PAPER #8.03

# ARCHITECTURES OF EMERGENCY. SENTINEL OPERATIONS FOR A RAPIDLY CHANGING ENVIRONMENT

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How to cite
Mompean Botias, Estefania. "Architectures of Emergency. Sentinel operations for a rapidly changing environment." In *Proceedings of 3rd Valencia International Biennial of Research in Architecture. Changing priorities*. Valencia. 2022. https://doi.org/10.4995/VIBRArch2022.2022.15274

## ABSTRACT

The declaration of an emergency is given by various protocols that respond to a series of interventions driven by an environmental urgency (Anderson 2017), designed by global networks of experts that mobilize advertising modes of economic development in the face of environmental collapse (Goh 2021). This research proposes a different imaginary of the Emergency. This reflection aims to resignify the Emergency from the embodied experiences of the disruptive events we live, opening the discussion on the frictions between a normative world based on human security and the modalities of militant movements dedicated to redressing social, environmental, and economic inequalities (Whyte 2018). In this sense, we develop the idea of *sentinel modes of care* that reflect the affective scaffolding of life-related to the environment and potential catastrophe (Wright, Plahe, and Jack 2022). A state of constant alertness characterizes *sentinel care* within a more-than-human register of the relationship and potentialities of the territory. This text aims to position itself on *emergency protocols* while exploring other imaginaries and their impact on spatial practices.

## KEYWORDS

Emergency; protocols; security; sentinels; architecture.

## 1. INTRODUCTION

In recent years we are seeing how the state of emergency is becoming the new normal. In a world increasingly interdependent and marked by planetary disruptions, emergencies are increasing and becoming a kind of "emergency condition" paced by a series of events often described as catastrophic. Perpetual risks, unpredictability, and prolonged periods of crisis extend into intersections with climate change, the density of the built environment, resource use and distribution, and political mutations. The way we perceive and the layer of meanings we attach to these events are part of the modes of representation by which society relates to and orients itself within the complexity of the environmental systems we inhabit (Centemeri, Topçu, and Burgess 2021).
On the one hand, this new order envelops us in a state of uncertainty that can slow down any action and participation of the inhabitants in moments of greatest need. On the other hand, during these moments, spaces of experimentation and social behaviors based on the practices of care emerge (Spade 2020).

From the spatial practices, we wonder how the *emergency protocols* can generate negotiations and participation of the affected communities. For this, it is necessary a resignification of emergency with the construction from the negotiation of limits, alarms, spaces, and response protocols.

### 1.1. The Emergency Design

The declaration of an emergency is a political and performative act that occurs when an imminent threat to human life and property is perceived, with a series of protocols that mark security limits (Collier and Lakoff 2021). When the level of alarm is catastrophic, caused mainly by political-technological setups associated with long processes of environmental degradation (Swyngedouw 2018), one enters the framework of disaster management and the political realm of catastrophes (Vázquez-Arroyo 2013). This field is applied from the perspective of human security with the modulation of risk and its regulation from new paradigms of resilience (Long and Rice 2019).

The emergency is a constituent of security. Security redefined from the *resilience paradigm* becomes a process of overcoming and coping with disturbances by absorbing the disturbance or limiting the damage from a self-organizing system (Kaufmann 2013). Thus, the state of security is never absolute but is constantly being refined. The act of redefining and generating this particular state of security is transferred to the population and to individual subjects with concrete tasks to create the conditions to restore normality. It is in this way that the *emergency protocols* constitute an apparatus defined by multiple practices of power (Agamben 2009). Protocols lead towards the (self-)conduct of other bodies that reflect the logic of *environmentality,* defined as the distribution of governance or *governmentality* (Foucault 2004; 2008) within and across environments and their technologies (Gabrys 2014). Regulatory mechanisms are formed from the conception of disturbances as moments in which to return to control and the associated state of normality. However, these same mechanisms transform normality is a perpetual crisis from their creation and reaction (Whyte 2020).

The protocols manage behaviors of society from diffuse rules allowing local self-organization to generate a complex security apparatus with strategies that are planned, carried out, and trained from a reenactment of the possible event, exercises, and drills (Collier and Lakoff 2021). These regulatory practices aim to incorporate a specific type of reaction in local communities, which are self-organized in the case of emergency but act according to common rules, from a common body established by protocols (Kaufmann 2013).

In this way, risk management comprises a series of protocols that set limits and actions that are integrated into land use laws, building codes, protective infrastructures, inspection protocols for technological systems, pollutant control regimes, toxic exposure guidelines, evacuation shelters, emergency facilities within emergency management manuals, etc.

How do these practices function architecturally? What are their limitations in a world affected by multiple and complex disruptive events? How can we conceptualize them rethinking the emergency to generate other forms of activation? How can we create practices that operate architecturally with the capacity to integrate and co-construct an infrastructure of care?

In exploring these questions, this text develops into three distinct sections that come to recompose the meanings of emergency. In a first approach, this text proposes to highlight the mechanisms that lead to spatial regulation in the management of an emergency. In a second part, the text develops the spatial operations that arise from the attention to the signs of an

imminent catastrophe, conceptualized here as *sentinel attentions*. These operations are shaped by the affective scaffolding of life-related to a rapidly changing environment. In the last part, the text will begin with the conceptualization of the *architectures of emergency,* which will allow us to move from conceptual frameworks of emergency to the spatial operationalization of protocols characterized by *sentinel care*.

## 2. THE SPATIAL REGULATION OF EMERGENCY: THE PROTO-TERRITORY

The emergency starts from the uncertainty of operating under exceptional laws in a "lawless" legal framework (Agamben 2008). However, this uncertainty is navigated within the previous preparation, with the anticipation and imposition of totalizing monitoring protocols with neocolonizing dyes. From Western conceptions, these operations are rewritten from the modulation of risk and the limits of security (Anderson 2010). These rules established from a series of monitoring protocols limit the impact of the possible emergency. When an emergency occurs, the alarm signal (established by the risk acceptability codes) is turned on. This signal triggers a series of cascading operations established from the hidden forces of past events or future simulations. From this continuous present with an abducted past and future, the current operationalization of the emergency in the territory reduces reality to packaged events (Hulme 2011) in a series of responses that strip them of any latent sensitivity, cultural focus, attention, or even intuition (Whyte 2020).

If we begin to look at emergency operations within a territory in a conceptualized way (Fig. 1), we can see that it is not so much the exception to the rule. The unforeseen event is planned, designed, and even commoditized. Brian Massumi, in his book *Ontopower,* conceptualizes the *proto-territory* as the place where recurring accidents occur and, at the same time, the processes of their control, defined as the *anti-accident*, are rehearsed (Massumi 2015). The *anti-accident* is the model of a territory, although more than a model it is a matrix of interconnected scenarios. In this way, preventive power is an environmental power. Marielle Kaufmann analyzes emergencies from the *resilience paradigm* and the patterns of operations that emerge within the logics of *autopoiesis* (synonymous with self-reproduction) which are networked units that are defined in the reproduction of their interconnected components. *Autopoietic systems* are engendered from their relationship to the environment because they make use of the continuous flows of energy and matter for survival in a medium. In this way, the system alters the environmental conditions of the territory through adaptive modulations (Kaufmann 2013). From these interconnections, the power of the *anti-accident* occupies the *proto-territory* in all its extensions of life, its iterative processes, and systems (Massumi 2009). The inhabitants of the *proto-territory* no longer prepare themselves for what they have experienced, but think beyond what has happened (Dekens 2007). This situation generates a total separation of meanings and approaches to the territory, turning them into colonizing forces with imposed readings of the territory. In places colonized by *emergency protocols*, local knowledge has been marginalized with the construction of large infrastructures such as the rechanneling of rivers, which is exposing communities to possible new threats. This new infrastructure is not only a technical object, but also a sense of possibilities, a language to be learned from the constitution of its materials (Larkin 2013). Moreover, climate science does not provide detailed predictions with precise causes, but modeled scenarios that allow us to work deliberately in the present, oriented towards a foreseen future.

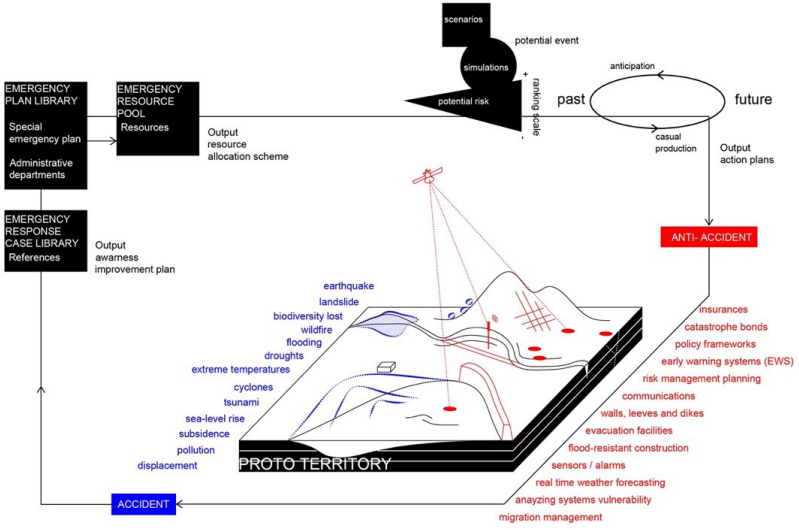



*Figure 1. The spatial regulation of emergency: the proto-territory. Source: (Author 2021)*

Thus, in the *proto-territory*, the emergency is designed through special plans, libraries of action plans, and banks of resources and references that make up the anti-accident and affect the formation of the accident itself. Control is not only spatial but also temporal, the present is abducted by a given set of possible events, operating to bring them into the present as potential future catastrophes that point to current vulnerabilities (Lakoff 2007). Karen Barad says that we keep designing the past and remembering the future; the present is trapped in a totalizing gaze of trying to anticipate a future of destruction affected by nuclear risk, climate change, and disruptive technologies (Barad 2018).

In this conceptual composition of the *proto-territory*, assembled from the design of *emergency protocols*, which identify security limits and generate readings for possible adaptations to possible disruptive events, modes of operation are composed that approach the sentinel body. It is from these reflections that the *Sentinel Architectures* appear. From the reading of the future emergency, these architectures oversee responding to all possible risk scenarios that may occur in an environment. Thus, as a prophetic device, we can read in them the possible events of an increasingly designed future.

## 3. SENTINEL ARCHITECTURES

Once we have approached the operation of the emergency protocols, we perceive that a series of pieces of evidence are necessary to activate the declaration of an emergency and thus precipitate the series of reactions necessary for its control and the illusory exit of the state of emergency. In this way, we need an alarm that incites its declaration. In addition, from precautionary principles, anticipatory action is part of the Emergency

Preparedness component (Lakoff 2007). At a time when we can anticipate possible events, but there is a degree of uncertainty due to the interconnectedness, contingency, and unpredictability of ecosystems, Early Warning Systems (EWS) have been established in recent years as surveillance methods to initiate action, even if knowledge of what is happening is incomplete (Hermans et al. 2022).

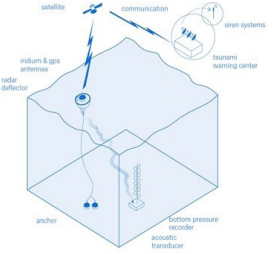
In this way, the sentinel corps is being built up in the development of continuous monitoring protocols. Sensitive or more vulnerable bodies to possible disruptive events are identified as sentinels (Keck and Lakoff 2017). The construction of these surveillance systems, modeled through EWS, is done from a continuous environmental reading. A series of reactions are expected from sensitive or vulnerable bodies to the perception of changes in an environment.

Sentinels are living beings or technical devices that provide the first signals of an impending catastrophe. In a hostile environment, we can consider them as allies for our own survival (Keck 2020). Historically, the word sentinel connotes a military function; a sentinel is a soldier. The sentinel is in charge of observing and sending signals from strategic positions on the battlefront, challenging the adversary and preventing any possible surprise attack.

Sentinel corps are in a continuous relationship with a medium and need a material thickness reading to alert them of possible changes in medium condition (Monsaingeon 2013). In their configuration, they need to know all possibilities and scenarios to forewarn the possible threat. They are configured in a state of continuous information reading security levels (Fig. 2).

But it does not remain only in the perception, the monitoring and forecasting component of the early warning system must move from forecasting the event to warning about the possible impacts of that event in terms of damage to people, infrastructure, or others (Hermans et al. 2022). The action

Matrix of tsunami siren towers, South Beach. Eirik Johnson




Deep Ocean Assesment and Reporting for Tsunamis (DART) system graph

# Washington Coast. safety landscape

*Figure 2. Washington Coast. Safety landscape devices. Source: The Atlas of Emergency (Author 2021)*

protocols are triggered from precautionary principles on possible threats in the reading of its signals and their interpretation. Thus, sentinel architectures make visible our precarious relationship with the environment, observed as deteriorated environments, and risky spaces that need to be controlled.

From this perspective, *sentinel architectures* could be defined as architectures programmed to warn and respond to a potential event and even, to respond to all possible risk scenarios in an environment. These devices are created from the sequestration of the future in the present (Adams, Murphy, and Clarke 2009); they can read the possible events of a destiny increasingly designed from the control of accidents. The future then becomes a regime of safety and simulation that brings catastrophes into the present as if the emergency had already occurred.

However, information is not an automatic signal that can be disseminated in real-time. Data must be retrieved, collected, entered, and interpreted (Farías 2014). Therefore, a *sentinel architecture* requires the ordering and interpretation of a whole series of data in a process of continuous inquiry. One of the main mistakes that are made is the separation between the readings of the facts with the decision-making that can contradict the alarm. Thus, counter-sensing practices are necessary (Latour, 2004).

In contaminated sites impacted by hurricanes, it is easy to find many soil and sediment contaminants high enough to put the health of the residents of the area at risk. The development of community laboratories in toxic areas allows residents to identify contaminants and act accordingly. To this end, testing units, remediation practices, and inspection education should form part of the practices of ecological democracy. Community laboratories constitute a strategy that fills the gap in environmental policy and is based on principles of citizen participation (Bullard 2018) (Fig. 3).

Public lab workshop.
Public Lab website

Mississippi's changing delta. Jesse Allen / NASA Earth Observatory

Louisiana & Houston

*Figure 3. Louisiana & Houston. Community Laboratories. Source: The Atlas of Emergency (Author 2021)*

These groups are not experts but develop from a networked specialization of surveillance through experimentation, a sentinel must alternate between scientific conceptualization and attention to how environments are modified through localized practices. The sentinel is not an isolated individual waiting for an enemy but is a localized/distributed system that functions with attention to the distinct messages sentinels transmit and reflection of what the information means to the environment we share with them (Gramaglia 2013). A collective body, a more-than-human assemblage that expresses the tensions of life in the limit of survival.

Etymologically, the word sentinel comes from the verb *sentir, entendre, écouter* (to feel, to hear, to listen). Understanding the sentinel as a correlational figure, of the relationship and stimuli for a reaction, finding meanings in winds, rains, chemical compositions, or behaviors of diverse organisms. The sentinel body as a sensitive entity reconstructs "sensing practices" as the network of interactions between the environment and the rest of the organisms that interconnect them (Gabrys 2019). The sentinel generates

meanings, reconstructing worlds in its way of understanding space and the collective way of feeling.
In this sentinel reading, there is a relationship of actors that generates a multi-species as well as the multi-scale collective body by integrating the relationship between chemical composition readings up to large spatial scales in their deployment. Sentinel devices do not operate autonomously, but are integrated into warning and response systems, included in preparedness plans that structure the official response and decision tools that guide the intervention when an event occurs.
Moreover, as mentioned above, *emergency protocols* are built as an autopoietic or adaptive system to a specific environment. If risk management leads to the use of statistical analysis according to patterns of a historical incidence, at a time of continuous preparation and adaptation to potential hazards, surveillance takes over and with it the sentinel devices that warn of potential danger ahead.
In this way, extending the concept of *sentinel architectures*, I envision practices that pay another kind of attention - a renewed attention to the closest resources and materialities that enable negotiations between communities and the environment.

### 3.1. Sentinel Attention

The modes of *sentinel care* reflect the affective scaffolding of life-related to the environment and potential catastrophe. A state of constant alertness characterizes *sentinel care* within a more-than-human register of relationship, the assemblages that constitute a territory and its potentialities.

Peatland restoration blocking drainage channel.
Wetlands International


Flood marker placed near the river. Larawan mula kay Gerald Valdez

Philippines

*Figure 4. The Philippines. Sentinel Codes. Source: The Atlas of Emergency (Author 2021)*

From the conceptualization of *sentinel architectures*, we approach the relationship between the limits of emergency and alarms in the forms of active integration of the different inhabitants of the environment. By witnessing and mobilizing ourselves on the rapid changes we are living through, we must develop our own tools to evidence the disruptive processes in the territory, using our own bodies as instruments of evidence. From the local knowledge that is built from the experience of the local environment, the identification, and monitoring of indicators that point to a possibility of dangers, the way to confront and communicate the possible risks. Thus, it is necessary to collaboratively design objects, devices, or tools that invite observation of biophysical indicators, experimentation, and analysis to build cause-effect relationships or "worlds" about current and future conditions. Build readings to form judgments and negotiations from the independence of survival in their climate. For example, in the Philippines, the Kanungkong are instruments to warn the population when a catastrophe occurs. It is an early warning instrument made of bamboo (Molina 2016). These sentinel codes have been agreed upon with the community through consultations. In addition, the flood hazard *warning signs* have been jointly designed and are part of the community landscape. This example shows the importance of empowering local communities so that they can decide on local facts without being overridden by sometimes misleading national or international data (Farías 2014) (Fig. 4).

After this process of conceptual deployment, we can move on to the operationalization of *sentinel architectures* as evidence-generating tools. *Sentinel architectures* are in a continuous reading of influences and transformation from the surrounding environment. In continuous interaction with the earth's surface and with the different atmospheric gradients that surround them. Buildings register, accumulate and transmit in a process of aestheticization through the environment (Weizman 2017). However, *sentinel architectures* not only record their past but also generate an activation influencing the creation of futures by generating events in their relationship through other bodies. *Sentinel architecture* as a "transcorporeal stretching between the present, the future and the past" (Neimanis and Loewen Walker 2014, 1) helps to reimagine sentinel bodies as archives of events and to make other futures possible.

Its implementation from the resignification of emergency can significantly affect an architecture that reveals atmospheric conditions rather than ignores them in the expectation of the alarm signal.

## 4. EMERGENCY ARCHITECTURES. OPEN HOUSES AND THE EMERGENCY ARCHIVE

Once entered into the different mechanisms that engender *sentinel care*. We could reach more precise cases in the mapping and modeling of spatialities that are formed within these actions in the collective construction of the emergency and the sensibilities necessary to generate new realities from a social and political intervention.

Writing this text in another heatwave goes beyond all recorded observations (July 2022). Collectively we are experiencing the important change revealed by atmospheric conditions. It intrigues many of us. It raises questions about our habits. The city has been filled with information about places to alleviate the emergency once declared, but there are few places to discuss action plans because these plans seem to require urgency beyond debate.

However, in areas highly affected by cyclical events, for example in the more spatially marginal areas of the Ciliwung river in Indonesia, a whole network of repair communities has been emerging: the so-called Ciliwung Komunitas. These river *sentinel care communities* are responsible for monitoring river water levels, organizing the cleaning of the sewage system, and documenting and transmitting the state of the river through social networks (Miller and Douglass 2015).

These communities generate networked spatialities called *Sanggar* (open houses). These spaces can be a vacant plot, agricultural land, a pavilion, or a hut on the edges of the river that can be used for meetings, a library or prayer room and usually has basic facilities such as toilets and a pantry room (Suryantini, Permata, and Angelia 2018).

From these spaces, various activities for action and care of the territory are organized. Among the different actions, we find the organization of mobilizations, environmental defense and restoration activities, artistic and community events, forest recovery, forest rights defense, community workshops, community cleanup organization, pollutant mapping, fish species registration, garbage collection, community mapping, community gardening and composting, libraries, legal advice ... (Padawangi and Douglass 2015). In addition, this vast network of spaces becomes tools of community empowerment in times of disaster becoming a network of organization of the informal response to the emergency (Fig. 5).

It is from the development of sentinel practices based on care and resistance to the protocols of an increasingly legitimized anti-accident where we can see other *architectures of emergency.* Embracing these spaces as part of everyday life that embraces culture and economy is an alternative approach to emergency management that puts people and the whole ecology of living organisms as active members of society rather than victims. One of the best-known examples is the Sanggar Alfaz which became an open house for children to play in 2009 after the mud disaster affected the Porong subdistrict (Padawangi 2016).

These practices of evidence and care are practices that reveal multiple threats from the experience of affected communities that go beyond scientific conceptions of the record. These practices become reactive to current ecologies with resonances from the past and repercussions for the future. In this way, the spaces of recording and archiving operate to weave relationships of community care by documenting and resisting oppressions to reimagine alternatives (Caswell 2021).


*Figure 5. Ciliwung River. Communities' organization. Source: The Atlas of Emergency (Author 2021)*

Furthermore, communal and activist archives are open and adaptive spaces that recover individual and collective memory to reactivate social and political agency (Polletta 1999). These archive spaces as *emergency archives*, become enabling spaces for networking through sentinel readings of the medium and respond to intertwined crises from performative action.

In places like New York, Rachel Garber Cole is documenting the emotional, psychological, and sensory experiences of living in this rapidly warming time. "The Warmest Year Ever Recorded. An oral history of life on a warming planet" is an archive for a future and a practice for a present in need of experiences that alleviate these collective emotional afflictions. The spaces she has activated during the collection of experiences are the community gardens of Brooklyn, places where abrupt changes are made tangible in a reading of the plants being grown, and the more-than-human relationships of endangered common ecologies. These stories speak to our concerns as bodies sensitive to change and the need to incorporate alternative narratives and the spaces that are activated from the construction of these narratives.

This archive of experiences has evolved in connection with the Interference Archive in New York. Community archives as living archives are open, responsive, inclusive, collaborative, and generative places where the community actively constructs and archives history (Almeida and Hoyer 2019). Thus, archiving from the emergency is not only a record of the past but a political act of optimism toward a future that will need our memories to invoke struggles and crises that can give meaning to an increasingly disadvantaged present. In the end, the *emergency archive* becomes the site of cultural, political, and technological healing that emerges from the collective, networked intelligence of disruptions. Designed from the narratives and methodologies of the affected communities, it emerges as the observatory of change and a refuge to process the more-than-human trauma of the events. Thus, the *emergency architectures* are characterized as places of transcription by and for the collective

Image taken during a plant workshop.
Nora Almeida


The Warmest Years on Record. an oral history of life on a warming planet
Rachel Garber Cole

Interference Archive.
Gowanus canal. Brooklyn

*Figure 6. Interference Archive, Brooklyn. Archiving the Emergency. Source: The Atlas of Emergency (Author 2021)*

memory from the perspective of the future, becoming then vital spaces of transmission of all that we can save and of mourning for irreversible losses. These spaces speak of the construction and appropriation of the *architectures of emergency*. If the *architectures of emergency* are hijacked by sensitive data points of an already designed future, their operability could be reclaimed through the different sensibilities by putting in relation the production of evidence and intervention for the survival of life-generating assemblages (Fig. 6).

## 6. CONCLUSIONS

From these practices, the portfolio of examples from urbanism and architecture could be abundant, a new condition given should open the doors to multiple explorations (at this moment we are putting together an atlas of emergency). It is from the critical analysis of these new conditions that will lead us to swing to one side of the coin: either we accept the *emergency protocols* as they are modeled, governed by a control characteristic of the tyranny of the exception continued into a future of devastation. Or, on the other hand, we begin to construct sites of negotiation and care, for a "creative sabotage of the future" (Cooper 2006), commonplaces of redundancy assembled in worlds yet to come.
In this way, it could be from the appropriation of *sentinel architectures* that we could resist an increasingly designed future, to generate alternatives towards a future of plural and concrete possibilities "simultaneously utopian and realistic, which is built in the present from the activities of care" (Santos 2010).

## ACKNOWLEDGEMENTS

This paper is part of a Ph.D. developed within the Alice Lab at EPFL. I am grateful for the discussions with my co-directors Dieter Dietz and Lucía Jalón Oyarzun as well as my laboratory colleges. I am also grateful for the discussions with the various researchers who have given me hints on the different examples related to this document.

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