Protocols in (Emergency) Time

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«an exploded diagram of a spiral made of changing protocols»

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The 2023 Summer of Protocols generated a plurality of research projects where protocols emerge and unfold across a multitude of scenarios, social spheres, technological landscapes, ritual practices, and everyday life. This essay seeks to synthesize some of the common threads that bind these diverse imaginings of protocols together. One fundamental aspect that cuts across all protocols discussed in the program is their temporal dimension. Be it social interaction protocols or traffic protocols, the creation of safety standards or software code, they all have moments of inception, durations of operation, differential rhythms, and evolutionary timeframes.

In fact, the complex temporality of protocols is what distinguishes them from static concepts like standards or rules. A protocol simply imagined and designed is no protocol at all until it is actualized—applied to a given context and generated behavioral interactions with social actors. This is what weds protocols to time. Protocols come to life in their execution, that is, in their uptake by participants. And, as Sarah Friend argued in her essay, *Good Death,* they die by abandonment.

I will examine the implications and paradoxes of the temporality of protocols discussed in the *Summer of Protocols*. Ultimately, these observations aim to provoke contemplation on the relevance of the concept of protocol in "emergency times"—moments characterized by a rapid acceleration of action and sense-making processes. Specifically, I will conclude by offering a succinct reflection on the role of protocols in the context of unfolding global climate change.

On a Minimal Definition

Despite the wide array of projects, the definitions put forward by researchers to demarcate and establish what constitutes a protocol were remarkably akin. Above all, there was agreement among researchers that protocols serve as tools or systems to facilitate coordinated behavior. This consensus, in turn, indicated two fundamental aspects for nearly all of them:

Simultaneous enablement and restraint: Protocols possess dual characteristics, acting as both enablers and constraints in various capacities.
Inherent temporality: Protocols exist within the realm of time; they are intrinsically process-oriented.

While this might appear intuitive, it's imperative to explicitly underscore this point in the context of the current argument. Where there are protocols, there is temporality; no temporality, no protocols. I will add protocolization links past and present to future as experience is linked to expectation. As Kei Kreutler argued in her essay, *Artificial Memory and Orienting Infinity,* it is the protocol itself that creates a sense of time.

On Method

The idea behind this study was to employ the 11 core projects from the Summer of Protocols as a dataset comprising 11 distinct units, each focusing on different conceptions and cases of protocol. I engaged all the core researchers in a loosely structured interview during which I posed a series of eight to ten questions. The protocols discussed in these projects range across traffic regulations, speed bumps, hazard reporting, processes of standardization, the Ethereum blockchain, the "Intertwingler" (a versatile coding tool akin to a "Swiss Army Knife" for web retrofitting), the application of computational metaphors to physical space, the concept of the swarm (a minimally protocolized social formation), memory, family dynamics, and knowledge production. I added to these the cases of COVID-19 regulations like social distancing protocols and carbon emissions regulations as stipulated. for example, in the Paris Agreement.

All core researchers were asked to reflect on:

- the origins of their protocols and their relation to the past
- the innovative or preserving intentions of their protocols, that is, their fundamental orientation toward future or past

- the roles of duration and repetitiveness in their protocols
- the teleology of their protocols, or the vision of a "beyond"-protocol future state

In addition, I asked each core researcher to offer a definition of protocol based on their case. My key line of inquiry was to understand what their responses revealed about the temporal dimensions of protocols, their beginnings, evolutions, iterations, and endings. Undeniably, the arguments I derived involve simplifications and abstractions that cannot do full justice to the complexity of the individual perspectives that informed them. I hope they serve as starting points for future discussion nonetheless.

New Beginnings

// Thesis 1 Protocols emerge from crisis threat

For all projects, the researchers made an important distinction between the moment of inception of protocols and their continuous reproduction during the period of operation. Initially, protocols may either be intentionally designed or emerge and consolidate spontaneously over time.[1] They can originate as plans on a white paper or be imposed by a powerful enough entity, as seen with traffic regulations. But protocols also acquire new life with each new iteration of their application, making their moment of emergence appear less significant. In this latter view, each block within a blockchain or every turn at a traffic intersection becomes a renewal of the protocol in its practical enactment. For the sake of clarity, I will discuss both the broader inception and the individual reiteration separately.

Regarding original initiation, there are two seemingly divergent perspectives to consider. Protocols might appear to emerge naturally from the calm waters of established environments with their ongoing habits and traditions—so much so that their moment of origin is no longer discernible. Or—as I wish to contend: more likely—protocols emerge in specific coordinates of time and space as responses to the flurry of crisis and its future uncertainties. Protocols are designed in reaction to some troubling condition rather than being conceived of independently from their environment. This argument is more obvious for some protocols than for others.

COVID-19 regulations are an ideal example. Encompassing protocols like social distancing and handwashing, these regulations emerged due to immediate concerns stemming from existing practices that facilitated the rapid spread of the virus. Similarly, the Paris Agreement and its ambition to limit global warming to 1.5 degrees Celsius make sense only in the context of the "climate crisis." Protocols for hazard reporting align with this category as well.

These **emergency brake protocols** are designed to secure or reinstate a stable ground in reaction to a perceived threat. They do not necessarily arise post-disaster but are predicated on the anticipation of potential catastrophe, which legitimizes their imposition. Because such protocols are introduced within existing frameworks of social practices, they necessitate oversight of a social or legal nature and their legitimation becomes crucial. Fittingly, most examples discussed of this type of protocol could also be categorized as legal protocols.

Convention-driven (social) protocols, a second category, are less overtly provoked by crises; they often appear to be almost "second nature" and, consequently, timeless. Handshakes and roles within family or professional contexts are often just "how things are done." Even within scientific knowledge production, the rules and assumptions might seem too self-evident to warrant reconsideration.

A number of projects argued for caution with these "unconscious," implicit, or "weakly expressed" protocols. I would agree and add that—even if we cannot fully trace the origin of social protocols easily—these seemingly "natural" orders also counteract

1. The perspective of this analysis operates under the assumption that protocols can be envisioned using a figure/ground relationship. Protocols are distinct entities with defined boundaries that either emerge from or are built upon a foundational ground, an environment. Importantly, this viewpoint doesn't discount the idea that protocols exert influence on the ground from which they originate. While they rely on this ground, they remain distinguishable entities.

a sense of uncertainty in their repeated enactment.

Take modern-day western family roles, for instance. Originally a product of significant disruptions in pre-modern life, urbanization and industrialization led to the division of private and public spheres at the time of the emergence of the nuclear family ideal. These transformative processes, which were crises for their time, gave birth to the roles that—for better or worse—still guide our interactions within family dynamics today. Even if the causality of that origin story is complicated, the continuity and dependability of family roles still does secure ongoing interactions, relieving actors of many decisions that are simply given by protocol.

As another example from a fundamentally interactional micro-perspective, the handshake is designed to introduce two people promising and performing collaboration. I would argue that handshakes, in both their design and everyday practice, subtly function to prevent suspicion of antagonism from arising and hence maintain relations—without anyone giving these functions a thought. They displace uncertainty by producing familiarity and predictability.

Similarly, the rules governing scientific knowledge production became clearly defined only with the expansion of (geographical) horizons in modernity, challenging traditional modes of establishing and asserting (localized) "truth." Although today it often seems a "natural" thing to delegate decisions to "the experts" and their facts, the term "expertise" only gained prominence in the early 20th century as the claims to it proliferated to problematic levels. Stringent rules governing "rigorous" research, demanding resources and credentials, effectively restrict who can assert claims to expertise today, averting the perceived dangers of relativism and moral conflict—and maintaining privilege.

Optimization-driven protocols, as a third category, sit at the intersection of the technological realm and the social sphere. Examples include traffic regulation, standards-making processes, the rules of formal organizations, and perhaps even web development tools. These protocols, like social protocols, are not overly concerned with their origins in settled times and bounded space. Someone accustomed to right-hand traffic may rarely contemplate the "social construction" of the consistent flow of vehicles. But international travel would force them to confront how traffic adheres to a designed set of rules that could well be otherwise, pointing to non-naturalness. Such protocols also conceivably developed due to growing chaos in newly emergent urban spaces at the advent of automobiles. In their operation, these protocols make movement of traffic predictable and diffuse the threat of uncertainty and accidents on the road.

Similarly, technical standards and web development tools are likely created within the context of suboptimal conditions that generate greater uncertainty and unpredictability. Outdated or malfunctioning standards that hinder or jeopardize daily activities may persist for a surprising duration. However, the strain they cause is likely to catalyze efforts to alleviate it. As the myth has it, the original Bitcoin protocol was designed in response to the 2008–2009 financial crisis, with the cryptic message on its genesis block referring to a news headline: "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks." This brings Bitcoin in close proximity to the emergency brake protocols.

In conclusion, I argue that all these types of protocols arise out of or are a functional response to crises or the threat of it, creating significant uncertainties in an environment. They promise to convert threatening contingencies into coordinated action. At the least, this means protocols should be understood as reactions to something else, designed as a negative of a present that is expected to reach into the future if it wasn't for their intervention.

Certainly, there are ways to contrast the ideal-types of emergency-driven legal protocols, optimization-driven technological protocols and convention-driven social protocols beyond their shared quality of *reacting*, in one way or another, to crisis threats. I will

delve into these distinctions next, pivoting our focus toward the evolution of protocols through instances of enactment.

Iterations, Durations, and Rhythms

// Thesis 2 Protocols both conserve and evolve

Technological protocols often are thought of as disruptive tools with grand prospects toward innovation and change. However, if we understand protocols at large, as argued above, to emerge in reaction to a threat, they would arguably be conservative by design. In this section, the lifecycle of protocols will be unpacked beyond their inception to see how far this idea holds.

As I previously highlighted, a fundamental aspect of protocols is that they are realized through active participation, that is, individuals applying or adhering to them in repetitive cycles. Once activated, the temporal structure of protocols can be likened to a circle or a spiral.

The circle represents a perfect reproduction of action according to protocol, while the spiral illustrates a gradual shift, an evolution of the protocol through its enactment. Handshakes are an example of the former and open-source web development tools of the latter.

This distinction shows that one of the most intriguing dynamics of a protocol in motion is in the ways it intersects with the human element where it is adhered to, bent, or even broken. Through repetition, protocols can either enable participants' agency, gradually exhaust participants over time, or become so internalized that they appear as "second nature," deeply ingrained within individuals' behavior.

Protocols hence contain contradictory tendencies—of dynamic change and evolution on the one hand, and of routinization and conservation on the other. Which tendency prevails depends on the relationship between the design of the protocol and its actual realization, its uptake and internationalization by social actors.

Convention-driven (social) protocols exemplify the conserving effect, according to which protocols consistently orient toward and reproduce the past. Their repetition draws out the circular figure. Typically transmitted through socialization, these protocols blur the awareness of their designed and strategic nature over time, rendering their origins timeless. This mode of transmission fosters a perception that these protocols are merely "how things are done." Repetition for conventional protocols across historical scales further lends them an air of naturalness. Such protocols are conservative in the sense that they are traditional. Summer of Protocol researcher Angela Walch focuses on the unconscious element in these protocols; Nadia Asparouhova refers to weakly expressed protocols. Only when such protocols become conscious or "strongly expressed" can they be altered. For example, the handshake, deeply internalized as a hallmark of "western-style" decorum, was overridden by the emergency protocol of social distancing as touching people became something to reconsider as a threat. However, these instances remain scarce and less influential in comparison to the substantial structural influence of fully ingrained, implicit social protocols that dominate and run societies globally.

Consider, for instance, the long-term effect of COVID-19 protocols. After over a year of continuous restrictions on close interactions, gatherings, and shared spaces, there was a concern that these rules might swiftly become "second nature" as well, altering social dynamics indefinitely. While some long-term effects of COVID-19 protocols remain to be determined, it's evident from this case that we do not fully understand the internalization of a protocol as a process. Instead of becoming "just how things are done"—consistently and at scale—COVID-19 regulations exhibited tiring effects on many individuals. Rules were frequently bent or challenged when the immediate threat was questioned over time or across different social spaces, weakening the emergency protocol's legitimacy.

Similarly, other emergency-brake protocols such as those aimed at reducing carbon

emissions have maintained a distinct contrast to habits as "natural ways of doing things" for significant portions of the population. Arguably, this is also due to the perceived temporal lag associated with climate change—a potential future rather than a current reality and hence not a crisis threat sufficient to legitimize the strong impositions of emergency protocols.

Protocols for hazard reporting as they arose over the 19th and 20th centuries in high-risk industries have some things in common with these examples: the constant introduction of new safety protocols that was explored by Timber Schroff underscores the recurrent necessity for regulation due to tiring effects of these protocols. However, to the limited group of those who professionally apply such protocols daily, they likely do become "the natural way to do things." For some protocols, then, both the internalization of rules and the occasional or habitual bending of them might be two sides of the same coin, arising from the repetitiveness of enactment.

This duality is salient for optimization-driven protocols found in organizational life more broadly. Organizations usually come with instances of *dis*organization that can both disrupt and ultimately enhance effectiveness.

Take traffic, for example, where a balance must be struck between clear rules and participants' ability to flexibly adapt in exceptional situations. Similarly, the process of establishing standards demands adherence to guidelines while also incorporating the necessary flexibility for adaptation. Scientific research procedures, formally protocolized, are often necessarily violated in practice to navigate challenges and function effectively.

For all these protocol examples, a complete internalization of rules and procedures, a full merging of the protocol into its environment as just "natural," would pose significant issues. To deploy their full potential, protocol participants need a way of determining situationally when it is time to bend the rules to allow for protocol evolution. However, some degree of internalization is still essential to sustain participation. The benefit of protocols only comes with routinization, a streamlining of repetitive action that exemplarily illustrates the duality of enabling and constraining effects.

I propose that this midpoint of the evolutionary process in optimization-driven technological or organizational protocols can be best visualized as a spiral temporality, both circularly repetitive and somewhat linear, where no repetition is an exact replica of the previous one. The tension between perfectly routine reiterations and slight divergence from the given path fits onto this spiral image, though it highlights a gradual, sustained evolution more than occasional, random diversions.

The spiral movement grants these protocols a degree of future-orientation, fostering greater innovation than emergency-brake or convention-driven protocols which preserve environments through strictly imposed or deeply internalized rules. Yet, as per my argument, this spiraling rhythm will always fall short of the "revolutionary" impetus for intended rupture found in a more linear temporality.

In summary, protocols in themselves gain strength as their figure-ground contrast diminishes, merging them into the backdrop of normalcy where they become ingrained, unconscious habits. Consequently, repetition assumes a key role in sustaining them. Yet, this seeming strength also makes them less dynamic and adaptable to change. Further, their function becomes obscure as they become an end in itself.

Whether protocols transition to this state of second nature or remain perceived as impositions is not straightforward to ascertain at the inception of a protocol. When participation is conscious (but hence also optional) and allows for flexibility, a loose coupling between protocol and actor, protocolization can facilitate slow but steady evolution.

The contradictory duality in protocol rhythms tempers enthusiasm about the inherent change-making potential of protocols. As it turned out through this study, protocols flourish based on notions of control and management. They are best at

hedging uncertainties or contingencies. This implies a leaning towards replication. But the tendency to change and evolve and the countertendency to routinize and conserve coexist differently in different kinds of protocols, complicating generalizations.

Importantly, stating that protocols are conservative is not a political assertion. This statement does not challenge the value of preservation and conservation during periods of undeniable turmoil. The intention of highlighting the backward-oriented nature of protocols is merely to underscore—as some of the researchers did—that these tools often possess their own agency. They assert their temporal logic upon anything we endeavor with them, especially where there is no conscious reflection on their use.

Finally, once a protocol is set into motion as a response to an undesired rupture, its aim becomes to sustain its existence. This leads us to the final set of questions of the study: How do protocols envision the future with or beyond their own presence?

Endings and Beyond

// Thesis 3 Protocols lack a future vision

In principle, protocols are premium tools for shaping the future. They are conceived as guiding principles for future actions, harnessing the potential power of coordination and hence should imply a vision of what is to be accomplished. However, do protocols possess intentions, a foresight of the direction in which these actions ultimately lead? What exactly do protocols strive for?

I propose that protocols inherently lack a distinct imagination of the future that differs from the moment in which they emerge, especially when they are purely repetitive and operate with what I have called a circular temporality. Protocols are incapable of inspiring a vision of what lies beyond them other than a return to a past state. Their future is an extrapolation from past and present rather than an imaginative speculation.

Much of this argument derives from the preceding hypotheses. I've established that protocols are reactions to imminent crises or uncertainties, that they are mechanisms for preserving environments. Again, paradoxically, when they try to shape the future by (re)orienting behavior, they are still oriented towards the avoidance of the crisis or threat that motivated their existence. In other words, protocols are means of solving problems of the past and present in the future without actually having an inspired vision of the future or an end-goal. In some instances, the means themselves may become the ends as social actors lose sight of the problems or crises of the past that the protocols were supposed to address and solve. We can examine this means-before-ends perspective from various angles.

Social, convention-driven protocols most clearly become ends in themselves. The family again serves as an exemplary instance. Individuals adhere to the protocols of familial roles without substantial contemplation of its objectives or potential adaptability. This adherence is often due to socialization foreclosing a reconsideration of actions as protocolized.

Optimization-driven protocols governing organizational realms can be likened to bureaucratic artifacts. Their continuous functionality might evolve into an end in itself without the requirement to question intentions or unintended effects. Some of these protocols might have a tendency to become material, and hence inert, as they become powerful. As David Lang, Drew Austin, and Chenoe Hart show in their essays, protocols can be materialized in hardware, infrastructure, or architecture which humans constantly encounter in their actions. As such, for better or worse, they will shape future actions, introduce trends, and become hard to get rid of again. Indeed, a standard's success is often measured by its period of validity. This exemplifies the constraining effect of protocols.

The dynamics appear somewhat different for technological protocols, or more specifically, the technological aspects embedded within protocols. In relation to these, we've explored the repetitive nature of their enactment, potentially fostering

a spiraling inclination towards variation within repetition. These protocols can become shape-shifters, constantly evolving and reducing the timeframe of their existence as a singular instance within a continuum of interlinked moments across time. In effect, for these protocols, deeming a final goal beyond an iteration seems absurd. They must remain adaptable to the input of participants engaged in them, again leaving them without teleology.

Blockchains may be an ideal-type example here. To cite from Sarah Friend's essay advocating for scripts of digital death:

> A blockchain in particular makes a certain kind of claim about time and permanence: that it is ongoing, that it is unidirectional, that the past is immutable, that it is singular.

There is nothing that could perhaps supersede this closed logic of a digital heartbeat, there is only a repetitive rhythm pushing forward while going around and around.

Consequently, I argue that protocols in all their various forms lack the feature of inherent future visions. Admittedly, they might be applied towards a future resembling the past, as in the case of emergency-brake protocols. However, they do not themselves possess innovative power, as coordinating actions toward a contingent, ever-shifting goal is simply not "programmable."

Rafael Fernández' essay discussing web-based entities known as "swarms"—which rapidly and effectively coordinate towards immediate objectives—provides thought-provoking insight into this problem. Swarm behavior is innovative and dynamic precisely because it can be regarded as minimally protocolized, since swarm participants do not adhere to scripts, rules, or predefined roles for their collective actions. However, these phenomena operate within highly technologically protocolized digital environments. This leaves us with the questions of what constitutes participation in a protocol and within what actor-protocol relationship innovation or preservation is favored.

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This essay has attempted to argue that protocols are tools to counter the uncertainty of crises, elicit coordination, and preserve manageability, but they do not lend themselves to reimagining futures. What is the significance of such arguments?

Initially, my investigations were motivated by skepticism about whether protocols are the way forward in a world riddled with urgent need for manifest change in the face of constantly worsening conditions like climate change and a questionable likelihood of a "serendipitous rescue." More abstractly, my question was: can protocols function in emergency time—where processes accelerate and may reach tipping points without further space for intervention?

A critical entry point to this skeptical attitude was to consider how protocols are sources of emergencies rather than solutions. After all, in "risk society" it is the inadvertent side effects of "successful" human activity on this planet which threatens human future in multiple ways. Much of this activity of course was enabled by protocols used in coal and oil production, industrial agriculture, and globalized trade—protocols designed without a full anticipation of their consequences. Of course, the analysis presented here did not falsify this hunch, yet it certainly complicated the position.

If protocols are reliably a reaction to perceptions of emergency (Thesis 1), and this causality is not even especially salient in thinking about them, it might be because protocols have indeed successfully hedged threats and averted the worst. No protocol without crisis and uncertainty, and perhaps no crisis without a protocolized solution. If, however, protocols achieve this feat through the steady beat of coordinated routinization, this may seem at odds with the all-encompassing acceleration of time in a climate crisis.

Clearly, protocols are not a revolutionary tool demanded to "treat the crisis as a crisis." We should not pretend they will "save us" in themselves. Yet protocolization can leverage the power of coordination toward change, if the goals are given, the rules are simple, explicit, known, and adaptable, and the

rhythm of repetitive enactment is steady and invigorating to a broad base of participants.

How well protocols fit or how incompatible they are with the needs of an imperiled planet depends ultimately on human will, as much of the promise of protocols lies in the tense relationships between protocols and participants. Finding inspiration in a "livable future" for all remains the key ingredient.

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