorf as "standards by which employees set priorities that enable them to judge whether an order is attractive or unattractive, whether a customer is attractive or unattractive" (2000, 4). In this way, the values of the organisation are infused into and implemented by the individuals who make the decisions, both big and small.

According to Christensen and Overdorf, there are three options for organisations to create new processes and values to address challenges of disruptive change: (1) create a new internal structure for processes and values to be developed, (2) spin off an independent organisation from the mother organisation, or (3) create a new organisation wherein processes and values are adapted to new tasks. In our case study, VG went for the first option by establishing what one previous study called a "heavyweight team" (Clark and Wheelwright 1992). To spur existing workers to communicate and interact in new ways, management can pull certain specialised staff members out of the existing structure and invite them to create new capabilities within traditional processes and generate new values. Clark and Wheelwright describe how Chrysler created such teams when they wanted to develop all-new automobile platforms such as the minivan, sport utility vehicle, truck, and so on. Each individual team member had to take responsibility for the initiative's overall success (Clark and Wheelwright 1992).

Relatedly, Storsul and Krumsvik (2013) introduce various types of media-industry innovation by referring to the "four Ps" (Storsul and Krumsvik 2013, 16–17).

- The first P—innovation which introduces or improves products—could apply to the development of new media platforms, genres, or communication patterns.
- The second P, concerning process-oriented innovation, could apply to how media organisations are structured and journalists practices are negotiated during processes.
- The third P, which involves positioning, could apply to how a media organisation frames itself through advertising and marketing.
- The fourth P, paradigmatic innovation, addresses basic changes to an “organization’s mindset, values and business models”.
- To these four Ps, they add an S to acknowledge journalism’s focus on its social purpose. In a later article (Krumsvik et al. 2019), they also add genre innovation to those forms of change most relevant to the media industry.

Out of these Ps, process innovation is most relevant to our case study.

Public-service Inspired Innovation in the Newsroom during Crises

More recently, Creech and Nadler (2018) acknowledged that innovation has been used to drive transformation within the media business, editorial management strategies and journalistic roles but lament the fact that it has been so tied to business and commercialism in media organisations. This association, they conclude, dismisses the structural, historical, and cultural conditions of journalism and especially those related to its support of democratic society. Journalism is never better aligned with its aim to work toward the greater good than during a crisis, when journalists generally rise to the occasion and strive to serve the public in any way they can. It is less generally recognized that such conditions also produce innovation, which might be processual or social as well as commercial. In the present article, we elaborate upon how “an interlocking network of rules and activities, roles, technologies, norms” generates cross-disciplinary solutions to new problems.

More importantly, we focus on the aspect of the institution which involves journalism-as-work (Örnebring 2016) by drawing upon the theoretical framework of sociologist Julia Evetts (2003, 2006). Evetts differentiates between two discourses of professionalism, the organisational and the occupational. The former incorporates “rational legal forms of decision-making, hierarchical structures of authority, the standardization of work practices, accountability, target setting and performance review and is based on occupational training and certification”. The latter—the more traditional, historical form of professionalism—“involves a discourse constructed within professional groups themselves that involves discretionary decision-making in complex cases, collegial authority, the occupational control of the work based on shared education and training, a strong socialization process, work culture and occupational identities” (141). Despite the possibility of tension between the two discourses, the organizational and occupational, they overlap as well, and common interests can also be uncovered or negotiated between them (Örnebring 2010). Occupational professionalism is accompanied by shared norms which can be challenged when journalists are forced into close collaborations with other news workers, such as technological developers. For example, while both journalists and developers might share the goals of trying to produce quality journalism, practice

transparency, and encourage democratic values, they work in different ways with different content and materials.

Norms and values derived from one area of the newsroom—for example, the technology department (developers, digital managers, experts in digital systems)—engage during crises with the fourth-estate norms and values of the journalists themselves. Örnebring writes, “Journalism-as-institution, to reiterate, is the *shared norms and routines* of news production as created and maintained by a *set of organizations*, and journalism-as-work are the *everyday practical activities undertaken by individuals who produce journalistic content*” (Örnebring 2016, 15). Örnebring notes that journalists share norms and values via their socialisation as members of a profession, whereas journalism-as-institution depends on “the economic context” (2016, 15). In spite of this occupational and organisational professionalism need not be antagonistic to one another—there are, in fact, many overlapping and common interests between them (Örnebring 2016, 15). In their more recent work focusing on autonomy in journalism, Örnebring and Karlsson (2022, 3) observe that journalism requires independence to hold power to account. This is never more important than during a crisis, when decision-making is pushed further toward the front lines of news production due to an endemic lack of time. In this article, then, we are particularly interested how a practice perspective “acknowledges the importance of individual agency on processes of innovation”—a perspective that is relatively less developed within innovation theory (Steensen 2013, 57).

We examine the crisis-driven collaboration between digital developers and journalists at VG during Covid-19, drawing upon the concept of “computational thinking” (Wing 2006) in news production, among other things. Within the field of the computational exploration of journalism (CEJ) (Gynnild 2014, 1), this concept puts the person first to better capture a “way that humans solve problems[.] it is not trying to get humans to think like computers” (Wing 2006, 35). In tandem with the concepts of process and social and paradigmatic innovation, this article explores the ways in which computational thinking informs and enriches “journalistic thinking” and vice versa. Ultimately, this article argues that crises, and particularly huge ones like the global pandemic, allow for cross-disciplinary negotiations and more horizontal structures of power within existing organisations such as newsrooms.

Methodology

When the pandemic first emerged, Norwegian news organisations took many different approaches to it, including, for example, VG’s bottom-up development of its new Covid-19 live tracker. VG is part of the Schibsted Media Group, founded in 1839 as a printing house, and associated for years with the largest print newspaper in Norway, *Aftenposten*. Today, Schibsted remains among the considerable global media players through its digital marketplaces (Barland 2012, 6), which now include eBay, the world’s largest online classifieds group. Schibsted’s turnover in 2021 was 1.5 billion euros.² Norwegian media organisations including the Schibsted group are generally in the forefront when it comes to digital development and innovation, and VG boasts an especially vigorous tradition of experimenting with change and innovation during crises (see, for example, Konow-Lund, Beck, and Olsson 2017; Konow-Lund 2013; Barland 2012).

VG is regarded as a leading media outlet in Scandinavia. In this part of the world, the Nordic countries have long been ranked very highly in terms of press freedom³ and trustworthiness. The role of the media is considered essential in the context of the Nordic welfare state systems (Syvertsen et al. 2014).

In describing the value of the case study to the researcher, Yin emphasises its utility as an empirical method for investigating a “contemporary phenomenon” within a real-world context particularly when the “boundaries between phenomenon and context may not be clearly evident” (2018, 15). In this sense, case-study research is not so different from experimental research (2018, 40), Yin continues. Furthermore, by contextualization, the observations can be considered as valid knowledge in a larger environment, here comparable news media industry (Mjøset 2009). In the interests of studying VG’s implementation of its Covid-19 live tracker, we have chosen the single case study as our method because the pandemic represents an “extreme case” or an “unusual case” “deviating from theoretical norms or even everyday occurrences” (Yin 2018, 50). We consider that looking at a process situated outside of normal news production can shed light on both what went before (the “normal” and ongoing) and what followed (the extreme or unusual) (Corkin 2013).

Furthermore, the Covid-19 pandemic differs from other sudden crises in that it not only emerged unexpectedly but also persisted for over two years without relenting in terms of its unpredictable and contentious nature, so that lockdowns, for example, could arise overnight depending on the convictions of a country’s politicians. Our case study involving VG’s Covid-19 live tracker also qualifies for the fourth rationale—that it be revelatory—because we as academics were given access to unique information which we interpreted through the lens of our extensive pre-academic careers in the media as editors or reporters. During the spring of 2021, that is, the VG staff was incredible busy despite being in lockdown, but we were able to meet with the heavyweight live tracker team (Christensen and Overdorf 2000) as well as key stakeholders in the implementation of the live tracker. In line with Quandt and Wahl-Jorgensen (2021), we also found that the coronavirus crisis brought opportunities to rethink our methodological approaches. For example, prescheduled and carefully planned overtures to informants were difficult to arrange during the lockdown, so we had to conduct our interviews in various phases rather than all at once. This is the difference between what we will call a conceptual crisis—that is, the general crises in journalism which might accompany, for example, digitization or a faltering business model—and a dire crisis such as a domestic terror attack (for example, 22 July 2011; see et al. 2016) or the global pandemic.

In the context of the latter as a dire crisis, we chose to conduct a pilot study involving six industry stakeholders including professionals from the Association of Norwegian Editors, the Norwegian Union of Journalists, and a factchecking company, as well as an expert on artificial intelligence and factchecking from a university, the CEO of Tinius Trust (major owner of Schibsted), and a former VG news editor and VGTV publisher with twenty years of experience in innovative projects there. These exploratory interviews took place from January to March 2021 to help us develop relevant questions as well as provide “conceptual clarification for research design” for the subsequent study (Yin 2018, 106). The second phase of our work involved interviews from March to May 2021 with the core group of informants involved with VG’s live tracker. The last phase involved interviews from early June to mid-July 2021 with VG editorial managers, the publisher, the

chief administrative officer, and the innovation director, who shed light on resources, overall processes and organisational values.

Informants were interviewed in different phases between January and November 2021. While the initial informants were able to shed light on the live-tracker project's background, history, and organizational structuring, the second-phase informants were chosen for their first-hand knowledge of adaptations to work practices and routines. During the third phase, in turn, we interviewed administrators and editorial managers.

The initial, formative phase of this study was intended to contribute to a better understanding of the context of journalistic transformation during the pandemic; Yin, for example, stresses that a pilot study is mainly "of value to the research team itself" (Yin 2018, 108). An overview of all our informants is included at the end of the article. Our interview guide focused specifically on topics including material and human resources, practices during the process, and informal and formal values (Christensen and Overdorf 2000). The interviews were manually transcribed by both authors and project research assistants, and lasted between 60 and 90 min. Related data categories for interview analysis included innovation in practice, digital technology, the implementation of the live tracker, reflections on the various roles in the newsroom, and the alignments and/or tensions between occupational and organizational professional discourses.

Results and Discussion

1: The Establishment of Cross Disciplinary Collaboration in the First Phase of the Crises

While there is clearly no lack of sudden critical events such as terror attacks (Konow-Lund, Beck, and Olsson 2017; Konow-Lund and Olsson 2016), relatively few long-term global crises have arisen so suddenly and unpredictably as Covid-19. To develop relevant questions and conceptual clarification for the research design (Yin 2018, 106–107), we chose to conduct a pilot study. In this sense, the scope of our inquiry extended beyond simply approaching staff in the VG newsroom to encompass how media organisations in general experienced the pandemic in terms of their practice. In the pilot study we found several references to VG, which was held up as an example of how journalistic practice could use crisis as an opportunity. The way VG had implemented the Covid-19 live tracker was associated by some informants with a unique culture in the VG newsroom—one which could be compared to a "family" (Assistant Secretary General, Association of Norwegian Editors, 25 January 2021). One informant pointed out that professional journalists and editors frequently visited VG to learn more about how innovation was initiated there. On the question of how the pandemic had challenged, changed, or initiated journalistic practices, several informants said that nothing revolutionary had occurred, but the crisis had clearly challenged or accelerated an existing digital shift within journalism (CEO Tinius Trust, 11 Januar 2021). One former publisher of VGTV who had become news director at the largest Norwegian broadcaster explained that the ability to react swiftly at a critical moment was essential to organisationally turning a disadvantage into an advantage (previous publisher VGTV, February 2021), and that VG's smaller but very efficient newsroom was better equipped to do so than those of bigger organisations. In general, it also became clear that even as late as the beginning of 2021, informants

were not yet able to fully make sense of the pandemic and its impact on processes and practices. We used these types of observations and insights to develop our research questions and study design, then organised our two interview phases with hands-on reporters, developers, managers and editors and top management, respectively.

At VG, a journalist and a developer recognised this demand for statistical tracking early on and began discussing the best ways to present the facts and figures concerning the coronavirus. The developer was inspired by the Covid-19 live tracker already in place at the *New York Times* online and initially wanted to manually code a similar tracker to offer unique statistical data about the Covid-19 situation in Norway. The first Covid-19 live tracker appeared at VG on 3 March 2020 and displayed the numbers of infected, dead, or recovered patients. As the pandemic grew and new coping measures emerged from the Norwegian government, other relevant statistical data, including the number of vaccinated people, risk-level maps, and travel advice, were added to the tracker's growing infrastructure. Through this tool, the audience was offered a continuously updated overview of the virus's spread in real time on a local, national, and global level—something that was simply not possible via the processes and practices of traditional reporting. It was only possible through a combination of the tools of data journalism with those of breaking-news journalism. For example, the VG live tracker distinguished itself from its peers by offering audiences unique data on local restrictions around the country generated by the breaking-news reporters as well as the digital developers in analogy ways, then added to the tracker. Between March 2020 and July 2021, the VG live tracker generated over 400 million unique clicks in a country with a population of approximately five million (Skup 2020).

2: Cross Disciplinary Bottom-up Production at VG

At the very start of the pandemic outbreak in Europe, there were relatively few news workers at the VG offices; most of the newsrooms developers and journalists were attending the annual NICAR conference (National Institute for Computer-Assisted Reporting), held that year in New Orleans from 4 to 8 March 2020. Our informants recalled following the development of the Covid-19 virus at the time without understanding the severity of the situation. When Norway went into lockdown that very week, the initiating editorial developer was taken by surprise. At the time he was not even located in the VG newsroom:

I switched on my Mac and scrutinized everything I could find about Covid-19, all the statistics, all the sources. I looked up the *New York Times* and the *Washington Post* to check which sources they were using: <https://www.worldometers.info/>. Is Worldometers a solid source, or one to avoid? So, the first thing I needed to do was to establish reliable sources. I began with the international statistics and then followed up with the numbers for Norway, but there were no Covid-19 statistics for Norwegian municipalities at that time. That is why we started phoning municipal chief medical officers to collate the data ourselves. We created our own register of the infection cases before that was done by the NIPH [Norwegian Institute of Public Health]. (Editorial Developer, VG, 30 April 2021).

Initially, the most important aspect of a live tracker project was the developer's ability to systematically organize the architectural interface to provide information in a convenient and systematic way. In addition to the numbers, that is, it eventually came to offer

extensive travel advice. It also linked readers to short news stories about Covid-19 written by VG journalists.

Luckily, the developer and breaking-news reporter who kicked off the initiative had already collaborated on interdisciplinary projects which required both of their areas of expertise. Later on, Editor-in-Chief Gard Steiro would attribute the success of the live tracker to the fact that its core group of reporters and developers had worked together before. Our informants recalled that it was primarily the breaking-news reporter who took it upon herself to raise awareness among fellow journalists, developers and managers about the importance of the live tracker. It also reminded informants about previous crisis initiatives, such as VG's "hitchhiking graphic" to help people hitchhike to their destinations when ash from the 2010 Icelandic volcano eruption grounded all the airplanes. Five years later, an editorial developer, an editor dedicated to work with journalists, recalled that when time was short, the developers did not wait for management's approval but went ahead with preparatory work on the graphic (Developer VG, 22 April 2016). When an editorial manager eventually approved the idea, the developers were able to say, "Your idea about a hitch-hiking graphic will be implemented in 30 min".

Following this existing pattern of bottom-up initiative during crises, the developer started to manually code and create a version of a Covid-19 live tracker which responded to VG's perceived needs. The task, according to the reporter and developer who oversaw the project early on, was to accommodate the audience's demand for detailed information—even though the authorities were doing what they could to inform the citizenry, the kinds of information available varied significantly among municipalities and local areas. Restrictions, in particular, were being implemented differently from place to place, and the authorities appeared unable to synthesise or summarise these differences, due to lack of existing capacity and resources (Francis and Bessant 2005). The reporter and developer realised they had found a way to help by generating and improving the data which was available. Informants pointed out that the tracker would have stalled if not for the reporter and developer's experience with previous collaborative projects—routines and practices, but also a mutual respect for each other's work, were already in place. In her article "Journalism Innovation Leads to Innovation Journalism: The Impact of Computational Exploration on Changing Mindsets", Gynnild (2014) first coins the aforementioned term "computational exploration in journalism" (CEJ) to encompass a "multifaceted change of algorithms, data and social science methods in reporting and storytelling. CEJ typically involves the journalistic co-creation of quantitative news projects that transcend geographical, disciplinary, and linguistic boundaries" (2014, 1). Gynnild insists that if journalists embrace computational thinking to utilise technology in an innovative way, their journalism will follow suit. Regarding the implementation of the live tracker, such an embrace led to several new processes, including the creation of an autonomous team, the prioritisation of sustainability and new approaches to accessing resources.

As time went on and the number of infected cases increased by the day, VG had to rebuild the live tracker's infrastructure in order for it to become more sustainable, so they sacrificed two weeks of production while developers recoded it. The system developer defended the decision to apply the new architecture:

We understood that the way the live tracker was engineered was inadequate with regard to how everything was mushrooming (the number of clicks). The journalists were frustrated by

the time we spent working on the technical improvements, but this effort enabled us to be more efficient later on, and to expand the system with new features. (Editorial Developer, VG, 5 May 2021)

This developer also emphasised the continuous need to improve the tracker's sustainability.

3: Process Innovation due to Autonomous Cross Disciplinary Organization

VG has a long tradition of news workers rising to the occasion during breaking news and crises. Editor-in-Chief Gard Steiro notes that it is embedded in the organisational culture there. According to Steiro, VG staff uses each critical event as an opportunity to renew its journalistic practice, and the secret is that this work does not need to be management driven (Editor-in-chief, VG, 23 June 2021). This observation rang true as informants explained their decision-making during the early days of the pandemic in 2020. Several informants on the core team remarked upon the advantages of working independently:

We who are part of the Covid-19 team were making do without a leader. We have not been together all four of us physically since March of last year. Our communication was generally written. All four of us have been highly motivated and excited about the project. By the time we got a Covid-19 leader last fall—in September or October of 2020—we had concluded that being without a boss had worked very well. We were rather spoiled, in the sense that we did what we wanted to at the moment and felt that was working fine. But it was also good to get a manager. Through her role she helped free us from certain mandatory tasks that hampered our development work. This has worked well too. A few inputs and requests have been made, but we have been very self-propelled. (Reporter, VG, 14 April 2021)

Another reporter (Reporter, VG, 12 May 2021) from the Covid-19 live tracker team also added how important it was to produce as fast as possible, and how, due to this, there was little time to wait for management's decisions. Just waiting for meetings with editors, getting editorial permissions and following a traditional focus on the newsroom hierarchy would have come at the cost of being ahead of others as well as being able to deliver excellent performance. Instead, she states, it was all about just going ahead and generating as much information as possible: "The next time I am working on a project like this, I am not going to seek approval from a leader. I am going to just go ahead and do it" (Reporter, VG, 14 April 2021).

While the whole project began with one reporter and one developer working from an online Excel sheet—while the reporter registered cases, the developer wrote the code—more cases (and data) required more project staff. Over time, the number of staff working on the Covid-19 live tracker increased to over 38 persons. While many of those were developers, a pool of reporters was required at all times.⁴ As authorities such as the World Health Organization (WHO) and the Norwegian Institute of Public Health (NIPH) informed the public at the global and national level, respectively, VG focused on the numbers of localised cases and other local data from municipalities. The hope was to inform people about their own situations in their respective locations and therefore help them to survive. Communication within the team was crucial in this project, which, as mentioned, had been organised as both a bottom-up initiative of two individual actors and an organisational collaboration between two areas (breaking news and digital development). The developer and the journalists recalled how intense the production

work was in the beginning, and how quickly they came to depend on leadership for resources and ultimate project approval. When asking the initiating breaking news reporters whether there is a risk for the autonomy of the editorial developers to transfer to the journalists she replies:

Journalists are also very independent. Yet it varies among newspapers, whether ideas come from above or below. I am used to working very independently, as I am covering a certain sphere. This is my responsibility. I know what takes priority, what we need to do today. Then, afterwards, we discuss the proceedings with our managers. So, in this sense, the differences between reporters and developers are not that significant. However, I have never worked this long without being followed up by a boss. (Reporter, VG, 12 May 2021)

Implicit in this autonomy is the development of expertise in the field—or, in this case, in Covid-19. The reporter above, for example, recalled how she was on the phone with the initiating editorial developer in the middle of the night at the beginning of the pandemic. There was a bug in the data system which was affecting the presentation of the statistics and leading to errors. At that point, the reporter thought, “Oh my God, what have we done? I can’t be here at 12:30 at night and then have to return to work at 7 AM. This is something big”. She went on to note that this led to negotiations with the management of the Covid-19 group where they explained to them: “We can do it like this or that. This is going to be best, but it will require a lot of resources. But we have got all we asked for” (Reporter, VG, 12 May 2021).

This successful outcome recalls Powers and Zhao’s (2018) findings that multiskilled online journalists have more power by definition and are allowed to implement new ideas and innovations: “While most of the organizations have some level of hierarchy, multi-skilled online journalists are more autonomous and rely less on editors than do those in traditional newsrooms” (2018, 352). In the case of the VG live tracker, the breaking-news reporters who pushed the project embraced computational thinking and their development colleagues and received, in turn, the trust and autonomy to succeed.

4: Managements Role during Process Innovation

Informants, independent of one another, credited the success of the VG Covid-19 live tracker, and the sustainability of the production and the whole system, to the autonomy of the group. Editor-in-Chief Gard Steiro referred to the sport of curling to describe managers as sweepers, clearing points of friction away from the news workers while they did their jobs.

It is really beautiful to watch, because as managers we should just facilitate for things to happen. So, like they do with brooms in curling, we should just sweep away anything that could put friction in the path of our staff, enabling them to come up with the ideas themselves.

So, like they do with brooms in curling, we should just sweep away anything that could put friction into the path of our staff, enabling them to come up with the ideas themselves. It is a combination of these things. I do think that everyone working at VG understands that during a critical event or crisis we have to strive to be the breakers of news, but we also need to be innovative in that situation. (Editor-in-Chief Gard Steiro, VG, 23 June 2021)

While the live tracker core group enjoyed great independence and autonomy early on in the pandemic, the project owed its ultimate sustainability to management's provision of both resources and extra staff. More staff also led to the need for a training program, as the core group took on the task of introducing newly added reporters to the project's research system and means of data implementation.

5: An Audience Turn Within Process Innovation

While VG has a long tradition of using critical events to renew its journalistic products and practices (Steiro, 23 June 2020), the global pandemic was different. Editor-in-Chief Gard Steiro highlights the fact that this was the first time VG had managed to link so many sources of data despite what he called the "bad data" upon which they were based (such as the PDF format of the official sources). A senior developer agreed, noting that while NIPH administrators represented one of the main sources of data, they were not especially experienced in presenting and reporting on it: "At the same time, I am not sure that, if NIPH had had an awesome webpage with graphics and all, it would have been the same as when the data was presented at VG.no" (Senior Developer, 5 May 2021). Despite hurdles related to linking among substandard data sources, the relationship between the developers and the reporters thrived. Neither saw the other and their unique competencies as a challenge but rather as an opportunity to learn more. The collaboration was also defined by its flat, non-hierarchical structure and constant communication among team members via the online software platform Slack (Bunce et al. 2018), which allowed for the ready exchange of collegial advice, suggestions and assistance.

While the initial start-up of the live tracker was pushed forward by the collaborating news workers, middle and upper management made their impact by supporting this autonomy:

When large-scale events take place, we aim to define the user's needs quickly. What are the most immediate needs the users have during a big event? [. . .] So, we look at any major event as a great opportunity to renew journalism. That was our outlook on this occasion too. Advantageously, this formula does not need to be management driven. [. . .] The organisation and culture at VG are set up to enable our staff to hone in on the appropriate positions to do their job when a crisis occurs. (Editor-in-Chief Gard Steiro, 23 June 2021)

The key to process innovations such as the implementation of the live tracker was, in the words of the developers, building bridges between journalists and developers. Usually, these colleagues have different dynamics of collaboration within their areas; while journalists often plan stories in advance, developers must solve the problem immediately at hand. The live tracker project facilitated collaboration at other levels by enabling task sharing toward the same overall ends. In interviews, the developers were quick to emphasise that the digital skills of the reporters and their ability to understand the logic of development were crucial to starting new projects such as this. A senior developer also pointed out how important it was to build bridges between the different departments and newsrooms environments. According to him, this effort improved during the pandemic: "the best projects come from making things together" (Senior Developer, 5 May 2021).

The reporters, developers and managers agreed that the live tracker project's cultivation of autonomy and collaboration between reporters and developers changed the VG

newsroom. First, the live tracker obviously filled a gap in the interaction between the authorities and the public during the pandemic, and both the reporters and the developers said how meaningful their work was toward this end. As intense as the last eighteen months had been, they all said they would not have missed the opportunity to collaborate in this way. The project also demonstrated that process innovation can arise in a spontaneous and even bottom-up manner.

Conclusion

Our study has accessed data on how journalists and editors perceived both transformation and innovation *during* a global crisis. As previously mentioned, there is no lack of studies on innovation during various conceptual crises of journalism, but studies on how dire crises function as drivers and motivate innovation and transformation remain scarce. This study begins to address this gap. While Storsul and Krumsvik (2013) situate process innovation as one of the components of general media innovation, this study locates a different dynamic for process innovation: an ongoing negotiation between bottom-up and top-down adaptation.

Drawing upon the sociological framework of Evetts (2003, 2006) as well as Örnebring (2010), we describe this negotiation more specifically as engaged with the autonomy of organizational and occupational professionalism during crises.⁵ Similar to what happens during breaking-news incidents, newsroom management during crises swiftly acknowledges the expertise and specialization of the frontline workers and strategically steps back so that these staff members can step up. This requires top managers to demonstrate confidence and trust in their staff, meaning that the autonomy granted is both relational and flexible (Örnebring and Karlsson 2022, 55).

In the case of the Covid-19 live tracker, management offered autonomy to a skilled group of developers and breaking-news reporters, and in return this group grew eager to demonstrate its organizational loyalty and creative capabilities. We found this implementation of an autonomous, self-managed “heavyweight team” over six months on an ad hoc basis *during* a global crisis to be unprecedented. We also found that occupational and organizational discourses of professionalism were in fact able to motivate and reinforce one another in terms of their ability to engage in innovation and transformation. These dynamics were at once bottom-up/top-down and horizontal in nature. The impact of the heavyweight team extended throughout the newsroom as well because of its fundamentally collaborative, cross-disciplinary nature and organizational allegiance. Ultimately, we uncovered three main aspects of innovation and the creation of value during dire crises:

1. Such opportunities generate increased insight into various existing and new roles in the organisation and a better understanding of how to alter both roles and tasks during crises.
2. We also identified evidence of a better understanding of the importance of a heavyweight team during a crisis and the way in which this kind of team can realise the values of the media organisation and thereby enable the emergence of more trust from management in staff members.

3. We found a shift in the audience's assignment of credibility from expert organisations like the National Institute of Public Health to media organisations, thanks to the latter's ability to combine data journalism with traditional and manual methods of investigative journalism.

Changing roles and tasks during crises. During the VG live tracker collaboration, reporters learned from editorial developers, but, more importantly, developers learned from reporters. Editorial developers were described by informants as having vast autonomy and as being more isolated than reporters. While contributing to the Covid-19 live tracker from March 2020 until May 2021, they also participated in manual research, contact with sources, and negotiations for data or information. This finding accommodates Steensen's (2013, 57) call for a more practice perspective within innovation theory.

A shift of credibility from expert organisations to media organisations during crises. The traditional journalistic research that supplemented the NIPH data set for the live tracker enhanced the reputation of VG as a source of information to such an extent that VG was approached by other external sources regarding whether it would share its data. This finding calls for more research on media organizations and sources, and their transformative roles during crises.

The importance of a heavyweight team during crises. From the very start, the process of implementing the Covid-19 live tracker was bottom up—the first initiative was taken by an editorial developer, in fact. This led to the formation of what Christensen and Overdorf (2000) call a “heavyweight” team, the members of which were trained to make decisions in line with organisational values but also to develop and create their own practices and values. The team could also negotiate with management about the resources they would need to do their best work. This result calls for future research interest on how internal newsroom autonomy is constructed during crises.

From a management point of view, the heavyweight team model had a ripple effect on the newsroom's overall practice, particularly when it came to pooling skills, tasks, and content ideas. The journalists who contributed to the live tracker saw it as a successful realisation of bottom-up initiative and innovation, as did management. Ultimately, more research is needed to explore the durable consequences of this crisis-induced innovation of both a product and a practice.

List of Primary Sources Interviewed

PHASE 1

Job position and organisation

Job position and organisation	Type and phase
1. Vice secretary-general, Association of Norwegian Editors	Pilot study phase 1— winter 2021
2. Former news editor, VG	Pilot study phase 1— winter 2021
3. Advisor, Norwegian Union of Journalists/researcher of traumas for journalists / member Dart Center	Pilot study phase 1— winter 2021
4. Fact checker, former commentator in newspaper PhD Faktisk.no—Norwegian Fact Checking Company (partly owned by VG)	Pilot study phase 1— winter 2021
5. CEO, Tinius Trust (largest shareholder in Schibsted Media Group)	Pilot study phase 1— winter 2021
6. Senior advisor and director, Centre for Investigative Journalism, Bergen	Pilot study phase 1— winter 2021

PHASE 2: VG

7. Online reporter	Spring 2021
8. Breaking news reporter	Spring 2021
9. Online reporter	Spring 2021
10. Editorial manager, Covid-19 Live Tracker	Spring 2021
11. Editorial developer	Spring 2021
12. Editorial developer	Spring 2021
13. Breaking news reporter	Spring 2021
14. Online reporter	Spring 2021

PHASE 3: VG

15. Editorial manager, Covid-19 Live Tracker	Summer 2021
16. Visual editorial developer	Summer 2021
17. Head of department, responsible for investigative journalism at VG	Summer 2021
18. Publisher	Summer 2021
19. Chief administrative officer	Summer 2021
20. Product director / previous reporter and editorial manager	Summer 2021

Notes

1. See <https://www.vg.no/spesial/corona/>
2. See <https://schibsted.com/ir/>
3. See <https://freedomhouse.org>
4. This number is based upon of the number of people who had worked on the Covid-19 live tracker from spring 2020 through 12 September 2021 (personal mail communication with the chief administrative officer at VG, 12 September 2021).
5. For an early elaboration of such negotiations, see Örnebring 2010.

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ORCID

Junai Mtchedlidze  <http://orcid.org/0000-0002-3432-0067>

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