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INCONSISTENT PROJECTIONS: CON-FIGURING SECURITY VISION THROUGH DIAGRAMMING

Abstract

In this paper we propose a time-based digital tool, a diagram-in-the-making, as to learn about computer vision in the field of security. With this method we want to map the heterogeneous and multiple nature of security vision technologies and their imaginaries. Concretely, we conducted qualitative interviews with professionals who develop, use or militate against these technologies and asked them to draw a diagram as to support their narrative. In spatialising the conversation, the diagrams allow for a wide variety of actants and relations to emerge. The time-based unfolding of the lines enacts imaginaries of computer vision practices which are intrinsically intertwined with the narratives of which they are part. It creates space for hesitation, uncertainties, incongruities and complexities that would have been rendered invisible in a geographic map. Through the spatial, material and temporal unfoldings of the diagrams we learn that security vision imaginaries are partial and contradictory.

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Introduction

> *There is complexity if things relate but don't add up, if events occur but not within the processes of linear time, and if phenomena share a space but cannot be mapped in terms of a single set of three-dimensional coordinates. (Mol and Law 1)*

In the exploratory phase of social scientific research, maps have often been used as valuable tools to capture, analyse, and portray an object of research. Often in the form of geographical maps, (social) network visualisations, or point clouds,[1] the rendering of data points onto a two-dimensional plane can expose relations between various properties, entities, areas, clusters, or classes. However, more recent literature in science and technology studies (STS) and feminist critique of technoscience have gradually shifted attention from maps as epistemological devices to the means by which they are constituted and the politics they perform (Kitchin and Dodge; D'Ignazio). Maps are considered to have trouble addressing the fluid and messy nature of social reality while operating under a veil of neutrality (Drucker; D'Inazio). Through their consistent mode of operation, maps perform a rhetoric "god trick of seeing everything from nowhere" (Haraway 581). The categories and labels of a map are no longer taken for granted, but are rather considered as a site of politics and contestation. In effect, an examination of maps is an analysis of how boundaries between entities are drawn, how differences are made, and what is included or omitted. A reflexive approach to visualizing data — explicitly or implicitly — should interrogate not only the contents of the underlying dataset, but also the way it is constituted; its structure, modes of collection (e.g., Marres and Moats; Martin-Mazé and Perret), and modes of visualisation (Drucker; Dávila). For example, by blurring lines and drawing uncertainty, a map can be more explicit about the insecurity of its categorisation (Drucker). Such a map no longer consistently projects input data onto an output surface, but instead draws attention to the practices and politics of its knowledge production.

In this text, we take these insecurities of mapping as a productive analytical site. Based on our own exploratory research in computer vision technologies in the field of security, we will outline a method that allows us to examine how our object of research emerges as a multiple, entangled in situated practices that engage with security vision.

The authors of this article are members of a research group studying the politics of computer vision technologies in the field of security. Such computer vision technologies automate the analysis of photo or video footage in order to spot weapons, violence, or other kinds of behaviour deemed undesirable, and they are increasingly being used to automate border security, contribute to smart CCTV, and moderate online conversations. In order to grasp better this field of research, we started by exploring how our object of research — "security vision" — configures notions of security and computer vision.[2]

"Configuration" as an analytical concept was coined by Lucy Suchman to describe how technologies can be considered assemblages of heterogeneous human and non-human elements that produce meaning as they come into relation. Suchman and other relational theorists in science and technology studies (STS) have argued that the actions of technologies cannot be ascribed to a singular actor — whether human or non-human — but instead should be considered "an effect of practices that are multiply distributed and contingently enacted" (Suchman, "Human–Machine Reconfigurations" 267; see also

Barad).[3] Suchman's conceptualization resonates with Karen Barad's notion of "intra-action" to underscore how the entities that come into relation are not given in advance, but rather emerge through the encounter with one another. What is of interest for a relational analysis is therefore not the network itself, but how such networks structure actors and entities (human or otherwise) and the complex arrangements between them (e.g., Callon). In other words, for Suchman, how humans and machines figure together or *con*figure is not given, but rather constructed in both discourse and practice.

Fundamental to the notion of configuration is how, through the work of technologists and users, technology materializes some of the cultural imaginaries that inspire them and which, in turn, they enact into being (Suchman, "Human–Machine Reconfigurations" 226). In our understanding, imaginaries are not the opposite of knowing or doing, but very much a part of them. These imaginaries enfold individual experience, collective professional practices, and widely circulating narratives about technology. They bring together heterogeneous elements such as one's understanding of techniques, equipment, or the juridical. Imaginaries shape and are shaped in turn by the practices of those working with technology. As such, technologies can be considered to bring together elements from across various registers into more or less stable material-semiotic arrangements. Suchman explains, "configuration in this sense is a device for studying technologies with particular attention to the imaginaries and materialities that they *join together*" ("Human–Machine Reconfigurations" 48). Configurations also draw attention to the political effects of everyday practices and how they institute bounded entities and their relations.

Taken as a site of politics, the configuration of entities is potentially an important locus of analysis. For our case, this implies that there is no single "security vision" that comprises a pre-determined set of components, but rather that such a security vision is multiple and heterogeneous. Annemarie Mol in her discussion of the ontological multiple argues that bodies, objects, and entities do not exist in and of themselves, but come into being through practices. As practices vary, so do the different enactments of the objects that are brought into being while still unified under a single nomenclature. These practices do not enact multiple perspectives on the same thing, but instead they allow a research object to emerge as more than one while being less than many. Grasping how security vision is enacted differently through different professional practices that are engaged with such technologies might help us to examine further how these technologies come to matter.

How can we then explore this "security vision" as a site that draws entities together and establishes the borders and relations between these entities?

To address this question, we mobilise the notion of con-figuration in order to propose an approach to mapping based on diagramming. Through this method, we are interested not in the finished drawings as artefacts, but rather in draw*ing* and diagram*ming* as time-based processes. Second, we will unpack how through con-figurations, our object of research, security vision, is rendered in spatial terms. In the third and last section, we argue that the temporal dimension within and across the various diagrams sensitises us to the uncertainties, hesitations, speculations, and inconsistencies that are instrumental in con-figuring our object of research.

Diagramming as a mapping device

Diagramming, as O'Sullivan explains, can be understood as a device that performs abstractions, suggests connections and compatibilities, and offers a perspective, a speculative future. As such, they "double as protocols for a possible practice" (13). Diagrams historically hold an important place in computational practices (Soon and Cox). For example, a flowchart is a kind of diagram often used to describe the various steps of a programmed routine. The format of a diagram is indicative of programming as a social and communicative practice (Soon and Cox 214). In a similar vein, in his exploration of machine learning practices, Adrian Mackenzie suggests that mathematical formulae that appear in computer science papers and software code can be seen as diagrams. Diagramming, being a spatialisation of symbols, is fundamental to computational practices. However, we propose the use of diagramming not as object of research, but as a methodological device to understand such practices.

In doing so, we take inspiration from the fields of art and design. For example, Louise Drulhe in her work *Critical Atlas of Internet* explores several metaphors and graphical languages that have been used to represent the Internet. The project's loose visual language allows for the Internet to appear as a heterogeneous system of people, equipment, techniques, and material and social issues. Moreover, the various diagrams are not compatible; they are not different perspectives on the same thing. In Drulhe's *Atlas*, the juxtaposition of these various renderings makes their politics visible.

The drawings bring together different entities through different relations. Seen through the analytical lens of configuration, these drawings present their object using different *figures*, which appear together in different *con*-figurations. "To figure is to assign shape, designate what is to be made noticeable and consequential, to be taken as identifying." (Suchman, "Configuration" 49) Drawing a shape on a canvas is an act that draws in imaginaries in a practice of signification. Through their circulation, such figures transform as they appear in new contexts, taking on new relations and significations. The trope of the figure is suggestive of both their productive potential and the possibility of their analysis.

By taking diagrams as con-figurations, we propose a practice of mapping different from a more traditional form of consistent projections such as geographical maps. This method introduces hand-drawn mapmaking within an interview setting, allowing us to process the conversation and its image in a new way. With this method, we want to map our object of research by attending to the various ways in which "security vision" draws together different imaginaries of technology.

We conducted interviews with various professionals working in the field of computer vision and security and asked them to describe how they see computer vision operating in their specific fields. Based on an initial survey of security vision practices, in Europe we identified various roles involved in such practices. Our interviewees develop such technologies themselves, work on projects in which such software is developed, or are critical of the use of security vision, either from a legal or activist perspective.

Eventually, we conducted six in-depth interviews with professionals in three different European countries.[4] Gerwin van der Lugt is a developer of software that detects so-called "high-impact crimes" in camera streams. András Lukács is a senior researcher and coordinator in the AI Lab at the Department of Mathematics of the

Eötvös Loránd University in Budapest. Guido Delver is an engineer and coordinator of a Rotterdam-based project entitled "Burglary-Free Neighborhood" that aims at developing autonomous systems built into street lamps to reinforce public security. Attila Bátorfy is a journalist and data visualization expert who teaches journalism, media studies, and information graphics at the Media Department of Eötvös Loránd University. Peter Smith (pseudonym) is a senior security expert working for a European organisation employing border technologies. Finally, Ádám Remport is a Hungarian legal expert and activist working specifically on state actor use of biometric technologies. Being a rather small group of people, these interviewees do not serve as "illustrative representatives" (Mol and Law 16-17) of the fields in which they work. However, as each of them has different cultural and institutional affiliations and holds a different position with respect to working with security vision technology, they cover a broad spectrum of engagement with our research object.

We began the interviews with a very basic question: "When we speak of security vision we speak of the use of computer vision in a security context. Can you explain from your perspective what these concepts mean and how they come together?" We then asked our interviewees to draw a diagram or mind map of the entities, institutions, and processes they mentioned throughout the conversation, as well as the connections between them. As the questions are asked on the spot, the con-figurations that appear can by no means be taken as exhaustive, but instead are closely tied into the conversation that brings them about.

We did not want to confine the interviewees to a particular visual register or drawing style, and nor did we want to overwhelm them with a plethora of options. Therefore, we decided on an empty drawing canvas. While we initially experimented with filming the drawing of the diagram by placing a camera above a sheet of A3 paper, we soon decided to record the drawing digitally. With a rasterised video, there would have been no (direct) way to recover individual shapes and segments in a time-based manner. Therefore, instead of using a relatively simple screen recording, we decided to develop our own software to interface the conversations.[5] We wanted a vector-animation of our conversation so that at a later stage, we would be able to extract these strokes from the diagram, independently of whether they were drawn on top of one another.

In our trials, we used a standard set of four markers: black, red, blue, and green. For our digital interface, we decided to use the same set of colours. We purchased a pen display which, with its 24 inch diagonal, is comparable in size to an A3 paper. Mimicking the pen-and-paper set-up, we decided not to implement an undo function; instead, interviewees would have to cross out any unwanted elements of their drawing. A major difference between a sheet of paper and the digital drawing board, however, is that the latter can be dragged around, creating an infinite canvas. The diagrams that emerged through these interviews are a combination of the recorded audio with the recorded drawings, both in a time-based format.

Diagrams, O'Sullivan proposes, allow for a composite practice in which drawings from "different milieus" or frameworks can be juxtaposed as well as superimposed on one another. Such composites might help to work out possible relations and divergences among the various diagrams we collected through our interviews. Such composites could appear as collages or as time-based video edits. In this first methodological experiment, we decided to juxtapose excerpts of the diagrams using annotations as a way to have them work together.[6] We therefore

created an interface through which the various diagrams could be explored, taken apart, and reassembled as new wholes (see Figure 1). This happens in two steps. First, we annotate the diagrams based on the conversation, the drawing, or a combination of the two. This is a rather common method for working with interviews; yet, as we work with vector animations, it allows us to extract and collect not only spoken text, but also to create excerpts of the drawings. Second, these annotations provide an entry point into the conversations; they become a way to order and see them side by side (Figure 2).

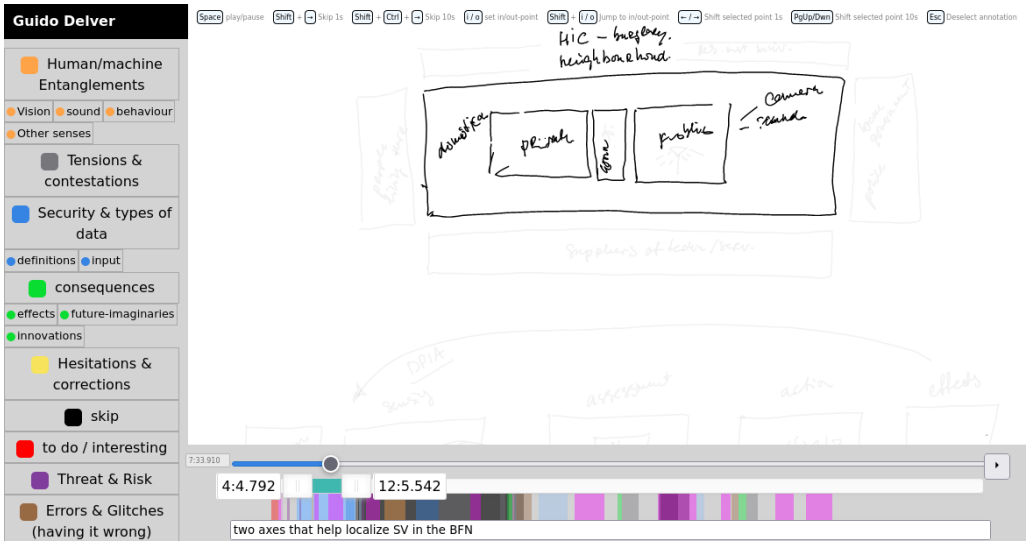
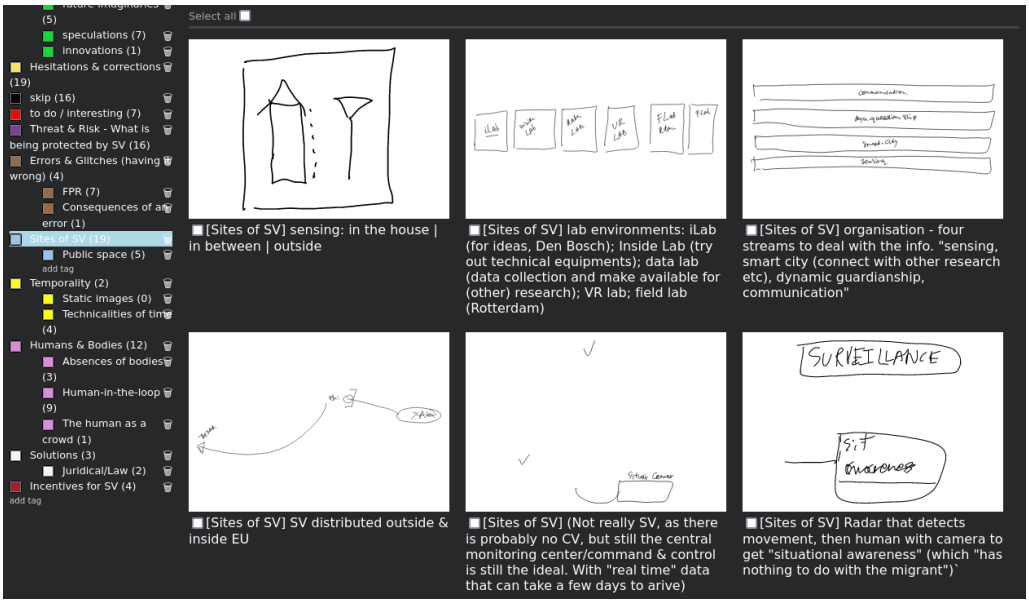


Figure 1: Screenshot of the browser-based annotation tool. In the centre is the diagram, of which the segment between the in and out points is drawn in black. The left-hand side features a list of available tags (partially visible here).

Figure 2: By annotating the diagrams, we can juxtapose excerpts based on the tags.



With the diagramming method and tools presented here, we aim to explore the relations drawn and the entities demarcated as a way to examine how "security vision" joins them together. Diagrams as a form of mapping are exploratory devices. However, contrary to maps that serve as tools for (re)presentation, the diagrams create spatial con-figurations that do not abide by a consistent projection. In the sections that follow, we will outline how the materialization and spatialisation of the conversation that the diagrams facilitate helps us to examine the con-figurations they bring about. Subsequently, we will examine how the temporal aspect of these diagrams leaves room for uncertainties, helping us to describe how unstable boundaries solidify.

Traces of the diagrams

Before we started the interviews, we held certain expectations about what the diagrams might look like and how they would draw out various security vision configurations. The *Critical Atlas of Internet* (Druhle), was just one of the diagramming projects that informed our expectations. Kate Crawford and Vladan Joler's *Anatomy of AI* and Matteo Pasquinelli and Vladan Joler's "spurious and baroque" *Nooscope* diagram also served as visual referents when we started to develop our method. What all these diagrams have in common is that each drawing gives shape to their specific objects of research in a coherent structure. In these maps, all represented institutions, techniques, and technologies are directly or indirectly connected through the relations drawn. Therefore, we also expected that every conversation would yield a diagram that would abide by a single structure — albeit more modest in scale and more explicitly positioned than the examples mentioned. We thought that our interviewees would end up drawing circles, connected with lines and occasionally using keywords. However, as we encouraged each interviewee to use any visual expression they felt most comfortable with, the conversations yielded rather different drawings. The resulting diagrams show a rich variety, reflecting not only the divergent ideas of what it means to draw a diagram, but also what the different practitioners had in mind regarding visual representations more generally.

This rich variety of the diagrams forced us to reconsider the conventions by which we interpreted the drawings. While the drawings often contain words, they do break with the common spatial logics of both written text and graphic design. They neither systematically flow from the top left of a canvas to the bottom right (see Figure 3, Top), nor do they present their information in a visually hierarchical way. Some of the drawings contain graphs (see also Figure 4), yet they do not abide by mathematical rules. Some drawings contain arrows or lines, indicating *some* kind of flow or hierarchy, but these signs seldom denote clearly defined relations (Figure 3, Bottom Right). On still other occasions, relations were depicted with illustrations (Figure 3, Bottom Left). The diagrams were not clear-cut flowcharts depicting how the technology works or what it comprises.

In making sense of these diagrams, we therefore turn to the notion of con-figuration. As Suchman explains, "figuration alerts us to the need to recover the domains of practice and significance that are presupposed by and built into particular technological artefacts, as well as the ways in which artefact boundaries are naturalized as antecedent rather than ongoing consequences of specific socio-technical encounters" ("Configuration" 50). The diagrams through their spatial enactments allow for security vision to emerge entangled with complex and multiple practices without naturalizing any of its terms or

socio-technical arrangements. The strokes in the drawing create a material image that allows analysis of the entities it joins together, while resisting any attempt to be synthesised into one single coherent narrative.

When looking across the diagrams we collected, we can identify two characteristics of con-figurations that emerge in their visual rendering: order and multiplicity.

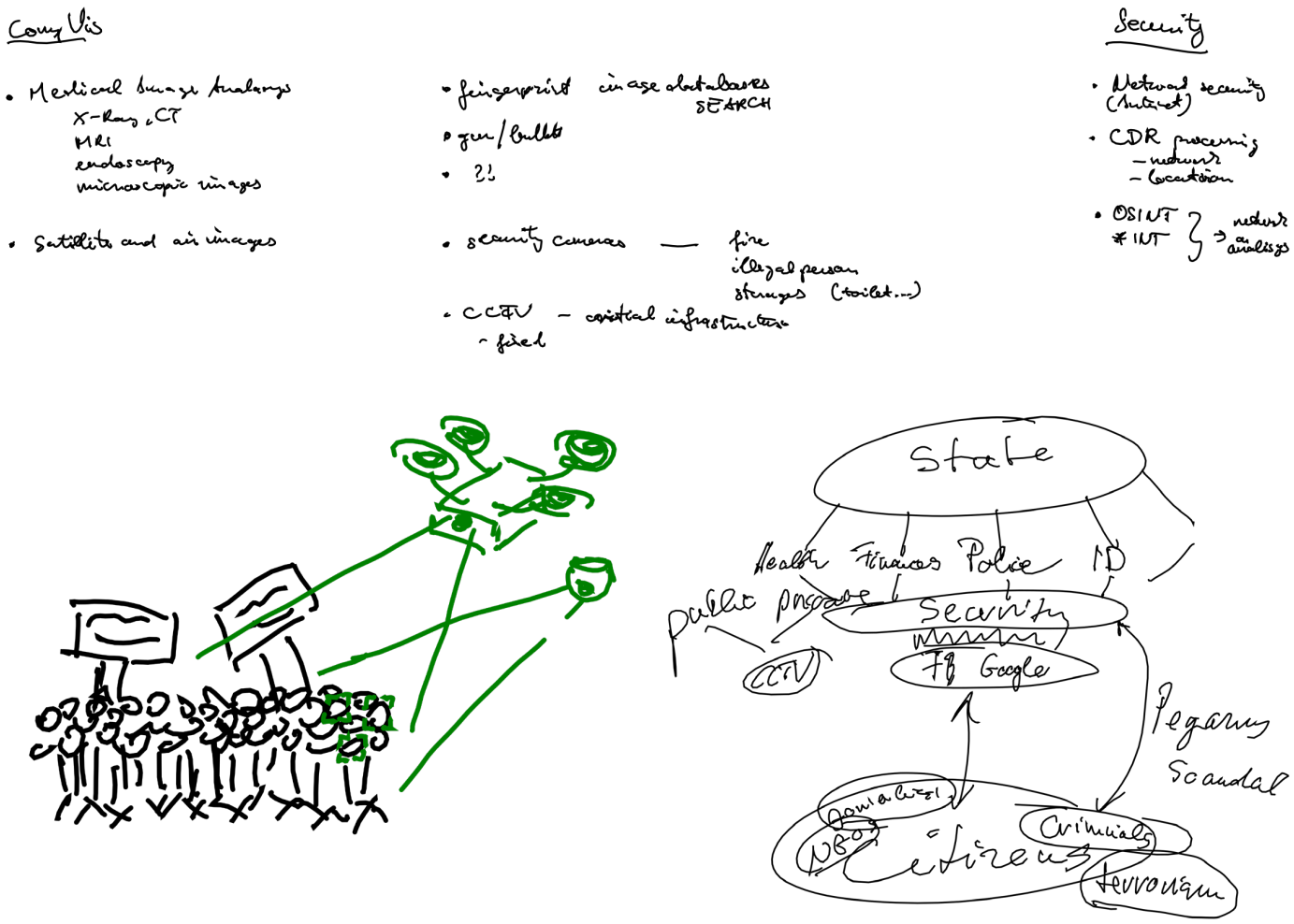


Figure 3: Three excerpts from the Diagrams by András Lukács, Ádám Remport, and Attila Bátorfy that showcase drawings using very different visual languages. Top: In this excerpt, we only see bullet points with written words. Bottom Left: An illustration of a protest monitored by cameras drawn as a crowd and technological devices. Bottom Right: A drawing of relations between various institutions involved in security in Hungary.

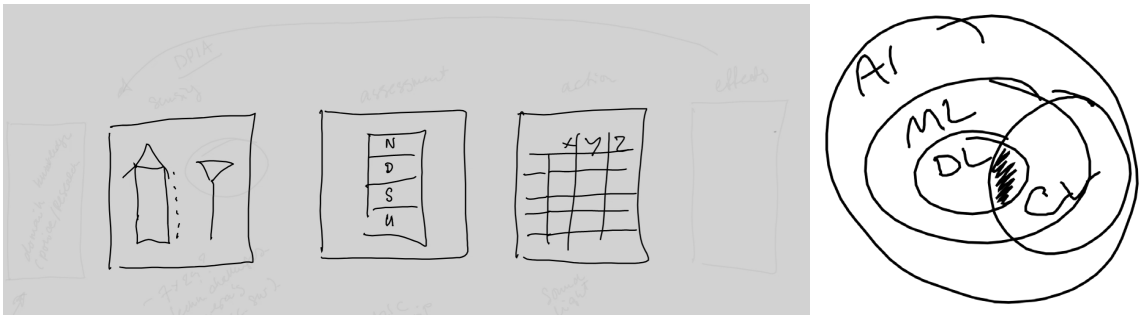


Figure 4: The processes of an event system of a security vision project, laid out by Guido Delver (see also https://www.securityvision.io/diagrams/videos/delver1.mp4) and a Venn diagram that Gerwin van der Lugt uses to position his practice in relation to other technological fields (see also https://www.securityvision.io/diagrams/videos/vdlugt1.mp4).

Spaces that order relations

First, the diagrams use space to order concepts and relations. For example, in one of the interviews, when Guido Delver discussed the "stakeholders" of the project he managed, he did not list them, but placed them instead on two axes: municipality/police ↔ residents and industry/suppliers ↔ research/universities. All these parties "gathered around" the public space in which computer vision was deployed. During another interview, András Lukács used bullet points with written concepts, but instead of placing these vertically, he placed these elements between two extremes: "security" and "computer vision". In this drawing, security vision emerges in the centre of the image, where the two extremes overlap (Figure 3, Top). On another occasion, Gerwin van der Lugt more explicitly drew a Venn diagram to locate his expertise on computer vision in a particular subset of the field (Figure 4).

In the space that emerges, the placement of various concepts helps to indicate what differentiates and what unites the object of research. Through these spatialisations, we learn that the relations between the entities mentioned in the interviews cannot be reduced to either connection (as would be signalled by a line in a network visualisation) or containment (as in a Venn diagram). They are much more complex. Sometimes connections are assumed but left implicit, while at other times they are signalled only by bringing two entities into physical proximity but never spelling the connections out. Connections are made explicit only when they figure in a specific story line.

Multiple configurations

The second way in which space matters in the diagrams is to allow for multiplicity *within* the drawings. Most drawings, while forming a whole within the context of the conversation, can also be seen as being composed of many distinct drawings that are the results of loosely connected topics discussed by the interviewees. These distinct drawings appear side by side, sometimes even curving around one another, ever shifting in scale. Scribbling asides in the corner, the interviewees often tried to squeeze as much as possible within the boundaries of the 24 inch canvas. The equations in Figure 4, for example, were so squeezed in that they had to be explicitly demarcated from the rest of the drawing by a line. Even though the interface allows for infinite dragging and is theoretically unbound, the thick black borders of the pen display did

in fact matter in shaping the drawing, as the drawings try to take up the space that is left available to them. The absence of a uniform projection liberates these multiple drawings-within-a-drawing from a mutual visual hierarchy. While this might make the reading of the diagrams difficult, it allows the diagrams to bring together concepts and visual language from across various incompatible registers. They appear not as coherent narratives, but as collections of figures, thoughts and associations, summarising and synthesising larger ideas that hang together by virtue of their mutual appearance in the diagram.

By allowing for both order and multiplicity, the diagrams con-figure incompatible concepts and narratives. Moreover, the spatialisation of the conversation cannot be seen as distinct from the diagram's temporal dimension. During the interviews, the drawings often became a visual referent that facilitated further elaboration and explanation. In these moments, the strokes on the canvas provided landmarks for the conversation. This becomes apparent within the conversation as the interviewees turn to the drawing to point out what they are speaking about or to pick up the conversation from a particular point. The drawings also served as visual references in the phase of their analysis. After we had conducted the interviews, we printed out the drawings on A3 paper and hung them on our office walls. While we thus temporarily flattened the diagrams, removing their temporal dimension, it was by looking at the printouts that we could retrace the conversation and recall the topic being discussed with each specific shape. The diagrams again spatialised the conversations, this time those we were having among ourselves in the office.

In the next section, we will elaborate how the diagrams, through both their temporal unfolding as well as their mutually coming together, foreground the ways in which security vision con-figures uncertainties and hesitation.

Contingent diagrams

By recording the interview as unfolding in time, the diagrams gain a temporal dimension. This allows us to see what happens before or after a stroke. When playing back the recordings, it quickly becomes clear that the drawing as a device shapes the diagrams. It pushes itself forward in the sudden line breaks when the pen is not properly touching the surface of the display; in the confusion of how to "move around" the canvas; in our requests to use different colours; in the moments when a slight hiccup in the Internet connection causes the interface to require a "refresh". Such moments punctuate the conversations. However, when we look at the temporal unfolding of the diagrams, another kind of interruption also becomes visible.

During the conversations, our interlocutors frequently voiced doubts and uncertainties before putting the pen to the canvas. The uncertainties expressed were, for instance, about the terminology, the parties involved in a project, or relationships that "might be possible", but whose actual status is unclear to the interviewee. Sometimes such doubts lead to crossed-out text, different line styling, or clear question marks. For instance, Ádám Remport wanted to depict a database of facial image data (Figure 5). He began by drawing a collection of facial photos, at one point realising that "this is not what a facial database looks like." He crosses out the drawing and draws another representation in which the face is "coded" instead of pictorial. The drawing and subsequent redefinition draws attention to the dominance of particular images and imaginaries of technology over others. An expert intuitively defaults to such

imageries, but then feels the need to explicitly distance themselves from them. Another such moment can be found in the diagram of Gerwin van der Lugt. When he discusses the equations for true and false positive rates (TPR/FPR), he corrects his definition in the drawing while stressing the importance of being precise about these terms (Figure 6). In these cases, the very act of drawing triggers hesitation and redefinition.

However, after the pen touches the canvas, the only remaining trace of hesitation is often the brief increase in the interval between strokes. The drawing solidifies the entities mentioned, even if the doubt is verbally expressed. The canvas as a medium forces the speaker-drawer to make a decision as to how to represent the uncertainty. Deliberate or not, a moment of prioritization takes place. While the interviewees give air to many of their considerations, only seldom do they choose to "give ink" to them too. It is for precisely this reason that we do not disconnect the visual from the auditory or the drawing from speech. While each track can be informative on its own, it is in the resonances and dissonances between the two (the drawing and the sound) that the diagrams allow the fuzzy nature of that which is figured to step forward. As Johanna Drucker argues, by allowing for such complexities, we can work with notions that are co-dependent and contingent without reducing or purifying them (see also Law and Mol). The act of doubting, ever present in the diagrams, blurs the boundaries of the concepts mobilised, alerting us to complexities that otherwise would be "cleaned" out.

This becomes even more apparent in the process of annotation. Through the need to provide an in point and an out point for each annotation, the conversation pushes back. When does one cut the continuous flow of a conversation in which what is being said is always in relation to what comes before

Figure 5: A database for facial recognition does not contain photos. Excerpt from the diagram by Ádám Remport (see also https://securityvision.io/diagrams/videos/ramport1.mp4).

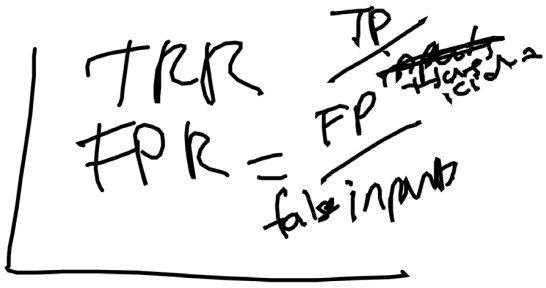


Figure 6: When writing down the equations for false and true positive rates, Gerwin van der Lugt realises the need to be precise about these terms (see also https://www.securityvision.io/diagrams/videos/vdlugt2.mp4)

and after it? Nevertheless, annotating the diagrams helps make sense of what and how security vision is con-figured by looking not only at a single conversation, but also across the various diagrams. The annotations allow us to cut up the diagrams and reassemble them into new collections. When juxtaposing these dismembered parts, we see variations appearing across the interviews.

In juxtaposing these excerpts, the diagrams remind us that they do not present absolute truths. Instead, they provide a glimpse into how our interlocutors understand and work with security vision. As such, any description counts. While one of them (a software developer) lists particular local "security integrators" as key partners in the deployment of their technology, another interviewee (an activist) considers the technology provided

to governmental organisations by big tech companies such as Google and Facebook to be a threat. As configurations join together imaginaries and materialities, we need to take uncertainties and speculation seriously. Speculations abound as to which companies are involved, which technologies are used, or which futures this entails. Collaborations and conjectures, specificities and grand narratives appear side by side. Different entities configure security vision through different relations.

It is by caring for instead of rejecting these contradictions and convergences that we can get a sense of the politics of security vision that materialises between the various fields and professional practices and between the diagrams.

Conclusion

> *Although a single simplification* reduces *complexity, at the places where different simplifications meet, complexity is created, emerging where various modes of ordering (styles, logics) come together and add up comfortably or in tension, or both. (Mol and Law 11)*

In this article, we discuss our use of diagramming as an alternative means to map the field of security vision. In an effort to account for the situated nature of the mapping exercise, we did not define security vision beforehand, but instead delegated this task to various professionals working with computer vision technologies in the security field. The resulting diagrams thereby situate our object of research in various practices such as those of software developers, engineers, program coordinators, activists, etc. The diagrams — specifically, the discrepancies and incongruities within and between them — demonstrate that we can effectively explore the con-figuration of entities and the relations among them without necessarily flattening or cleaning them, such as would happen in a straightforward visual projection.

Although we should be careful not to fetishize the affective quality of a hand-drawn diagram as opposed to that of a computer-generated map, their "sketchy" nature suggests their status as a conceptual aid. The diagramming therefore becomes "a strategy of experimentation that scrambles narrative, figuration — the givens — and allows something else, at last, to step forward. This is the production of the unknown from within the known, the unseen from within the seen" (O'Sullivan 17). Like maps, diagrams can serve as exploratory devices. Instead of adhering to a consistent projection of in point to out point, they rely on "speculative geometries" and "self-organizing forms" (Soon and Cox 221). Similarly, the diagrams we collected do not curate a clearly structured set of devices, institutions, or people. Rather, it is by collecting and combining a variety of diagrams about security vision that our object of research emerges as an ontological multiple. Inspired by diagramming projects such as *Anatomy of AI* or *Nooscope*, which address the politics of artificial intelligence through single visual objects, we experimented with a disjointed kind of diagram. While seemingly similar in nature, the goal of time-based diagramming is different from these meticulously designed structures. Rather than a device for presentation, the method rather helps us to analyse the structuring networks of associations.

Their loose visual language allows the diagrams to con-figure complex, sometimes even incompatible concepts and narratives in a shared visual space. In their unfolding over time, the diagrams forefront how such con-figurations are not stable structures, but

rely on hesitation and contingencies. Their use of space on the canvas is no longer consistent. As the drawing unfolds, one can see the space grow and shrink, transforming from a two-dimensional plane into a three-dimensional space, or even being suspended altogether. This fluid topology opens up intriguing avenues for exploring computer vision technologies in the field of security and locating their politics in unexpected entities and relations.

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Notes

[1] For instance, when using Multiple Correspondence Analysis (Le Roux and Rouanet).

[2] Note that this paper is a methodological exploration. An analysis of "security vision" through the lens of diagramming will take place in another article. For an elaborate discussion of the exploratory phase, see Plájás, Ragazzi and van de Ven.

[3] In a famous example, Bruno Latour describes how it is neither a gun nor a human individual that shoots (and, in effect, potentially kills), but instead the act of shooting is mutually constituted by both human and non-human actants: "You are different with a gun in your hand; the gun is different with you holding it" (Latour 179).

[4] The Netherlands, Hungary, and Poland.

[5] The code for the interface is available at https://git.rubenvandeven.com/security_vision/svganim.

[6] Other ways of working with the diagrams could prove interesting as well. For instance, we have considered overlaying handwritten annotations on top of the diagrams. Another possibility would have been borrowing techniques from qualitative interviewing: we can visit the interviewees several times, each time refining the drawings, or discussing the diagrams of other interviewees to elicit additional reflections on, or reconfigurations of, their initial input.

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