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The collective disorientation of the COVID-19 crisis

Authors:

Pablo Fernández Velasco^a, Bastien Perroy^a, Roberto Casati^a

^aInstitut Jean Nicod, Département d'études cognitives, ENS, EHESS, CNRS, PSL University.

Abstract: One of the chief features of this global crisis is that we find ourselves in a shifting landscape. The resulting disorientation extends beyond health research and into many domains of our individual and collective lives. We suffer from political disorientation (e.g. the need for a radical shift in economic thinking), from social disorientation (e.g. the rearrangement of social dynamics based on distancing measures), and from temporal disorientation (e.g. the warping of our sense of time during lockdown), to name but a few. This generalised state of disorientation has substantial effects on well-being and decision-making. In this paper, we review the multiple dimensions of disorientation of the COVID-19 crisis and use state-of-the art research on disorientation to gain insight into the social, psychological and political dynamics of the current pandemic. Just like standard, spatial cases of disorientation, the non-spatial forms of disorientation prevalent in the current crisis consist in the mismatch between our frames of reference and our immediate experience, and they result in anxiety, helplessness and isolation, but also in the possibility of re-orienting. The current crisis provides a unique environment in which to study non-spatial forms of disorientation. In turn, existing knowledge about spatial disorientation can serve to shed light on the shifting landscape of the COVID-19 pandemic.

Keywords: COVID-19; temporal disorientation; social disorientation; political disorientation; phenomenology.

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Key messages:

- Growing evidence suggests that the Covid-19 crisis was disorienting across domains.
- Disorientation is a metacognitive feeling monitoring both spatial and non-spatial tasks.
- Temporal disorientation was fostered by the pandemic's counterintuitive temporality.
- Disorientation mitigation can facilitate new social and political frames of reference to emerge.

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1. Introduction

The New England Journal of Medicine editorial on the COVID-19 pandemic penned by Anthony Fauci and colleagues was appropriately titled “Navigating the Uncharted” (Fauci et al., 2020). One of the chief features of the COVID-19 crisis is that we find ourselves in a shifting landscape. The resulting disorientation (the sense of “navigating the uncharted”) extends beyond health research and into many domains of our individual and collective lives. We suffer from political disorientation (e.g. the alleged need for a radical shift in economic thinking; Michie, 2020), from social disorientation (e.g. the sudden rearrangement of social dynamics based on distancing measures; Abel and McQueen, 2020) and from temporal disorientation (e.g. the warping of our sense of time during lockdown; Cellini et al., 2020; Casati 2020; Perroy, 2020), to name but a few. This multifarious state of disorientation has substantial effects on well-being and decision-making (Qiu et al., 2020; Roy et al., 2020; Rajkumar, 2020). In this paper, we review the multiple dimensions

of disorientation of the COVID-19 crisis and use state-of-the art research on disorientation to gain insight into the social, psychological and political dynamics of the current pandemic.

Given the profusion of spatial metaphors in language (Lakoff and Johnson, 1980), it is no surprise that we find plenty of expressions that refer to being lost in a metaphorical, not-quite-spatial sense. On some occasions “we lose track of time”, and we might be “lost in thought” when someone asks us a question, or feel “at a loss” in a given social situation. Disorientation generates powerful metaphors, and it has therefore been evoked in a broad range of contexts (Alexander, 1996; Cresswell, 1996; Crang, 2001; Lefebvre, 2004; Stiegler, 2009, Cadet, 2010; O’Neill, 2011; Marouan and Simmons, 2013; Saunders, 2016; Schmidt di Friedberg, 2017). A question one should address before taking metaphors of disorientation too far is to what degree and how non-spatial cases of disorientation correspond to the prototypical, spatial cases. What are the features, or the structure, if any, that are common to getting lost while visiting a foreign city, on the one hand, and getting lost socially, politically, temporally, on the other? This is not an issue that has been thoroughly addressed in the academic literature. The COVID-19 crisis, with its wealth of reports of multifaceted and salient cases of non-spatial disorientation, provides a unique case study to tackle this question. In return, establishing a link between non-spatial and spatial types of disorientation allows us to utilise existing knowledge of spatial disorientation to shed light on the shifting landscape of the COVID-19 pandemic and help us “navigate the uncharted”.

The article is structured as follows: Section 2 will offer a conceptual analysis of the potential connections between spatial and non-spatial forms of disorientation. Section 3 will look at temporal forms of disorientation that have emerged during the COVID-19 crisis. Section 4 will extend the analysis to other forms of non-spatial disorientation and offer some conclusions and future directions along this line of research.

2. Disorientation(s)

A quick look at some of the research coming out in the last four years would seem to indicate that an interest in disorientation, in its non-spatial forms, has been on the rise even before the outbreak of COVID-19. Authors from a variety of fields discuss an increase in cultural¹ disorientation (prevalent in the era of globalisation; Potosky, 2016), in political disorientation

¹ Extra-cultural in Pototsky’s original terminology.

(feeding the emergence of populist figures; Tonello, 2018) and in social disorientation (as a result of the growing mobility of workers; Bissell and Gorman-Murray, 2019; or the disorientation of migrants and refugees; Papadopoulos, 2002). The plurality of the forms of disorientation does not end there: researchers also talk of temporal disorientation (e.g. in Alzheimer's disease; Giannakopoulos et al., 2000), disorientation in web navigation (Ahuja and Webster, 2001), the disorientation of illness (Lajoie, 2019) and of disability (Parrey, 2020), or disorientation in the midst of cognitive inquiry (Earnshaw, 2019).

To make sense of the diversity of non-spatial disorientation experiences, it is useful to see the way researchers characterise the above-mentioned experiences, and the degree to which they tie these experiences to the prototypical, spatial case of e.g. getting lost in the forest or when visiting a new city. Fabrizio Tonello does not provide a precise definition, but he is quite explicit in describing political disorientation “as a phenomenon that has striking similarities with the physical disorientation created by an alien landscape” (Tonello, 2018: 114). There is a political landscape in which voters try to orient themselves; the traditional way of finding one's way in post-war times was through party structures that scaffolded political engagement and voting and were equivalent to maps that aided navigation in a difficult landscape; the collapse of the party-centric system left voters disoriented and much like lost hikers, feeling anxiety, at times even displaying erratic behaviour. Similarly, in the field of management studies, Denise Potosky defines cultural disorientation as the experience that results when individuals “lack interpretive frames during episodes of cross-cultural interaction” (Potosky, 2016: 228).

Regarding the disorientation experiences in the life of mobile workers (i.e. those with no fixed workplace), Bissell and Gorman-Murray argue that such experiences “signal a loss of bodily capacity to know others; to know how to proceed; and to know how to hold a situation together”, which results in “incomprehension, confusion, and disintegration” (Bissell and Gorman-Murray, 2019: 2). Other authors describe non-spatial forms of disorientation “as what happens when the interpretative grids we use to make sense of the world change rapidly and/or radically” (Saunders, 2016: 92), or “a sense of losing our coordinates as to how to go on” (Earnshaw, 2019: 181). In all of the above, there is a sense in which disorientation consists of not knowing how to proceed because one is lacking or unable to access the relevant frames of reference (or coordinates, or interpretative grids²... relevant for a given political, social or cultural context). Some of the authors define disorientation as an

² ‘Coordinates’ and ‘grid’, of course, are defining spatial metaphors here.

affective state (e.g. an emotion in the case of Earnshaw), and some highlight the bodily aspects of the experience (e.g. a feeling of distance and alienation from others and from one's surroundings in the case of Bissell and Gorman-Murray; or the embodied disorientation of queer bodies inhabiting heteronormative environments, as in Ahmed 2006).

Although spatial metaphors abound in these accounts, not every author makes an explicit commitment to the equivalence between non-spatial and spatial forms of disorientation. Ami Harbin, in her book *Disorientation and Moral Life* (2016) deliberately pursues a broad understanding of 'disorientations' that transcends spatial forms of disorientation. Disorientations, she tells us, are "experiences that make it difficult to know how to go on" (Harbin, 2016: 13). Having a pluralist understanding of the phenomenon raises the question of how to identify or individuate 'disorientations', so she favours a family resemblance characterisation, which, she argues, is loose enough to cover cases of disorientation in grief, disorientation in illness or disorientation as moments of consciousness raising, while devoting proper attention to the particularities of each case. And yet, in her book, there is often talk of the loss of (e.g. social) *frameworks* in disorientation and of gaining new *frameworks* in orientation, and the idea of not knowing how to go on resonates both with the characterisation of non-spatial disorientation made by other authors, and, as we will see, with characterisations of spatial disorientation. This is not an issue which she discusses in depth, but in her characterisation two features appear that seem to put cases of non-spatial disorientation apart from cases of spatial disorientation: the former are deeply affective (e.g. "feeling deeply out of place", Harbin 2016: 2) and they are sustained (as opposed to episodic) experiences. However, there is a way to characterise spatial disorientation that brings its more affective aspects to the fore.

Spatial disorientation has been characterised as a failure in the wayfinding process (Golledge, 1999); as not knowing the directions and distances to get to a given point (Rieser, 1999) or at the subject's inability to find her way (Dudchenko, 2010). Such cognitivist-leaning characterisations focus on issues of failure, ignorance and inability, respectively, which all seem far from the deeply affective way in which Harbin characterises disorientation, from Earnshaw's view of disorientation as an emotion and from the emphasis on corporality made by Bissell and Gorman-Murray. This specific gap can be closed in a characterisation of spatial disorientation as a metacognitive feeling (Fernández Velasco and Casati 2020a; b). Metacognitive feelings are phenomenal experiences concerning the subject's own mental processes (for a review, see Arango-Muñoz and Michalean, 2014), e.g. the feeling of knowing (Koriat, 2000). Considering disorientation as a metacognitive

feeling provides a way to account for *both* the affective and the metacognitive aspects of the phenomenon. According to this new characterisation, spatial disorientation is an affective state that evaluates and regulates the subject's active navigational process.

Recent phenomenological analyses also narrow the gap between spatial and non-spatial forms of disorientation. The collection and analysis of subjective reports from spatially disoriented individuals resulted in the emergence of a series of common features of the disorientation experience, which included anxiety, confusion, helplessness and self-diminishment (Fernández Velasco, 2020). A deeper phenomenological analysis concluded that during disorientation there is a disintegration of egocentric and allocentric frames of reference, which results in an experience of diminished possibility. The idea is that while someone is oriented, indexical spatial representations (e.g. "I am in Trafalgar Square and Charing Cross Road is to my right") are integrated with non-indexical spatial representations (e.g. "Oxford Circus is north of Trafalgar Square, and Charing Cross Road connects the two"), and this opens possibilities for navigation (e.g. "I can turn right and follow Charing Cross Road to Oxford Circus") — but when someone is disoriented, egocentric-allocentric integration comes apart and the subject senses her possibilities shrinking in an embodied way, which, as mentioned above, often result in anxiety, confusion, helplessness and self-diminishment.

Notice how similar the above phenomenology is to the previously introduced descriptions of non-spatial forms of disorientation. Anxiety, confusion, helplessness and self-diminishment resonate with the incomprehension, confusion, and disintegration (e.g. the sense of distance akin to the sense of shrinking) mentioned in Bisell and Gorman-Murray's work. The disintegration of frames of reference in spatial disorientation and the resulting shirking of possibility corresponds to the characterisations of non-spatial disorientation as not knowing how to proceed as a result of lacking the relevant frames of reference, which is a common element in most of the existing accounts. And again, both spatial and non-spatial forms of disorientation are inherently affective. In particular, the idea of spatial disorientation being an affective state that evaluates and regulates navigational processes (i.e. the integration of frames of reference) is similar to the idea that non-spatial disorientation signals the loss of a capacity, which is present in Bisell and Gorman-Murray's characterisation.

Through this comparative analysis, a comprehensive characterisation establishing a connection between spatial and non-spatial forms of disorientation begins to emerge. We can characterise

disorientation (spatial and otherwise) as experiences that result from the evaluation and regulation of processes integrating frames of reference pertaining to a variety of domains (e.g. spatial, temporal, social...). For this connection (between spatial and non-spatial forms of disorientation) to hold, we need to understand these frames of reference as spatial in a meaningful way. Such an understanding finds support in research in neuroscience and in psychology, where there is a growing consensus that spatial representation is the basis for a broad variety of cognitive processes, or that it shares brain resources with the latter. Ever since the discovery of place cells, the hippocampus has been hailed as the seat of spatial representation (O'Keefe and Nadel, 1978). More recent work has started to find evidence that the hippocampus maps not only space, but also other dimensions (for a review, see Epstein et al., 2017). According to this research, the hippocampus shapes visual experience (Nau, Julian and Doeller, 2018), serves as a foundation of episodic memory (Brunec et al., 2018) and imagination (Robin, 2017), and codes for time (MacDonald et al., 2011) and for semantic (Solomon et al., 2019; Viganò & Piazza 2020), conceptual (Constantinescu et al., 2016) and social spaces (Tavares et al., 2015).

The discovery that the neural locus of spatial representation underpins so many other forms of (spatially organised) cognition points to the privileged status of space in the human mind (Spiers, 2020) and is in line with the Kantian idea that space is a fundamental, grounding aspect of human experience (for a discussion, see Hatfield, 2006). This neuroscientific current also has its counterpart in psychology; in a recent contribution, Barbara Tversky reviews numerous psychology experiments on topics ranging from producing and understanding gestures to perspective-taking and concludes that spatial cognition is at the very foundation of human cognition (Tversky, 2019). In the light of this research, the notion that temporal, social or cultural experiences of disorientation are like experiences of spatial disorientation in more than just a metaphorical way gains substantial support. If there are space-like representations that frame our navigation through temporal, social and cultural domains, then issues with the integration of those frames are likely to result in experiences that are considerably similar to the experience we undergo when our spatial frames of reference disintegrate during spatial disorientation.

A substantial difference remains, which lies in the fact that many non-spatial forms of disorientation are sustained, i.e., they last in time. Note, however, that some non-spatial forms of disorientation are episodic — we might be lost in thought for only a moment or wake up and be temporally disoriented and quickly re-orient upon looking at a clock. Moreover, people who are lost

in the wilderness might sustain a state of disorientation for as long as it takes until they get rescued, whether it be several hours or several days. The only thing that makes spatial disorientation episodic rather than sustained is that we tend to solve spatial disorientation swiftly,³ because the costs of not solving it can be extremely severe (Adams et al., 2007). The difference between episodic and sustained states is not a difference between spatial and non-spatial forms of disorientation. It would be better to conceptualise it as a difference between episodic affective states and sustained existential feelings, of which grief and depression are prime examples (Ratcliffe 2005, Stephan 2012). The cases of disorientation that Harbin discusses in her book are cases of an existential feeling emerging out of the disintegration of an important frame of reference (be it social, cultural or religious) that disrupts the subject's habits and leave her unable to go on.

Having argued for a meaningful connection between spatial and non-spatial forms of disorientation, we will elucidate this connection by looking at the widespread disorientations that have emerged in the context of the COVID-19 crisis. We will focus primarily on temporal disorientation, for two reasons. First, temporal disorientation has been widely reported during the pandemic. Second, the connection between temporal and spatial disorientation is particularly clear and strong, which makes it a perfect case study. We will then build on the analysis of temporal disorientation and put forward an extension to other forms of disorientation. This will allow us to cast a light on the effects of the pandemic both on an individual and on a collective level.

3. The case of temporal disorientation

We can be lost in time just as much as we can be lost in space. We all have experienced waking up from an afternoon nap just to discover that it's already nighttime, or being significantly wrong on what time it is or how long we've been sleeping for, and dramatically so when we are jet-lagged. In some cases, we still manage to have an intuition about our location in time, especially with respect to particular events of the day, whether this intuition be illusory or not. In other circumstances, we simply feel (temporally) disoriented.

At its core, temporal disorientation is likely to share much with the neural mechanisms responsible for spatial disorientation. Cognitive maps are (at least minimally) involved in our

³ Notwithstanding cases of pathological states or Alzheimer's disease, in which disorientation can be sustained for long periods of time (e.g. Iaria, and Barton, 2010).

orienting in time (Arzy et al., 2009; Schiller et al., 2015); one and the same cognitive system is alleged to be responsible for one's spatial, temporal, and social navigation (Peer et al., 2015). The idea of one's (spatial) localisation on a mental timeline is discussed in diverse disciplines, such as neuropsychology (Futamura et al., 2018), developmental psychology (Tillman et al., 2018), linguistics (Tenbrink, 2015), and experimental psychology (Ansuini et al., 2016; Kolesari and Carlson, 2018). Just as much as the hippocampus plays a central role in spatial navigation, it is believed to be one of the core components of temporal consciousness (Dalla Barba and La Corte, 2013).

Despite this recent growing body of converging evidence, one should remain cautious about the implications for temporal disorientation; much less can be presently asserted confidently about temporal disorientation compared to spatial disorientation, and disorientation remains a phenomenon essentially studied for its spatial aspects. Here we consider temporal disorientation, in analogy to spatial disorientation, to be a metacognitive feeling proper to one's navigational representations associated with temporal cognition; as it happens, it is the feeling of the inability to aptly relate one's present situation with events situated in one's perspectival past or future.

During the COVID-19 pandemic, temporal disorientation happened to be experienced in several aspects of living the crisis. In this section, we'll review two instances: temporal disorientation as associated with decision-making when entangled in the misrepresentation of exponential dynamics (and as it happened in the case of the evolution the French epidemic in March 2020), and temporal disorientation in our everyday experience of time during lockdown or quarantines that follow major outbreaks. For the sake of clarity, we'll only focus on the first series of outbreaks and lockdowns that happened in the course of late Winter 2020 for most Western countries. The COVID-19 crisis extends throughout 2021, i.e. beyond the publication date of this paper. One's relationship to time and events may be singularly different in outbreaks and lockdowns happening at later stages of the crisis, e.g. the efficacy of vaccine campaigns or on the contrary the uncertain future perspective due to the possible mutations of the virus are expected to have an impact on one's temporal horizon of experience in ways we do not address here. Another reason to exert some care with generalisations is the well documented cultural variation over temporal representations that are lenient over spatial ones (Leone et al., 2018), i.e. representations that allow us to feel oriented with respect to past and future events thanks to a mental timeline. Thus, our main claim is that the disruption of cognitive mechanisms responsible for an optimal temporal orientation are in a

substantive part responsible for one feeling temporally disoriented during the onset of this pandemic.

Let's rewind the process through which France went into its first lockdown. It is customary, in French politics, to describe the President of the Republic as "the master of clocks" so as to instill the sense that despite an impression of fastening change of social dynamics, the French institutions remain in control of the temporality of public affairs (Delmas, 1991). On the 12 March 2020, and as Italy had already been under a national lockdown for 3 days, the French President pronounced a much-awaited speech in which he ordered schools and universities to be closed from 16 March onwards. Only two days later on the 14th, the Prime Minister had to hastily order the immediate closing of all non-essential shops as the government realised the first measure came too late. Quite noticeably in the midst of a pandemic, the government still encouraged 47 million voters to go to polling stations on 15 March for a national election. Finally, on 16 March, when the first announcement had only just come into effect, the President delivered a second speech in which he declared a national lockdown for the whole country, starting the subsequent day at noon, for a total delay of six days after Italy went into lockdown. The key aspect of this course of events that rises questions is this: had the French authorities realised on the 12th that they would need to declare the lockdown on the 16th, they would probably not have made the closing of schools and universities effective on the same day (as the former decision makes the latter inoperant), especially when both these announcements are made formally through rare grand presidential TV speeches followed live by millions of people (as it happened, 25 million on the 12th, and 35 million on the 16th [Le Monde, 2020]). Hence, French authorities were temporally disoriented – but what does this proposition actually entail?

We have characterised disorientation as the feeling that results from the evaluation and regulation of processes integrating frames of reference. Therefore, in the spatial case, we can expect disorientation to emerge if there is a breakdown of the cognitive map subtending one's spatial relationship to one's surroundings (Dudchenko, 2010). Similarly, temporal disorientation results from the breakdown of the mental timeline connecting oneself to arrays of probable future events. In both spatial and temporal terms, disorientation is the metacognitive feeling of the disconnect between one's immediate perception and action from an appropriate orientation through allocentric landmarks, be they events, dates, times, places, or objects, and through their boundaries, their relative distance, or their direction.

One simple explanation for slow scaling up of the responses to the crisis in France as well as in other countries is deeming them irrational, since in the French case, for example it looks afterwards as if the news leaving Milan were reaching Paris at the speed of a 19th century postilion. The graphs representing the evolution of the pandemic in Italy and France respectively were fitting all along, modulo an interval of seven or eight days. What France was experiencing relative to the pandemic's temporality at a certain point in time was what Italy experienced a week beforehand. In other words, Italy was located one week in the future relative to France. And yet, this temporal advantage wasn't leveraged, as if until the first national lockdown the temporal frame of reference in France was calendar time, not epidemic time, so-to-speak.

The irrationality-hypothesis would be a sound one if it weren't for the many different countries being concerned by a similar difficulty to adapt to the first outbreaks: as we mentioned similar narratives of a disoriented government could be witnessed in most other countries, which most likely indicate that more structural factors were at stake. One of these factors could be that so-called "epidemic time" might embody a counter-intuitive temporality, *ceteris paribus*. In other words, it might be intrinsically difficult to switch from calendar time to *this kind* of epidemic time. One might probably get lost easily in time in such situations, just as a tricky crossroad somewhere on a mountain trail is an easy setup for one to get spatially lost. When a person living through this kind of unanticipated outbreak realises that the timeline projected by the authorities "won't do" and that a totally different timeline with its own set of events might be going to supersede the previously socially endorsed timeline, they would feel temporally disoriented, in analogy to the spatially disoriented hiker realising she is venturing into an area that "doesn't make sense". Disorientation is a highly context-sensitive phenomenon. As it happened, many complex political factors were also critical, e.g. authorities negotiate their decisions with several social stakeholders, which can lead to an escalation of commitments. Under conditions of cognitive pressure the place of the junction of perception and action in time is more easily lost.

A particularly striking cognitive phenomenon commands attention: temporal distances are most probably misvalued in exponentially unfurling events (such as the early phases of an epidemic's evolution) in such a way that temporal disorientation is more likely to happen as a result. Our learning of temporal navigation early on in life is heuristically based on linear spatial models that structure the mental timeline: whether through the ordering of activities during a day (Friedman, 2008), gestures when learning to speak (Leone et al., 2018), or the way we write from left to right in

western countries (Bonato et al., 2012), it seems that we learn to mentally expect time to be like an unidimensional linear river, which flows quite steadily. Most likely, this is not a cognitive disadvantage when confronted to most of our temporalities: this way of expecting events to regularly unfold day after day, year after year, is well suited both for our social organisation of time (i.e. how we normatively orient ourselves collectively through recurrent social events and incremental societal changes), and for the circadian rhythm acting at its cognitive underpinning (i.e. our strong tendency to anchor regular activities to a particular moment of our wake/sleep cycle, even though it is being challenged by virtual spaces that don't necessarily unfold along spatial or temporal features). The temporality of a pandemic such as COVID-19, however, is anything but regular precisely because it isn't appearing in a linear fashion: its spread is modelled with a "reproduction" factor, which translates into exponential dynamics (Ma, 2020). In perspectival terms, the closer the epidemic is to us, the more it seems to come at us at a surprisingly fastening pace (which mathematically transcribes into an increasing first derivative). Just as distant physical hazards such as an avalanche only gradually look more ferocious the closer they get to a candid subject, the same type of bias seems to take place for non-linear temporal hazards. This is why log-linear regressions are much more intuitive in order to compare the location of each country in epidemic time, as those regressions translate an exponential dynamic into a linear format in which the actual danger of an epidemic, i.e. its reproduction factor, can be easily visually appreciated at all times through the steepness of the represented function. Since exponential dynamics are well documented to be responsible for cognitive biases (e.g. in the case of compound interests [see Levy and Tasoff, 2019]), it is safe to state that the temporal disorientations here at play were exacerbated by the dynamics. In early March the event "lockdown" was most likely perceived by the authorities as a distant future possibility, not as something having to take place in the subsequent hours. Furthermore, the approximate two weeks delay between a contamination and the need in some cases for a contaminated person to be admitted in an ICU (Azoulay et al., 2020) made it difficult to assess when a preventive measure should be enforced in the epidemic's exponential temporality. Being abruptly embarked into a temporality that is intrinsically non-intuitive to us, and that is impactful to the point that almost every other topic in one's life instantly becomes secondary, is thus a major stressor leading to disorientation. As a hallmark of disorientation, the epidemic's temporal frame of reference can simply and suddenly supersede in a matter of weeks (or even days for local outbreaks) the frames on which the public life is structured.

Another critical form of temporal disorientation during the pandemic came with a widespread distorted sense of time. According to a study on a UK's cohort, this distorted sense of time concerned 80% of people under lockdown (Ogden, 2020). Factors for this disfigurement of time can be of different forms and sources, whether agentive, perceptual, or epistemic.

Agentively, in normal times, activities are scattered across a day in a way such that busy periods feel as if they pass quickly. This is mostly due to the fact that executive functions are negatively correlated with the monitoring of time (Brown, 2017). Thus, keeping oneself busy is one good strategy in order to avoid feeling temporally (and spatially) stuck. Needless to say, there is usually less to do when you're forbidden to leave your house, hence an increased sense of boredom measured in some studies as well as a general (present) feeling of the slowing of the passage of time (e.g. Cellini et al., 2020). Keeping oneself busy is hypothetically one of the reasons that can partly explain why on average, employees who did manage to work remotely from home during the lockdown worked longer days, by close to an hour (DeFilippis et al., 2020). This hypothesis is congruent with the fact that an increased task load was associated with a faster sense of the passage of time during lockdown (Ogden, 2020). As we're going to emphasise, an unusual sense of the passage of time, whether faster or slower, is in itself a probable source of temporal disorientation since time distortions are sometimes argued to be associated with impairments in mental time travel, i.e. the capacity to project oneself mentally in time (e.g. in Alzheimer's disease [see El Haj and Kapogiannis, 2016]).

From a perceptual standpoint, an important aspect of lockdowns is to be found in the way it impacts our ability to track *events*. Because the particularity of events is mostly defined in terms of spatiotemporal changes (Davidson 1970; Tversky and Hard 2011), people encounter more events if they're physically mobile, rather than immobile like in quarantine. Hence, spatial confinement also acts as temporal confinement: no more birthday parties to look forward to, no more meetings for which we feel like we're late and such that we "have to go now!". Not to mention the fact that in normal times we move around quite a bit, as commuters or travellers, thus are often in situations that are highly structured, event-wise. When we traverse a lockdown period, the time that is the fabric of our day can feel like a continuous fluid we're no longer even able to split into parts that we could easily name and remember as events. Navigationally, events act as *temporal landmarks* which can help us feel oriented and in certain circumstances feel motivated (Dai and Li, 2019). Hence, lockdowns and quarantines, if they effectively disturb one's ability to keep entertaining temporal landmarks, can lead to temporal disorientation in the sense of one's lacking enough proximate

landmarks with which one can structure distinctively one's day, week, and month. This is one way to explain why when asked how many times they were mistaken in identifying which day of the week or which day of the month it was, people from a cohort of quarantined people in Italy were confused twice as many times as compared to weeks before lockdown (Cellini, 2020).

Interestingly from an epistemic standpoint, if time feels to pass more slowly in the context of an asphyxia of events and of an increased sense of boredom, it also leads to an interesting perspectival temporal bias when one retrospectively assesses one's previous weeks and months. The lack of structuring events that we mentioned is so critical in perception that it distorts the encoding of memories (for a review, see Radvansky, 2017). A day full of diverse events will feel, once completed, to encapsulate more time than an empty day, even though it felt that time flew so fast during the former's unfolding. Hence, and conversely, the cause of an elongation of time from a perceptual and agentive standpoint is also a cause for a compression of one's perspectival past from an epistemic standpoint. In other words, when there aren't many singular salient places or times to recollect, the river of time behind us just seems to have dried out. According to this view, a gloomy lockdown is to calendar time what a desert is to space: a flat surface devoid of landmarks, which precludes the intuitive egocentric tracking of one's movement in navigation. One can be easily tricked into thinking that one is halfway across the desert when one is not, just as one can be easily tricked during lockdown into thinking that it's already the weekend when it is a weekday instead. Of course, not all lockdowns are experienced as gloomy – some are rather distressful, e.g. in the all too common case of experiencing or seeing our kin experiencing the sickness, or for women and children confined with an abusive violent relative. Traumatic experiences are by definition not situated on eventless planes, and many individual experiences won't fit the dominant picture of times in lockdown as moments lost in time.

Building upon distortions in our acting in time and our perceiving of events, we may ultimately feel temporally most disoriented when trying to effectively project ourselves in time, since it is at that time that all the above-mentioned temporal distortions cumulate as a whole and that a disturbing contrast with “normal times” appears most saliently. The episodes of temporal disorientation experienced in lockdowns aren't anchored in-between two opposing temporalities, but rather are solely based on the uncanniness of being confined. When calendar time is properly replaced by epidemic and quarantine time, whose main social anchor is the daily national briefing on the epidemic figures, and when we simply can't live as we used to, we start suffering from a hypoxia

of the familiar events and temporal landmarks by which we could appropriately orient ourselves and through which we would feel the familiar flow of time.

Events are important not only as temporal landmarks. They also structure our sense of time by delineating temporal boundaries. A temporality without events is a boundless temporality, and this in itself is disorienting. Various studies in psychology support the importance of boundaries for orientation. For instance, disoriented rats use the geometric shape of a room (the layout of its boundaries) before any other cues (Cheng, 1986) and toddlers' ability to re-orient depends on the shape of the environmental boundaries but not on the geometric or non-geometric properties of objects in the environment (Gouteux and Spelke, 2001). The importance of boundaries for spatial navigation is also well-documented in neuroscience through the study of boundary cells. Boundary cells are used in wayfinding, and they appear to fire even when the perceived boundaries are far away. Research seems to indicate that place cells hook not only to landmarks but also to the geometric properties of space, spatial boundaries in particular, and that boundary vector cells feed into place cells in the subiculum (Lever et al., 2009). The importance of boundaries for spatial navigation makes sense when we realise that boundaries are affordances: they both determine paths in the environment that are easy to follow and demarcate safe zones from no-go zones. Thus, there is an action advantage to spatial boundaries that are visually accessible.

There is also a process advantage for boundaries in vision. The visual system is after reflectances (stable properties of the environment: the color objects have in sunlight and in the dark alike) but it can only use as its guide luminances (light coming to the eye), which confound the contribution of reflectance and illumination: the red light reaching your eyes could come from a red tomato in the sunlight, or from a white tomato in red light. In order to sort out the contribution of illumination and of reflectance to luminance, the visual system works with ratios and comparisons of ratios, sampling luminance boundaries at different spots. Say, you have a red kerchief laid on an orange tablecloth. Illumination in the room is highly variable but measuring locally the luminance ratio of red to orange at the boundary in different spots yields results that converge. If you measured by randomly sampling luminance at a spot deep inside the kerchief and at a spot way outside it, you would increase the variability of illumination (the orange spot may turn out to be in the shade, and appear darker than the spot outside which may be in full light). Boundaries allow for measurements that minimise the illumination variability (Palmer 1999). They are, to coin a term, epistemically safe places.

Epistemic safety extends to other type of boundaries, e.g. temporal boundaries and social boundaries. For instance, income is perceived as positional, i.e. as providing information about status (Carlsson et al., 2007). People prefer to earn 50k, which is more than their colleagues, who all earn 45k, rather than change job and earn 60k, which would be less than their new colleagues, who all earn 65k. Preference for positional rather than absolute income mirrors the epistemic advantage of visual and spatial boundaries: employees can compare their situation to that of people who are in the same environmental conditions as they are, and their possible situation to that of people who will be in the same environmental conditions as they would be. Temporal boundaries, in our framework, are for instance those marking the beginning or the end of lockdown, or the transitioning to some other restriction phase, or the availability of a vaccine. Part of the disorientation during the first lockdown can be related to an absence of a salient temporal boundary in the future. An upshot of the above is the conjecture that temporal disorientation is alleviated when we are able to look far away and detect temporal landmarks or boundaries. The perspective of more certain events in later stages of the epidemic, e.g. the progress of vaccination as soon as efficient and reliable vaccines were approved by Health authorities, suddenly made appear in an imaginable fashion a somewhat return to normalcy with respect to which one can orient oneself.

Temporal disorientation is also well documented in other situations than the current pandemic. It is a common phenomenon for persons experiencing life-changing situations that impair their ability to feel confident about the courses of events located in their future. Noticeable instances include refused asylum seekers fearing deportation (Griffiths, 2014) or patients being diagnosed with a severe illness like a cancer (Roberts and Clarke, 2009). Similarly, during a pandemic, some of the important temporal landmarks available during a year can be overshadowed with uncertainty (e.g. “will I even be able to reunite with my relatives for Christmas?”). As we mentioned, our uneasiness with exponential dynamics might prevent us from feeling confident in imagining the path down to these important landmarks as a linear route during a pandemic. And when, troubled and disoriented by what’s ahead, we turn ourselves back onto our past, we can only see that the fabric that thoroughly subtends it is distorted. The joint between the times before the pandemic started and the present chapter of our life might feel strangely disconnected, e.g. the previous year might feel like an eternity apart. In such case, the temporal corridor that connects the present events at hand with both those further located in one’s future and those back in one’s past might feel impalpable or unintelligible. This is one of the ways in which one can have feelings of isolation and vulnerability (which are, as we mentioned, usual consequences of disorientation) that carry over from space to

time. In the face of the pandemic, the intricate mental timeline on which we stand might crumble under our feet.

4. The many disorientations of the COVID-19 crisis

Social distancing measures have doubtlessly destabilised the habituality of our social world. We now bump elbows instead of shaking hands (Katila et al., 2020), wear masks that hindrance face-perception (Freud et al., 2020), and, in public spaces, we are constantly reminded to stay a safe distance away from others. A central issue here is that there has been a seismic shift in the frameworks that we habitually use for navigating our social world:

The COVID-19 pandemic must be considered as an extreme life situation, not only because it presents a concrete, well-documented life-threatening risk, but also for how it introduces a set of fractures into our daily life experience ... Such situations remove any protective layering we develop throughout our lives that stabilise us and allow us to pursue individual, professional, or social paths in life. This deconstruction of self-identity can be linked directly to *the breakdown of established frames of reference* through which we construct ourselves in a social context by conforming to societal norms, group expectations and social pressure. (Tarquinio, 2020: 3; our emphasis)

The COVID crisis has also had a big impact in both national and international political landscapes (Ibrahim, 2020). Despite an initial rally around the flag effect (Bækgaard et al., 2020), the pandemic has progressively eroded people's trust in the government and public authorities (Deslatte, 2020). Furthermore, there is evidence of an increase in conservative attitudes as a result of the pandemic — for instance, during the pandemic, individuals in the U.S. conformed more strongly to traditional gender roles and believed more strongly in traditional gender stereotypes than they did before the pandemic (Rosenfeld and Tomiyama, 2020). Both a rally around the flag effect and a conservatism effect can be expected in a situation of political disorientation. When frames of reference are disrupted, receding to well-known territories is a common reaction. And if, as Tonello suggests, political institutions and leaders act as landmarks that help us navigate the political landscape, the initial reaction to a political shift would be to rely strongly on those landmarks. This is quite consistent with how Schraff describes the situation at the beginning of the pandemic: “collective angst in the face of exponentially rising COVID-19 cases depresses the usual cognitive

evaluations of institutions and leads citizens to rally around existing institutions as a lifebuoy” (Schraff, 2020: 2). However, if the disorientation does not subside, the landmarks themselves will be deemed unreliable. People will find themselves in a prolonged state of political disorientation in which old ways of navigating the political landscape are no longer viable. Aaron Deslatte puts the degradation of trust caused by the global pandemic down to the inability of both citizens and public administrators “to sift through the information environment”, which results in motivated, partisan reasoning (Deslatte, 2020: 1). As will become clear, this political disorientation is inextricably intertwined with epistemic disorientation.

In a recent contribution on the COVID crisis, Francis Fukuyama describes the situation as follows: “The democratization of authority spurred by the digital revolution has flattened cognitive hierarchies along with other hierarchies, and political decision-making is now driven by often weaponized babble” (Fukuyama, 2020: 4). Apart from the issue of expertise that Fukuyama discusses, the pandemic has also resulted in an increase in conspiracy theories (Imhoff and Lamberty, 2020) and a proliferation of fake news (Naeem et al., 2020). Together, these effects can leave us in an unnavigable landscape of thought and result in the disorientation related to cognitive inquiry that we discussed in section 2 (Earnshaw, 2019). Here, it is worth remembering that the neuroscientific connection between spatial and temporal coding that we explored in-depth in section 3 has an equivalent when it comes to social (Tavares et al., 2015) and conceptual (Constantinescu et al., 2016) spaces, which substantiates the idea that the forms of disorientation explored in this section are analogous to spatial disorientation in a more-than-metaphorical way.

As in the case of temporal disorientation, the social, political and epistemic disorientations of the COVID-19 crisis all have momentous effects. Converging studies show that the social shift effected by the pandemic (e.g. social distancing measures) has pernicious effects on our physical and mental health, ranging from disruptions in sleep patterns to recurring suicidal ideation (Lewis, 2020). Political polarisation has been shown to have persistent effects on economic activity and health because it moves both individuals and institutions away from optimal choices or policies (Makridis and Rothwell, 2020). And, unsurprisingly, the belief in conspiracy theories is a major predictor of the type of behaviour (e.g. mask-wearing compliance) individuals will display during the pandemic (Imhoff and Lamberty, 2020). But although the multiplicity of disorientations paints an uninviting picture, there might be light at the end of the tunnel. As with temporal disorientation, establishing clear landmarks and drawing readable boundaries are promising ways to remediate the negative

effects of disorientation—i.e. to help people in the individual and collective navigation of the uncharted. Studies have shown that in countries (e.g. New Zealand) in which there is reliance on public experts, clear leadership, and a consistent message, is delivered, there was an increased trust in government during the pandemic⁴ and no noticeable increase in conspiracist ideation; even the effects on mental health of the lockdown were dovetailed by an increased sense of community (Sibley et al., 2020).

Moreover, disorientation remediation is not only an issue for governments—it is crucial at all levels of social organisation, all the way down to the individual. Organisations can help their members navigate the complexities of the situation by improving communication, showing leadership, delineating clear procedures and by re-structuring their internal temporality (e.g. helping members coordinate their routines, organising recurrent events, clearly drawing the boundaries at the beginning and the end of the working day, etc.). Of course, to do so, they must first overcome their own temporal (political, social...) disorientation at the organisational level. We can expect cascading effects here. Think back at the case explored in section 3, in which the temporal disorientation of the French government in March resulted in a failure to provide citizens with an adequate temporal framework. At the level of informal social networks (e.g. families), we can also help each other navigate the constantly evolving landscape. And as individuals, we have a certain responsibility (e.g. epistemic responsibility [Levy and Savulescu, 2020]) to find ways to navigate, and to help others navigate.

Finally, considering the various forms of disorientation that have emerged in the context of the pandemic should help us not only to seek for remediation in the form of different navigation aids. It can also help us understand the unrealised transformative effect of said disorientations. Many authors have highlighted the potential of the current pandemic for implementing radical changes in different domains, ranging from education (Golhamer et al., 2020) to tourism (Prideaux et al., 2020) and from environmental policy (Palahi et al., 2020) to social justice (Pleyers, 2020). Looking at the positive aspects of disorientation can help us conceptualise the potentially transformative effect of the current crisis. Psychotherapists widely acknowledge the importance of disorienting experiences for transformative learning and for identity formation — disorientation can give rise to “meaning making in a chaotic situation that was not understandable from within existing meaning

⁴ This increase in trust goes beyond the mere rally around the flag effect (Bækgaard et al., 2020) that occurred also in countries without clear leadership, and it was a sustained effect (unlike the rally around the flag effect of countries without clear leadership).

frameworks” (Mälkki, 2012: 207). In the context of COVID-19, Stetson and colleagues (2020) organised a small-group-based guided reflection as part of the medical professional identity formation at the University of California San Francisco and concluded that these disorienting times often serve as a catalyst for transformative learning.

In an effort to highlight some of the positive aspects of disorientation, Marcella Schmidt di Friedberg looked at how different thinkers from anthropology, design and geography have tackled the question. The emerging picture is one in which spatial disorientation holds a potential for getting beyond simplistic models of one’s environment, for suspending usual ways of movement, for embracing uncertainty and for establishing a new kind of relationship with space (Schmidt di Friedberg, 2017). Yet again, spatial disorientation turns out to be remarkably similar to non-spatial forms of the phenomenon. Schmidt di Friedberg’s discussion of the potential of spatial disorientation resonates here with Harbin’s study of the potential of non-spatial forms of disorientation (Harbin, 2016). On the one hand, the disintegration of our habitual frames of reference in a multitude of dimensions (e.g. social, temporal...) often leaves us unable to go on. On the other, such a disintegration provides a unique opportunity. It is an opportunity —both at an individual and at a collective level— to overhaul our habitual frames of reference and to find new ways of navigating our social, temporal, epistemic and political environments.

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