

Waiting For Homeland Security Theory

Christopher Bellavita

Nothing is harder, yet nothing is more necessary, than to speak of certain things whose existence is neither demonstrable nor probable. The very fact that serious and conscientious men treat them as existing things brings them a step closer to existence and to the possibility of being born.

– Herman Hesse, attributed to "Albertus Secundus"¹

ACT 1

A country road.

A wooden table.

A small whiteboard.

Gloaming.

SCENE 1 - THERE IS NOTHING TO BE DONE

The initial stage, the act of conceiving or inventing a theory, seems to me neither to call for logical analysis nor to be susceptible of it.

– Karl Popper

CHARLES: Everyone should be their own homeland security theorist.²

GAILE: Why in heaven's name would you wish that?

BARCLAY: It would be pure chaos.

JACQUES: We already have chaos. At least intellectual chaos. Homeland security has no theoretical center of gravity, no overall strategy for developing its theoretical foundations.

GAILE: (*agreeing*) It's a mishmash of loosely connected ideas, missions, and activities.

JACQUES: Observing intellectual activity in homeland security is like watching young children playing soccer, running in packs to follow the ball. We can do better.

BARCLAY: (*abstractly*) I recall reading something that called homeland security an anemic policy enterprise.³ So many people try to do so many things under the same umbrella. There is no central purpose to homeland security. One person called it an inconsistent hash.⁴

CHARLES: (*reflectively*) Why do we even care whether this activity we credulously call homeland security has its own theoretical framework? What would theory do for us as academics or for our students or practitioners?

JACQUES: (*earnestly*) I've been in this field since 9/11, and I believe we've just begun to build a discipline. I don't want to have wasted the past decade on something that just dissolves. And it will, if we don't bring conceptual precision to our work. If homeland security is ever to be academically respectable, it has to offer more than rhetoric and anecdotes. As thinkers who care about this field and who are invested in it, we have a responsibility to provide rigorous conceptual foundations for what we teach.

BARCLAY: (*approvingly*) Yes. Before we can develop a homeland security research agenda, we need to ground the knowledge we create. Theory – whether derived deductively or inductively – can help us do that.

CHARLES: I do not disagree with what you are saying.

GAILE: (*annoyed*) Does that mean you agree with us? Because if you do, the idea of encouraging everyone to be their own theorist is silly. It's like letting anyone be a dentist.

CHARLES: (*sharply*) Allow me some credit, please. I've thought at length about this; my thesis is not meant merely to be provocative. And your dentist analogy is fallacious. Homeland security is many things, but nothing having to do with teeth.

GAILE: (*gruffly*) You know what I mean. What you propose....

CHARLES: (*insistently*) No. I do not know what you mean, and that's a central part of the difficulty trying to develop homeland security theory. I did not come to my position casually. A few years ago I started thinking about this, wondering how to bring conceptual order to the homeland security mess. And I'm not talking about what practitioners do day to day, although that may also be messy. I'm talking about what we do – in the classrooms and in our research – when we talk and write about homeland security. I thought we needed to start with theory, and I worked to create one.

BARCLAY: (*crisply*) One? *One* theory of homeland security?

CHARLES: Yes, I thought I'd start with grand theory.⁵ I wanted something that organized all homeland security ideas. I wanted an overarching perspective I could use to structure the way I teach homeland security.

BARCLAY: How did that go?

CHARLES: (*flatly*) Not very well.

GAILE: I'm not a fan of grand theories. I question a need for unique homeland security theories, whether they are grand theories, mid range or micro theories.⁶ We can bring order to our inquiry of homeland security problems,⁷ by using the theoretical frameworks provided by the professions that make up homeland security – law enforcement, emergency management, the military, public health, and so on.⁸

BARCLAY: (*musingly*) I'm not convinced we can do without unique homeland security theories. However, I prefer mid-range theories myself. I believe those could be created around the constituent elements of homeland security – like border security, transportation, intelligence, preparedness, or critical infrastructure. I believe if we understand the major pieces of homeland security correctly, the entire theory-building endeavor will take care of itself. The whole will become apparent by aggregating the parts.

CHARLES: I have to disagree. I think you are confusing....

GAILE: (*interrupting*) I will side with at least the spirit of Professor Barclay's remarks here. Homeland security is much too big an activity to presume any of us know enough to create a universal theory. We might end up with unique mid-range theories or we may use existing theoretical perspectives, but we bring rigor to our scholarship by focusing on the conceptual building blocks of the discipline.

JACQUES: (*slowly*) I'm not suggesting any of us are smart enough to theorize about all of homeland security, but I think we should try. Or at least that's what I've been doing. We can always fall back on mid-range theories if our grand design project does not work out. But we should at least try.

CHARLES: I disagree with the three of you. My experience and thinking lead me to conclude we cannot have a grand theory of homeland security or, for that matter, mid-range theories that will

do anyone much good. Perhaps there will be a publication or two from the effort, but I don't think it's going to make much difference to the field.

BARCLAY: But you said you started out wanting a grand theory.

CHARLES: (*quietly*) An unexpected event happened on my way there.

BARCLAY: What?

CHARLES: I got lost in semantics.

[Charles brushes dust from the table.]

SCENE 2 – SHREDS AND PATCHES

Here is the world, sound as a nut, perfect, not the smallest piece of chaos left, never a stitch nor an end, not a mark of haste, or botching, or second thought; but the theory of the world is a thing of shreds and patches.

– Ralph Waldo Emerson

CHARLES: The more I researched, the more I realized I did not understand very well what theory means. It means lots of things. So if I wanted a grand theory of homeland security, what exactly would that look like?

GAILE: (*dismissively*) I'm not an advocate of semantic inquiry.

CHARLES: You're saying you don't care what words mean?

GAILE: I'm saying if we went around trying to define everything precisely, we'd never get anything done.

JACQUES: (*helpfully*) That's why people in our world value quantification. There is not a lot of discussion about the meaning of a number.

CHARLES: (*acerbically*) Right. Like statistics? Let's talk a few moments about heteroscedasticity or Markov's inequality.

BARCLAY: We're wandering from the point here. Professor Gaile is correct. Part of our obligation as scholars is to decide to use a word – like theory – in a particular way. As long as we specify our assumptions and identify the decisions we made to operationalize the language we use, we're okay. It is what scientists do.

CHARLES: (*intransigently*) If you apply that logic to the meaning of theory, you can find authors agreeing to use the word to signify almost anything – from individual hunch to a system of ideas that purport to explain or predict some phenomenon.⁹ I don't find such a broad range of meaning helpful.

GAILE: (*harshly*) I don't mean to belittle your cognitive angst, but the meaning of theory is very clear to me. I acknowledge there are many ways to interpret what the word could mean, but for most people a theory is a collection of ideas that are integrated in a cohesive way. Some theories *describe* a phenomenon, like homeland security. Some theories seek to *explain* something. There are, of course, *predictive* theories – one might call that the gold standard of theory.¹⁰

JACQUES: (*benignly*) It certainly is the goal of the physical sciences, the hard sciences, if you will. The true test of a theory's validity is its ability to predict.¹¹

CHARLES: I cannot agree with that, for several reasons. First, much of what happens within homeland security has more to do with the social than the physical sciences. Second....

GAILE: Let me finish, please. In addition to descriptive, explanatory and predictive, there also are *normative* theories, collections of ideas that say what ought to be done.

[Silence; each person thinking about what ought to happen next.]

BARCLAY: (*warmly*) Quiz time: Give me a homeland security example of each kind of theory.

GAILE: I'll start. I maintain TSA's twenty layers of security, or whatever the number is, is an example of descriptive theory.¹² It identifies the steps taken to ensure the safety of aircraft and passengers. In this example, descriptive theory says *what* something is.¹³

JACQUES: (*cheerfully*) Fathali Moghaddam created a six-element theory he believes explains the social and psychological processes that lead someone to commit terrorist acts.¹⁴ This theory provides information about *why* something happens, for what reasons.¹⁵

CHARLES: You could make the argument Moghaddam's model describes *how* – that is, the mechanisms – not *why* – people get radicalized. I think it's easier to disrupt radicalization *mechanisms* than to disrupt motives.

GAILE: (*continuing the quiz*) You could use almost any homeland security policy to illustrate a predictive theory.

BARCLAY: (*uncertain*) I don't follow your argument.

GAILE: One can look at public policy as a prediction based on an articulated logic, or at least one hopes as much. Practically all policies take an "if...then" form: if you do what it says to do in a policy, then you will achieve its desired outcomes. For instance, the 2007 HSPD 21 on public health and medical preparedness includes a policy statement that says planning for catastrophic health needs will improve information flow and response during an event.¹⁶

BARCLAY: You are interpreting "prediction" too loosely for me in that example. Do you have another, perhaps more traditional example of a predictive theory?

GAILE: Certainly. Take Wilson and Kelling's broken window theory from criminology: preventing small problems, like urban vandalism, helps a community prevent more serious crime.¹⁷ You can see it follows the same "if...then" pattern. Predictive theory describes *how* something happens, the cause-effect linkages.

BARCLAY: (*persistently*) What about a homeland security example of predictive theory?

GAILE: This is the point I made earlier; reducing crime – like gang violence – is a homeland security issue. We don't need any special homeland security theory for that. We have perfectly respectable theories we can employ.

JACQUES: (*agreeably*) I believe NIMS is an example of a predictive theory in homeland security.¹⁸ *If* public safety practitioners plan and behave as described in NIMS doctrine, *then* response to an event will be efficient and effective, or at least more so than it would be without the structure and procedures NIMS provides.

GAILE: Perhaps, but I'm not sure how you would test that. I think you could make a stronger case that NIMS is a normative theory. The federal government told states and cities they *should* adopt NIMS. Or they don't get grant money.

JACQUES: Maybe NIMS – as theory – is descriptive, explanatory, predictive, and normative.

CHARLES: (*contentedly*) Thank you for demonstrating the point I've been trying to make: once you start thinking about the meaning of "theory" and the language surrounding it, the more Augean becomes our academic task.

[All nod thoughtfully, pretending to understand what Augean means]

SCENE 3 - TELLING THE TRUTH ABOUT REALITY

A theory must be tempered with reality.
- Jawaharlal Nehru

GAILE: Our disquisition reminds me what E. F. Schumacher's said about theory: "It's amazing how much theory we can do without when work actually begins."¹⁹ I spent twenty years as a public safety practitioner. I was very good at what I did, and I don't recall one time when explicitly using theory made me more effective.

CHARLES: (*circumspectly*) Without belittling your faith in pragmatism, Gaile, doing what is practical is only one kind of truth.

GAILE: I realize that.

CHARLES: Searching for truth is a big part of our job. I'm probably going to end up being pragmatic: I believe encouraging everyone to be their own theorist is the ultimate pragmatism. But before I surrender to your conventional practitioner truth, I think we owe it to the academic part of homeland security to search for a different kind of truth.

BARCLAY: What do you have in mind?

JACQUES: (*helpfully*) We could start with objective truth, those things that cannot be wished away. That may be my all-time favorite definition of truth.

CHARLES: I remember something like that being presented as the definition of reality, not truth.²⁰

JACQUES: (*vexed*) Reality is the ultimate truth, my friend.

CHARLES: Good bumper sticker, Jacques. But I do not think it is helpful in this discussion. I think objective truth refers to language that corresponds to what is being described – the facts, the material reality.²¹ What is homeland security's reality? What is the ontological nature of this phenomenon we propose to theorize about?

GAILE: (*wearily*) I do not think I can tolerate one more "What is homeland security" academic circle jerk.²²

BARCLAY: "Ontology?" How are you using that word?

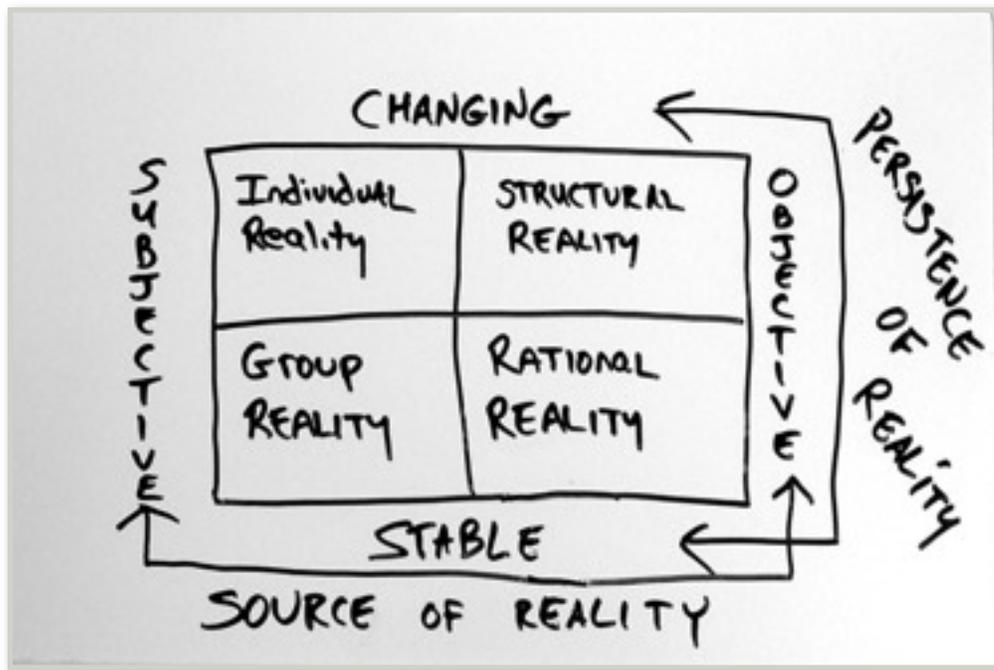
CHARLES: (*hesitantly*) I'm probably using it incorrectly, at least to a philosopher. But I mean ontology to refer to the essential nature, the being, of the phenomenon under examination. When we use the term homeland security, what – literally – does it refer to? Are we talking about organizations, activities, behaviors, missions, strategies, all of the above, something different? What is this thing we are discussing, as if we understand its ontological nature?

GAILE: (*smiling*) Ah, the last refuge of the academic: define your terms.

CHARLES: You can joke if you'd like, but it's more than a mindless academic exercise. As I reflect on the history of homeland security it is clear to me the term came first. The definition followed. And the definition keeps changing because the ontological reality supporting homeland security is much more subjective than it is objective. The distinction between those two realities is frequently ignored, to our detriment.

JACQUES: We don't all ignore it. In my classes I use something called the Ontological Box to talk about homeland security reality.²³

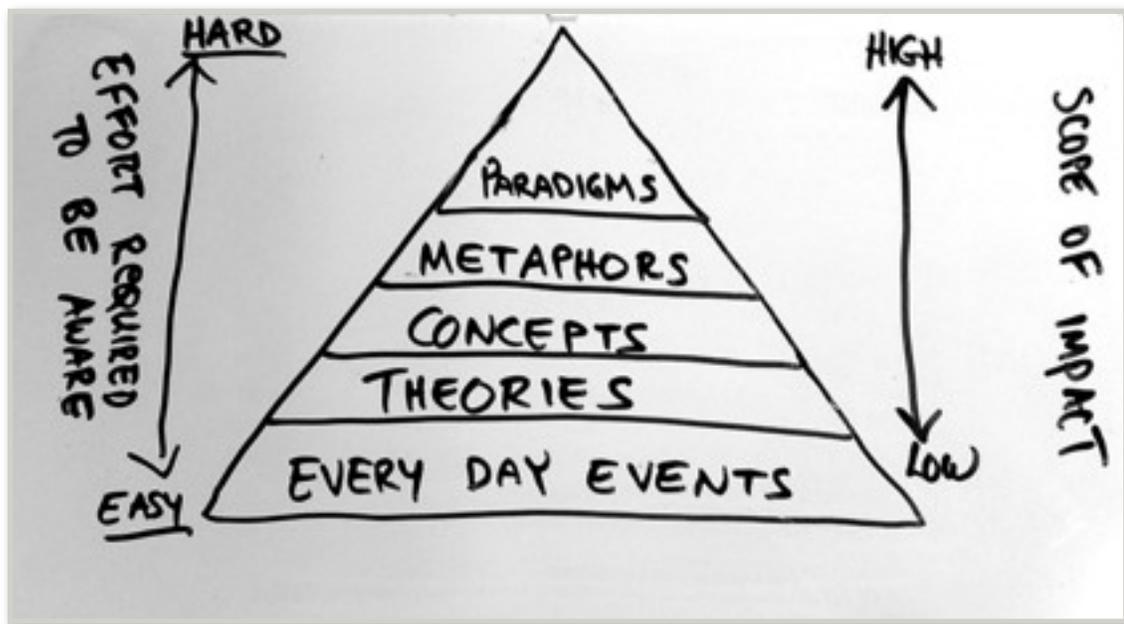
[Jacques takes a marking pen and draws on the pitted whiteboard.]



JACQUES: (*exuberantly*) I present the *source* of homeland security reality as one dimension, ranging from objective to subjective. I describe the *persistence* of that reality as a second dimension, ranging from very stable to continuously changing. For my analytical convenience, I can then define homeland security as four ideal types:²⁴ a rational reality,²⁵ a structural reality,²⁶ a group reality,²⁷...

BARCLAY: (*supportively*) Coherence truth?²⁸

JACQUES: Yes, I think groups cohere around a shared understanding of what reality is. [*Returns to his chart.*] And finally, homeland security as an individual's reality.²⁹ This ontological framework has sparked energetic discussion. At least in the classroom. I do something similar in class with the epistemology of homeland security – what counts as data, and methods of inquiring into homeland security.³⁰ Let me draw it.



GAILE: (*interrupting impatiently*) I get all that, but I think you're making this "what is homeland security" business way more difficult than it needs to be. I will accept there may be numerous fringe definitions of homeland security, but I think most people in the community use it to mean activities intended to prevent bad things from happening – whenever that's possible, and when something disastrous does happen, to work on response and recovery. It's not that hard to understand what homeland security means.

CHARLES: (*exactly*) You said "most people in the community" use homeland security the way you just described. I think that is key. I've looked at this "community" you allude to and it turns out there are at least half a dozen different communities.

BARCLAY: What kind of communities?

CHARLES: Language communities. I subscribe to the view that you understand the meaning of a word by observing how it is used.³¹ I've encountered more than half a dozen language communities that use the term homeland security in a distinct way.³²

JACQUES: (*gently*) Professor Gaile's definition captures the sense of the official one, the one from the Department of Homeland Security and from the *Quadrennial Homeland Security Review* report.³³

CHARLES: I don't know what you mean by "official." [*Charles pauses*] Let me say that a different way. I don't believe the way government uses the word has any privileged status.

GAILE: (*perplexed*) Goodness. It's got to count for something. There wouldn't be any homeland security if there were no Department of Homeland Security.

BARCLAY: I think states and cities, especially those who have experienced terrorist attacks and disasters, might disagree.

GAILE: (*yielding*) Yes, yes, of course. But you know what I mean.

CHARLES: Again, this is exactly what we are talking about. If we want to develop a theory of homeland security we have to be clear what we mean by theory and what we mean by homeland security. If we can't be precise about that, we at least have to describe the range of understanding available to us.

[Jaques wipes clean the whiteboard.]

BARCLAY: (*amenably*) OK, let's try to do that. To summarize your position, Professor Charles, as I understand it, theory can mean anything from a vague hunch to a well-specified and systematic collection of demonstrable principles and hypotheses.

CHARLES: Yes.

BARCLAY: And homeland security can mean almost anything from preventing terrorism, to a concentration on all hazards, to... to what else?

CHARLES: To national security, to managing slow moving catastrophes, and to the fear that government uses homeland security to justify limiting civil liberties.

GAILE: (*exasperated*) Oh please....

CHARLES: You may not agree with it, but it is one of the language communities in homeland security.

GAILE: (*forcibly*) Let me summarize my position. To develop a theory of homeland security you first decide what theory means. You make a decision about what most reasonable people in your profession mean by theory and use that understanding. You include a footnote to explain you understand there are lots of definitions of theory, but you pick one credible and defensible definition of theory to move the process along.

JACQUES: I agree, provisionally. And you can do the same thing for deciding what homeland security means. Just make sure that it is credible and defensible.

GAILE: (*assenting*) I will concede there are competing definitions of homeland security. Even if some of them strain the absurd. However, if our theory-building project is to be productive, we need to simply decide what we mean by homeland security. So I am going with the definition that appears in the official documents.

CHARLES: Fortunately, we do not have to agree. I understand your position and I disagree with it.

BARCLAY: Why?

CHARLES: As I said, I think the position surrenders too quickly to pragmatism.

JACQUES: It's not *idealistic* enough for you?

CHARLES: If you are referring to Plato's image in Raphael's School of Athens....³⁴

JACQUES: I am.

CHARLES: I suppose I am being idealistic in that sense. But if academics can't seek as pure a truth as possible, who can?³⁵

Now, what I want is, Facts. Teach these boys and girls nothing but Facts. Facts alone are wanted in life. Plant nothing else. And root out everything else. You can only form the minds of reasoning animals upon Facts: nothing else will ever be of any service to them. This is the principle on which I bring up my own children, and this is the principle on which I bring up these children. Stick to Facts, sir! – Charles Dickens (Hard Times)

If facts conflict with a theory, either the theory must be changed or the facts. – Benedict Spinoza

ACT 2

A country road.

A wooden table.

A small whiteboard.

Night.

A partial moon.

SCENE 1 - SELLING THE TRUTH TO REALITY

I can't stand theory because it is imposed by the intellectual. And the intellectual is, by definition, not a creative person. The intellectual is a person who talks about the creative process, but often doesn't understand it.
– Mary Pratt

GAILE: (*defensively*) Not that my view needs defending, but don't forget our students in all of this. They come to our programs because they want to be practical women and men, involved in the daily world of politics, organizations, budgets, and getting real work done. They want to make a positive difference in society.

JACQUES: I agree completely. Some of us may have the luxury of being in a fully funded department. But the rest of us are in a market. People come to our programs because we increase their chances of getting a job once they graduate. We are not going to draw many customers by offering an exegesis about the ontology of homeland security. Students want the knowledge and skills they need to prevent terrorism and to respond to disasters.

BARCLAY: We are wandering again from our theory discussion.

GAILE: (*insistently*) No we're not. We have an obligation to our students and to our emerging profession to be practical. Yes, we need to demonstrate that we have a theoretical foundation for what we teach and research. We also need to show what we teach has practical consequences in the real world, that our ideas help make the nation more secure.

CHARLES: (*compliantly*) You and I are in complete agreement here, Gaile.

GAILE: I doubt that.

JACQUES: I second that doubt.

CHARLES: (*disappointedly*) Hear me out. I'm all for where you want to end up. I simply believe what I have to offer is a much more practical and theoretical perspective than you provide.

BARCLAY: "A practical theoretical perspective?" Aren't you being inconsistent and contradictory?

CHARLES: (*conciliatorily*) If that's what you're hearing, then the error rests in my inability to articulate my position clearly enough. I think you get to pragmatism – that is, to what works – through idealism.

GAILE: Then what do you mean by idealism?

CHARLES: Platonic ideal stuff; it's about the search for pure forms. That's why I'm approaching the theory discussion first from a philosophical position. I do think philosophy can be very practical.

GAILE: (*shrugging*) You are being pedantically reductionist. Like Descartes, you appear to want everything broken down to the level of what each syllable means.³⁶

CHARLES: (*softly*) I would rather say that a different way. I believe I'm being more holistic than reductionist.³⁷ I want to start theory building from the level of each individual who wants to participate in this process. I want each person to be treated as an end unto himself or herself, and I want to see what theories emerge from a community of people who think and behave that way.

[Charles looks around unsuccessfully for something to sit on.]

BARCLAY: I would like to return to your assertion: you get to the practical in homeland security through the ideal. What do you mean by that?

CHARLES: (*keenly*) Earlier in our conversation, Professor Gaile made claims about what theory means and what homeland security means. I will assume the assertions resulted from a thoughtful review of the literature on both topics.

GAILE: Yes, from the literature and from my practical experience. I've spent years thinking about these issues and I came to my conclusions deliberately.

CHARLES: You have the knowledge and skills that allow you to do that. We all do. At least all of us at this table.

JACQUES: So you want to turn everyone into PhDs?

CHARLES: (*pleased*) An intriguing idea. But there are few enough jobs as it is. I'm not sure we need to spawn many more of us. Replacement reproduction should be enough.

BARCLAY: Back to the topic please.

CHARLES: (*adamantly*) We don't need to create more PhDs. We do need to teach our students the skills they need to be their own theorists in a homeland security world imbued – for as long as any of us can see – with ambiguity and uncertainty. That's partially behind my desire to have anyone interested in homeland security be their own theorists.

BARCLAY: To be consistent here, how are you using theory?

CHARLES: (*intently*) It does not actually matter. I am willing to accept everything from hunch to inviolate law. The output from a particular theorist is not as important to me as the process used to develop a theory – whether derived inductively, deductively, dialectically, abductively, through detour, multiple realities, open systems – it does not matter to me.³⁸ The “let everyone be a theorist” approach works if people are willing to share their ideas – and to the degree they can, their reasons – openly. That is the process that does matter to me.

BARCLAY: (*querulously*) You're merely restating what scientists are supposed to do.

CHARLES: No. I'm trying to say theorizing about homeland security is too important to be restricted to the academic patriciate. The activity should be open to all.³⁹

SCENE 2 – NOTHING IS MORE PRACTICAL

Science is an essentially anarchic enterprise: theoretical anarchism is more humanitarian and more likely to encourage progress than its law-and-order alternatives.... The only principle that does not inhibit progress is: anything goes.
– Paul Feyerabend

JACQUES: (*haltingly*) You place a lot of faith in critical thinking.

CHARLES: Yes. It is my single vice.

GAILE: And by critical thinking you mean looking at the assumptions underpinning the ideas generated by your creative free-for-all?

CHARLES: (*impatiently*) Of course. Assumptions and assertions. Our maxim should be "What is your claim about homeland security and why should anyone believe you?"⁴⁰

BARCLAY: So you envision a world where everyone in homeland security walks around uttering theories?

CHARLES: That world is already here. Except maybe for the muttering part.

BARCLAY: (*prickly*) I said "uttering."

CHARLES: (*dismissively*) Whatever. Theorists are all around us. Show me a homeland security practitioner who's any good at their work, and I will show you a good theorist.

GAILE: (*examining*) What about practitioners who aren't very good? Bad theorists?

CHARLES: (*considering*) I would like to think more about that question, but you probably could say that. If someone is ineffective at their work, that person's theory about how to get something done is likely incorrect.

GAILE: (*absorbed in a memory*) There is nothing like failure to make you question your operating theories.

JACQUES: I have a basic problem with your "show me a good practitioner" argument.

CHARLES: In a moment, please. Let me add one more piece. This surprised me: In my experience, good practitioners are almost always unable to describe their effectiveness from a theoretical perspective. They are effective, but they cannot explain why.

BARCLAY: (*aridly*) As Chris Argyris demonstrated, when they do offer a description it frequently differs from what they actually do.⁴¹

CHARLES: True. Since our classroom task is fundamentally about teaching people *how* to learn, rather than *what* to learn...

JACQUES: (*surprised*) Pardon me?

CHARLES: ... teaching critical thinking is key to what we do. If you're a good critical thinker you should be able to construct your own theories about homeland security, and subject those claims to the same critical analysis used to create the claim. This is where other people enter the process. Presumably, if there were flaws in your theory you would have found them. Talking with others is a way to test your ideas, to check for errors, as it were. Done correctly, especially with people who disagree with you, what I suggest holds the potential to transform ideas.⁴²

[A pause for silence. No one wants to speak next.]

BARCLAY: Professor Jacques, you said you did not agree that good practitioners are good theorists?

JACQUES: (*restlessly*) Some practitioners may be good theorists, but I don't think that helps us much in constructing and teaching homeland security theories. The idea that everyone should be their own theorist might work if the everyone you're talking about is an accomplished professional. It's not going to work if you're teaching a room full of inexperienced undergraduate students.

CHARLES: Now it's my turn to disagree with you.

JACQUES: (*irritably*) And my turn to ask you to allow me to finish. I also think you're incorrect believing we should not be teaching students *what* to learn. You obviously have not spent much time with undergraduates.

CHARLES: (*implacably*) You are making claims about inexperienced undergraduates. I think you should provide some evidence to support your assertions.

JACQUES: How about more than a decade teaching homeland security to undergraduates. Is that evidence enough for you?

GAILE: (*mildly*) That's my experience also. Students need foundational knowledge before they can act or theorize effectively. We teach foundations.

BARCLAY: (*peremptorily*) We are far from what we started talking about: can there be a theory of homeland security?

GAILE: (*emending*) A grand theory.

BARCLAY: Yes, can there be a grand theory? Charles used to think so, but has now abandoned that search. Gaile says probably not. Jacques says...what?

JACQUES: My view is there can be a grand theory of homeland security. In fact I would like to propose one.

GAILE: (*insistently*) Before you do that, I'd like to slightly modify Professor Barclay's summary. There may be a grand theory out there somewhere. But in my view we can make more progress as a discipline by focusing on mid-range theories, on theories that try to describe or explain a more manageable subset of homeland security: like preparedness, domestic intelligence, ethics, transportation security – the list of topics is almost without end. And, I will add again, the case has not been argued to my satisfaction that we need unique homeland security theories to make progress. Existing academic disciplines and professions have a lot to offer us.⁴³

CHARLES: (*confidently*) Please note how we are getting slightly closer to my position that we should encourage everyone to be their own theorists. We have expanded membership in our clerisy from homeland security academics, to now include academics in ancillary disciplines, and maybe even practitioners. If you can only see your way to dismantle your irredentist wall a bit more....

GAILE: That's silly. And not just because you are trying to get away with using "clerisy" and "irredentist."

BARCLAY: (*to no one*) Was that another dentist reference?

GAILE: (*to Charles*) You are ignoring that it takes a certain amount of training and knowledge to theorize effectively. Academics are especially good at theory building, especially academics who have been homeland security practitioners.

JACQUES: Like you, Gaile.

GAILE: Yes, and like you, Jacques.

SCENE 3 – CONTRIVED FOOTHOLDS

Knowledge is not a series of self consistent theories that converges toward an ideal view; it is rather an ever increasing ocean of mutually incompatible (and perhaps even incommensurable) alternatives, each single theory, each fairytale, each myth that is part of the collection forcing the others into greater articulation and all of them contributing, via this process of competition, to the development of our consciousness.

– Paul Feyerabend

BARCLAY: (*reflectively*) Here is where I think we are in the discussion. We have two, perhaps three positions represented on the issue of developing homeland security theory. The left position....

CHARLES: What do you mean by left?

BARCLAY: Well, what you're saying sounds left-libertarian to me: individuals should create their own rules. As opposed to the more right-leaning conservative position of adhering to traditional rules about making theory.

CHARLES: (*fractiously*) I don't see libertarian being the same thing as left.

BARCLAY: But for the purpose of this conversation?

CHARLES: I think my position is more anarchistic – in a good way – than left or libertarian. But please don't let my truth get in the way of your analysis.

BARCLAY: (*disregarding*) As I was saying, the left position is to question everything: the meaning of theory, of homeland security, of inquiry, of what counts as data, and so on. Everyone creates their own theory and shares those ideas with everyone else, modifying the theories as needed. Rather than having one dominant theory about homeland security, one looks for as many ideas as possible and subjects them to the crucible of critical analysis.⁴⁴

CHARLES: (*acceding*) That is an accurate representation of the substance of my argument. I would add that ideas – we can call them theories – would be evaluated continuously both through critical analysis and – because our field of study aims to be practical – the real world test. Eventually, conclusions we reach need to be verifiable, repeatable, and falsifiable.

JACQUES: (*quietly*) That's simply the requirements of basic science.⁴⁵

BARCLAY: Here's what I think of as the position on the right. It is a pragmatic view that says we, as scholars, need to operationalize terms like theory and homeland security. Bite the bullet and announce what we mean by those terms and why, then develop and test theories from that foundation. Realize there are alternative meanings for many of the core terms, but select meaning from what most informed and knowledgeable people would say are reasonable understandings of those words.

GAILE: (*approvingly*) Although I continue to question the need for unique homeland security theory, I agree with your summary. I think that approach gives us a much firmer, more manageable basis to use or create theories that advance our understanding of homeland security.

JACQUES: What Professor Barclay characterized as the position on the right is also how regular science proceeds: define terms, state and test hypotheses, report results.⁴⁶

CHARLES: (*dispassionately*) I think what Barclay's synthesis has done is illustrate how one arrives at a coherence theory of truth: work with people who share your basic assumptions about theory and homeland security. I am also seeking coherence truth. I simply want to allow more people to participate in the conversation.

[Three people pause. They look at each other through the darkness.]

GAILE: (*implacably*) Barclay, you said there are possibly three positions?

BARCLAY: Yes, I thought if there is a far left and extreme right, there should be a middle position. (*forgetfully*) But whatever it was apparently slipped my mind. Would anyone care to state it?

JACQUES: (*reservedly*) I think I might represent that position. I believe it's possible to have a grand theory of homeland security, and I think I have one. But to get there, I have to make several assumptions about the terms I use and what counts for me as evidence to support the theory.

CHARLES: How is that a third position?

JACQUES: (*pensively*) I'm not certain. When scientists want to understand something they cannot see, they create a model of what they believe the phenomenon is. They test and modify that model as necessary. In that sense, I think I "see" how all of homeland security works. I believe the model I have to present combines rigor with flexibility, and precision with interpretation. I offer it as a grand theory of homeland security. I'm not sure if that's a left position, a center position, or a right position.

BARCLAY: Why don't you tell us your model and let us decide?

There is a theory which states that if ever for any reason anyone discovers what exactly the Universe is for and why it is here it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another that states that this has already happened. – Douglas Adam

ACT 3

A country road.

A wooden table.

A small whiteboard.

Toward dawn.

SCENE 1 – PRODUCING HOMELAND SECURITY

A theory has only the alternative of being right or wrong. A model has a third possibility: it may be right, but irrelevant.
– Manfred Eigen

JACQUES: Like many research projects, I start with a question I want to answer: *What did it take to produce the homeland security enterprise?* I formulated the question so I would not have to define what I meant by homeland security or enterprise.⁴⁷

GAILE: How did you do that?

JACQUES: In my opinion anyone who cares about the subject already has a preferred definition of “homeland security” and “enterprise.” So rather than trying to get everyone to agree with the definition I like, I contend this theory will work for any definition of homeland security and any definition of the homeland security enterprise.

CHARLES: (*inviting*) How are you using “theory” in your formulation?

JACQUES: I’m not sure yet. My ideas are partly drawn from established frameworks, and partly from intuition. But I think the mash-up I end with works at the levels of descriptive, explanatory, predictive, and normative theory.

GAILE: (*judiciously*) It sounds to me as if you will be explaining. If you start by asking what it took to produce the homeland security enterprise, you’re seeking an explanation. You want to know the mechanisms that created what we presently have.

JACQUES: My hunch is if we can answer what I am calling the “production” question, we can understand what forces brought us to where we are now in the homeland security enterprise. If we understand those forces, we should be able to use that knowledge to move the enterprise toward a certain direction.

CHARLES: (*attentively*) I would like to note how your formulation depends on the Newtonian metaphors of force and direction. There are alternatives to that approach. But I will withhold a bit until I hear you out.

GAILE: (*sententiously*) Your force metaphor reminds me of an aphorism: the pessimist curses the wind, the optimist hopes it will change, and the realist adjusts his sails.⁴⁸

JACQUES: I like that. It captures what I’m trying to say. If we can understand what it took to produce the homeland security enterprise, we can adjust our sails to take the enterprise where we want it to go. And by “we,” I mean theorists and reflective practitioners.⁴⁹

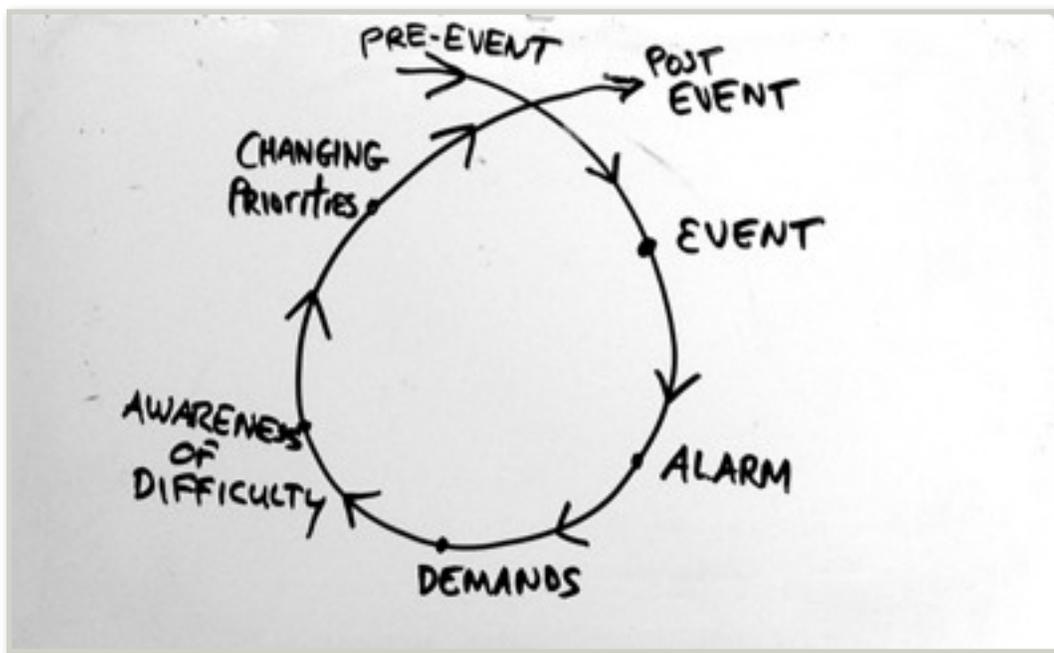
BARCLAY: (*redirecting*) Do you have an answer to your production question?

JACQUES: Yes. My answer is complicated, but let me state it and then try to unpack it. Here's what I conclude: It took an event significant enough to activate the issue attention cycle in homeland security. Once it was activated, the cycle continued to complete the pattern. Said another way, the homeland security enterprise is the second order consequence of the issue attention cycle. Multiple cycles, actually. The activation and unfolding of those cycles produced the homeland security enterprise we have today.

BARCLAY: I do not understand anything you just said.

GAILE: (*helpfully*) I think I do. The issue attention cycle is an idea Jacques has applied to homeland security.⁵⁰ The cycle describes what happens after a major event. There's a public clamor to do something immediately; people eventually realize how difficult it will be to fix the problem; then they subsequently lose interest. The cycle restarts with the next event.

JACQUES: That's the basic idea, but I see it slightly differently. [*Jacques draws on the whiteboard*] I envision seven stages in the cycle: pre-event, the actual event, alarm, demand, awareness of difficulty, changing priorities, and then finally the post-event period.⁵¹



BARCLAY: Can you give an example of the cycle?

JACQUES: (*affably*) There are plenty of examples, from the 9/11 attacks onward. But let me say more about why I think this is a grand theory.⁵²

BARCLAY: Please do.

JACQUES: I think everyone at this table would agree a significant part of the homeland security enterprise is complex, regardless how you conceptualize the enterprise.

CHARLES: What do you mean by....

JACQUES: I mean *complex* in the technical sense, not the common language meaning of that word.⁵³

CHARLES: You anticipate my question.

JACQUES: My mind may not work as quickly as yours, Professor Charles, but it does work.

CHARLES: (*bowing*) My apologies.

JACQUES: (*continuing*) Not every aspect of homeland security is complex. But I believe we would all agree the homeland security enterprise consists of countless agencies, people, levels of government, the private sector, nongovernmental organizations, citizens, and even other countries.⁵⁴

GAILE: Agreed. Homeland security is much more than the Department of Homeland Security.

JACQUES: (*avidly*) Imagine if you will multiple issue attention cycles operating simultaneously but asynchronously within the homeland security enterprise. And if you picture the enterprise populated with numerous agents, interacting with each other within multiple and variably constrained rule-based systems, you see an image of exceptional complexity.

BARCLAY: I'm not following any of that.

CHARLES: (*construing*) Professor Jacques has shifted from a Newtonian paradigm to a Darwinian one. Even though Jacques talks about forces and directions, I hear descriptions of an ecosystem: many life forms seeking a niche in the homeland security environment.⁵⁵

GAILE: (*disputing*) I'm hearing something less organic. It's as if the homeland security enterprise consisted of lots of hydrogen and oxygen atoms, combining together under various atmospheric conditions to produce a single cloud, a weather system, or a hurricane.

JACQUES: (*delightedly*) Both metaphors come close. I'm saying the homeland security enterprise is the continuously emerging product of a complex adaptive system.⁵⁶ It's a system that is energized by activity surrounding an initiating event – typically a mega event people view as threatening the security and maybe even the existence of the United States. The system sustains its energy by trying to solve or contain the problems triggered by the event, and by responding to the opportunities revealed by the event.⁵⁷

[They pause. Early light touches the horizon.]

SCENE 2 – TRUTH THAT IS LIVED, NOT TAUGHT

He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast.
– Leonardo da Vinci

CHARLES: Will you entertain questions about your grand homeland security theory?

JACQUES: (*cautiously*) Of course.

CHARLES: If we agree one function of theory is to describe a phenomenon, would you say your issue cycle theory *describes* homeland security?

JACQUES: (*deliberately*) For the purposes of building and testing theory, yes. I think it is possible to use the framework I offer to identify homeland security problems that resist solution, generate questions about those problems, create hypotheses about solutions, and then test those hypotheses. So yes, one can build a research agenda around the framework I offer.

BARCLAY: (*respectfully*) You're answering a different question. I think you've moved directly into theory's problem solving potential. Professor Charles asked about its power as a descriptive framework.

JACQUES: I think you could use the framework to describe the history of homeland security. That would demonstrate the theory's descriptive power. One could start with homeland security version 1.0 – the September 11, 2001 attacks. It then evolved to version 2.0 – Katrina and the discovery of all hazards. Version 3.0 arrived with H1N1 and the widespread acceptance of public health professionals into the enterprise. In Version 4.0, the newly elected Obama

Administration absorbed homeland security into national security. Version 5.0 arrived with the Great Recession and is marked by the awareness of fiscal limits, by programmatic retrenchment, and by a diminished threat of terrorism.⁵⁸ At the most macro level, it is possible to describe how significant events trigger change in homeland security. But to me that is not especially interesting or useful.

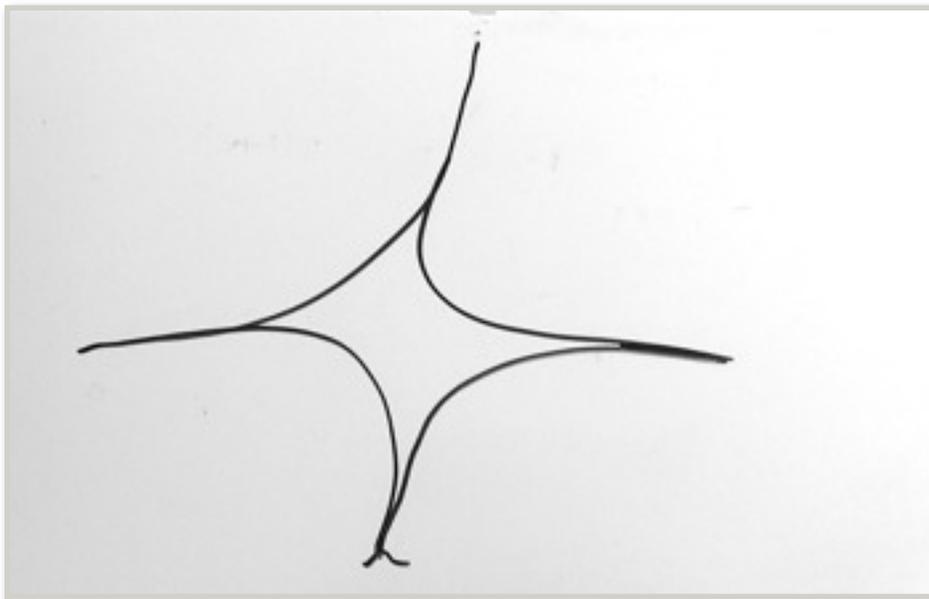
CHARLES: (*nodding*) I agree with you: it's not particularly interesting or useful. But at the risk of turning this into the homeland security equivalent of the Glass Bead Game,⁵⁹ allow me the second question you have already anticipated. Talk about the explanatory power of your theory.

JACQUES: (*circumspectly*) I think the framework can be used to explain why Hurricane Katrina shifted attention in the homeland security enterprise toward all hazards and away from terrorism.⁶⁰ The issue-attention pattern triggered by Katrina in 2005 dampened interest in a domestic terrorist threat that had declined substantially since 2001. The failed attempt by the underwear bomber in 2009 sped the implementation of body scanners.⁶¹ The meltdown of the US financial markets related directly, in my view, to the reduction in Urban Area Security Initiative grants.⁶² I believe one could build a long list of examples explaining how the enterprise has evolved. But I think ultimately we care about explaining so we can make predictions.

GAILE: Yes. I think we agree that's the ultimate value of a practical homeland security theory.⁶³

[One person yawns. One stretches. One spots a morning star.]

JACQUES: (*discomfited*) Prediction is where I run into problems. As I said earlier, some but not all, parts of the homeland security enterprise are complex. I don't think it's possible to predict with any precision the outputs of a complex adaptive system. Metaphorically, it is similar to the difficulties quantum physics encounters. One can describe the range of probable outcomes for an event, but one cannot predict a specific outcome.⁶⁴ I want to argue that prediction is possible for some aspects of the enterprise, but not for other parts. To support that part of my theory, and to show where prediction in homeland security is possible and where it is not, I need to present a supporting framework.⁶⁵



JACQUES: This is the cynefin framework.

CHARLES: I know that.

JACQUES: It helps me make sense of the homeland security environment in a way that contributes to explanation, prediction and normative guidance. I believe different stages of the homeland security issue attention cycle activate different aspects of the cynefin framework.

BARCLAY: How are you spelling that word? I've never heard of it.

JACQUES: C-y-n-e-f-i-n, pronounced "Ku-*nev*-in."

BARCLAY: What does it mean?

CHARLES: (*interrupting*) It's a Welsh word that roughly translates into the place of your multiple realities; it describes the relationship among people, experience, and contexts.⁶⁶

BARCLAY: I'm still not clear what the word means.

CHARLES: (*yielding*) Neither am I. But I find the framework occasionally useful.

JACQUES: I think it is a good description of the world I'm trying to portray. Homeland security is a place of multiple realities.

GAILE: I've read about the term, but I'm not convinced I know what it means.

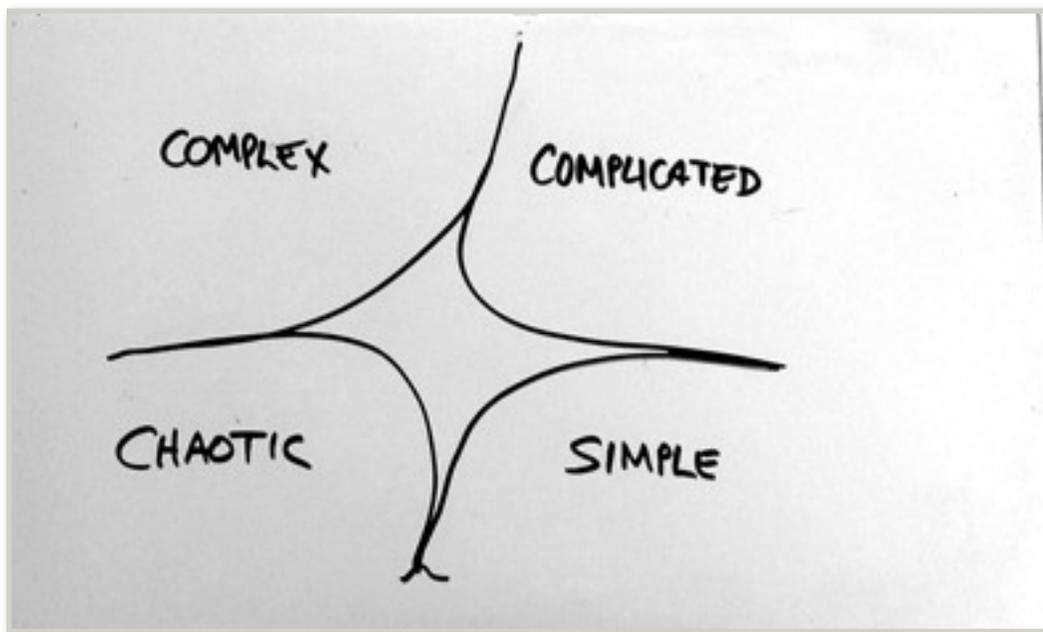
JACQUES: I've heard Snowden – who coined the term – lecture about it.⁶⁷

CHARLES: There is a YouTube video that describes it.⁶⁸

JACQUES: (*apologetically*) I'm going to be pedantic again, but I want to outline my understanding of cynefin. We start first with a system, defined as any network that coheres around something – like an issue or mission – and agents who operate within the system.

BARCLAY: Agents?

JACQUES: I mean people, organizations, policies, doctrines, rules – anything around which a system can form. Systems can be ordered, complex or chaotic. Ordered systems are further divided into simple and complicated. Let me draw it for you.



SCENE 3 – PATTERNS WITHOUT VALUES

Whenever a theory appears to you as the only possible one, take this as a sign that you have neither understood the theory nor the problem it was intended to solve.

– Karl Popper

BARCLAY: How are all these boxes useful?

CHARLES: (*helpfully insistent*) If I may. First of all, they are not boxes. They represent phenomenological spaces. The point is to ask what an issue would look like from each perspective. Some answers work better than others.

JACQUES: One's phenomenological choice has consequences for how one understands the source of order. The order of simple systems comes from known cause-and-effect relationships.

CHARLES: As an example, consider one of the Department of Homeland Security payroll systems: submit your timesheet and out comes a paycheck. That is a simple system.⁶⁹

JACQUES: Another simple system could be the procedures you follow going through airport security: show your boarding pass, show your identification, put your belongings on the conveyer belt, take your shoes and belt off, remove your computer, empty your pockets, stand inside the body scanner, raise your hands in the universal gesture of surrender, move forward when you are instructed, and so on. Simple systems are governed by rules, like standard operating procedures. They are derived from empirical demonstrations that the outcomes one wants can be obtained by following explicit procedures.

CHARLES: (*injecting*) The order in a complicated system, if I may continue, comes through research. You don't start out knowing what to do in a particular situation – such as how to process the massive amount of data suspicious activity reports generate⁷⁰ – but you can learn.

JACQUES: Determining how to identify and protect the critical nodes in a multi-state power grid is another example of a complicated homeland security problem. Eventually, research can lead to solutions that become standard operating procedures.

CHARLES: In a complicated system, order is knowable and sustainable.

JACQUES: Both simple and complicated systems are governed by known or knowable cause and effect relationships. That's where their order comes from.

GAILE: (*losing interest*) I do not see how this is related to building a homeland security theory.

JACQUES: Sorry, I can get too far into the weeds. What I'm trying to do is describe the phenomenological space that is homeland security, using the cynefin framework to illustrate ways of making sense of that space.

BARCLAY: (*incuriously*) I'm put off by the word *space*. It's jargon I'm not comfortable with.

GAILE: I don't have a problem with *space*. It's just another way to describe the homeland security enterprise.

CHARLES: Whether you call it the homeland security space or the enterprise, I don't want us to miss the significant point here: we four are making up what we mean by words like *enterprise* and *space* through our conversation. We are acting as if these words point to something real.

GAILE: (*amending*) Socially constructing reality?⁷¹

CHARLES: Yes, I believe so. Our conversation provides another example of how coherence truth works. Some parts of homeland security may be governed by objective truth, others by pragmatic truth. But in my view, the more we talk about this nebulous theory-building project among ourselves, and the more we identify and resolve our differences, the closer we get to coherence truth about homeland security theory.

BARCLAY: (*reengaging*) Meaning?

GAILE: It's what Richard Rorty said: Truth is what your colleagues let you get away with.⁷²

CHARLES: I suspect if there is ever to be a dominant theory of homeland security, it will be based more on coherence truth than pragmatic or objective truth. I predict that one of the many language communities in homeland security will come to some agreement about what constitutes an accepted theory. I say more power to whomever is able to accomplish that. At least that will provide something tangible for other language communities to engage. We can then get a healthy dialectic going over the substance of homeland security theory, and move past the how-to make-a theory discussion.⁷³

JACQUES: (*dismissing, gently*) Maybe, but let me continue talking about cynefin. I described the simple and the complicated systems. I think homeland security, writ large, has a fairly good understanding of simple and complicated problems. Simple problems are handled by standard operating procedures, and complicated problems are addressed through research.⁷⁴

CHARLES: (*magnanimously*) I like where you're going with this. Most of the simple and complicated problems in homeland security are solved or are being adequately managed through research.

JACQUES: I think I just said that. I have not done the empirical work to support those claims. But with some exceptions I believe that is the case. So my grand theory takes into consideration that many of homeland security's technical and administrative problems are fairly well specified, and as a result approachable through mid-range theories.

BARCLAY: Such as?

JACQUES: (*carefully*) Again, I have not done the empirical work yet, but I suspect issues like border entry procedures, finding handguns in carry-on luggage, monitoring the movement of maritime shipping containers fit this category. FEMA instructions for conducting planning and exercises may be another example.

CHARLES: Your examples are no-brainers from a theoretical perspective.

JACQUES: Conceptually, perhaps. But working out the details, say, of detecting a radiological signal in a port that has hundreds of thousands of containers can be daunting.

BARCLAY: (*impatiently*) What about the complex and chaotic parts of the cynefin framework?

JACQUES: Those domains describe activity where order emerges. Cause and effect relationships can be known, but almost always it's after the fact, after an event has happened.

[Gaile picks small stones from the ground and arches them toward the horizon.]

JACQUES: In my reading of homeland security's history, the changes, the big changes, have always been around events that are not going to happen the same way again.

BARCLAY: You are talking about black swans?

JACQUES: (*studiedly*) I don't think I would call them black swans.⁷⁵ Hurricane Katrina certainly was predictable and predicted. So too was using an airplane as a terrorist weapon, and the likelihood of a pandemic. But recall my central thesis: the homeland security enterprise was produced by events that initiated and sustained multiple issue attention cycles. I think one could agree that events surrounding complex and chaotic activity are largely responsible for the general shape and direction of the enterprise. Activities in the simple and complicated domains sustain that shape and direction. They may tinker with the shape at the margins, but they do not significantly alter it. Especially not in comparison to significant events.

GAILE: Perhaps the lack of significant difference between the Bush Administration's Homeland Security Presidential Directive 8 and the Obama Administration's Presidential Preparedness Directorate 8 illustrates your "tinkering with the shape" idea?⁷⁶

JACQUES: It might be. But I don't know enough about either to have an opinion.

BARCLAY: (*disquieted*) I don't understand yet how you are distinguishing between complex and chaotic in your formulation.

JACQUES: In a chaotic system, there is no discernible cause and effect pattern. Agents are independent and largely unconstrained.

CHARLES: There is a chilling scene in the Jules and Gedeon Naudet video about September 11th. It is the moment firefighters become aware the building is coming down around them.⁷⁷ That is chaos. Everything surprises. No one rules. Except maybe the laws of physics.

JACQUES: In a complex system, as I think we discussed earlier, order emerges retrospectively. We can discover cause effect relationships, but we only know them after the fact; and the relationships never recur.

GAILE: That's similar to Churchill's conclusion about history: the study of things that never happen the same way twice.

JACQUES: A complex system constrains the freedom agents have to act, but not as much as simple or complicated systems. Agents can modify a complex system through interacting with each other and with the system.⁷⁸

GAILE: An example would be how public health and other agencies learned to distribute vaccines during the 2009 H1N1 pandemic.⁷⁹ Or how the Deepwater Horizon event moved first from the chaos of the explosion, to the complexity of the response, to the complicated task of stopping the leak, to the – comparatively speaking – simple job of clean up.⁸⁰

JACQUES: Yes, good examples. But before this gets even more complicated...

BARCLAY: (*smiling*) Or complex?

JACQUES: Right. I don't want to lose sight of the forest. Before this explanation gets into even more details, let me restate my theoretical claim. I start with the question: What did it take to produce the homeland security enterprise? I argue it took the activation and unfolding of the homeland security issue attention cycle. I present a tentative description of the stages of that cycle.

BARCLAY: (*reassured*) OK, I follow all that.

JACQUES: Now, please allow me one more drawing.

[Jacques erases the board and begins to write.]

JACQUES: I maintain each stage in the issue attention cycle tends to evoke particular phenomenological characteristics. Each stage provides opportunities to make sense of a situation in a different way.⁸¹ I use the four elements of the cynefin framework as a convenient way to highlight – with an X – those opportunities.

	PRE-EVENT	EVENT	ALARM	DEMAND	DIFFICULT	PRIORITIES	POST-EVENT
SIMPLE	X				X	X	X
COMPLICATED	X		X	X	X	X	X
COMPLEX		X	X	X	X		
CHAOTIC		X					

SCENE 4 – ESCAPING FROM OLD IDEAS

All the limitative Theorems of metamathematics and the theory of computation suggest that once the ability to represent your own structure has reached a certain critical point, that is the kiss of death: it guarantees you can never represent yourself totally. Godel’s Incompleteness Theorem, Church’s Undecidability Theorem, Turing’s Halting Problem, Turski’s Truth Theorem will always have the [flavor] of some ancient fairy tale which warns you that “To seek self-knowledge is to embark on a journey...which will always be incomplete, cannot be charted on a map, will never halt, cannot be described.”

– Douglas Hofstadter

GAILE: I don’t want to be too much of a Philistine, but tell us the "so what" from all this?

JACQUES: (*hesitantly*) I’m still working on that, but I think one could fill in the chart for a variety of decisions that have to be made during the cycle: decisions about communication, strategy, planning, technology, leadership, and so on. For instance, there are certain leadership styles that are appropriate for some stages of the cycle and inappropriate for others.⁸²

GAILE: So it should be possible to use your cycle theory to generate testable hypotheses?

JACQUES: (*confidently*) Yes, let me use leadership as an example. During a catastrophe – let’s say, like Deepwater Horizon – I would expect to see leaders who used behaviors suitable for chaotic events to be more effective than leaders who followed standard operating procedures.⁸³

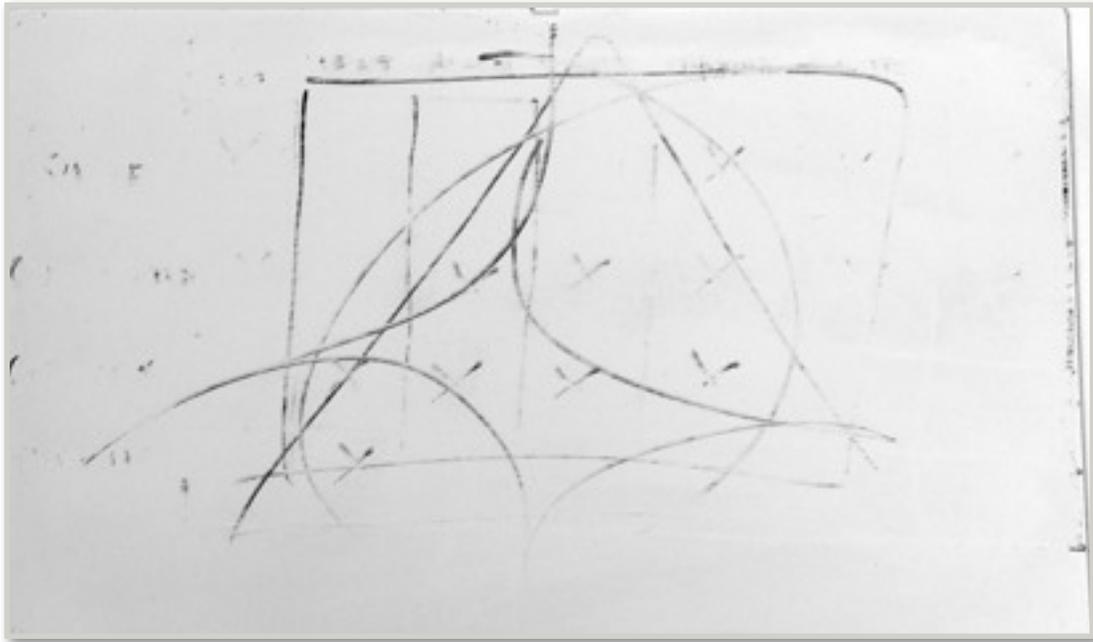
BARCLAY: And leaders would tend to be ineffective if they used complexity strategies in situations where following routine procedures is the appropriate behavior?

JACQUES: Yes. As an example, responding to a wildland fire using something other than the Incident Command System would be a mistake, and would be contrary to the strategy appropriate for a routine – at least in this context – disaster.

CHARLES: (*obdurately*) Your framework, while vaguely interesting, does seem to be a rehash – sorry, maybe not the best word – of something leadership and organizational theorists already understand quite well: different situations require different behaviors.

JACQUES: (*protectively*) I think I am providing more than a restatement of contingency theory.⁸⁴ I think I have an accurate descriptive theory of what it took to produce the homeland security enterprise. I also believe it explains how the enterprise evolves: multiple stakeholders interacting within systems created by overlapping and multiple issue attention cycles.

[*Jacques half-heartedly erases the board*]



JACQUES: The enterprise includes simple and complicated dimensions. Occasionally – and significantly – chaos happens. But I think the most interesting and uncontrollable parts of the enterprise reside within complexity. My grand theory suggests combining issue attention with the cynefin framework produces heuristic advice for appropriate action in the homeland security enterprise. I think it is especially valuable as a guide to acting within complexity.

CHARLES: Okay, I follow. But heuristic advice is insufficient. By your earlier argument, one does not predict the outcomes of a complex system. And recall our agreement that prediction is the true measure of useful theory.

JACQUES: (*discouraged*) That is where I run into difficulty. My admittedly idealistic hope is to be able to use the theory to make predictions about something significant in homeland security. I can handle prediction in the simple and complicated domains. But if the catalytic core of homeland security's trajectory resides within the complex domain, prediction – at least significant prediction – will not be possible. If it is possible, then the homeland security enterprise is not a complex adaptive system – at least as I understand that term.

CHARLES: (*encouraging*) Maybe we have not yet discovered how to predict complex events?⁸⁵ Perhaps the best we can do, as Gaile said, is to adjust our sails.

BARCLAY: (*abruptly*) I am trying not to be dense, but what does "adjust our sails" mean in homeland security?

JACQUES: (*slowly*) To me it means paying attention – for the problems you care about – to where you are in the issue attention cycle, knowing your phenomenological options, and then

acting according to what Mary Parker Follet called “the law of the situation.”⁸⁶ The theory I’m proposing helps leaders parse the situation they are in so they can be more effective.

BARCLAY: We have found another use of theory, at least descriptive theory: to act as a roadmap for strategic leadership.

CHARLES: (*aseptically*) As much as I might enjoy speculating about your grand theory, I have two other problems with it. First, your insistence on a significant initiating event rules out slowly moving catastrophes, such as climate change, a deteriorating national education system, and similar social trends.⁸⁷ Secondly, what would it take to falsify your idea?

JACQUES: Why do you want to falsify it?

GAILE: (*elaborating*) If a claim can’t be falsified then it is not scientific. It would be what Hume called a relation of ideas, something true simply by definition.⁸⁸ Karl Popper made this point.⁸⁹

CHARLES: Your model describes how you claim to see homeland security. Popper would argue you probably already had the ideas in your head before you applied them to homeland security. He believed we imagine first, then test our ideas – our models – through experimentation. The task of science is to try to falsify ideas, not to prove them. Through that process our models get better and we know more.⁹⁰ If your theory cannot be disproven, even hypothetically, then it adds nothing of substance to our store of knowledge.⁹¹ As intricate a formulation as you’ve constructed, what would it take to falsify your views?

JACQUES: (*distracted*) I would like to think more about that, but my immediate reaction is it would be easy to falsify. Show me a leader who’s good in a crisis because he follows how-to-be-a-leader rules,⁹² and I’ll say there’s something wrong with my framework.

CHARLES: But I hope your framework, your model, your grand theory – whatever you’re calling it – is not simply another way to say something about leadership that’s already well known.

JACQUES: (*bruised*) Thank you.

CHARLES: (*ignores comment*) You claim to have a way to explain what it took to produce the homeland security enterprise. You say it took events to initiate and sustain a pattern of behavior you’re calling the homeland security issue attention cycle. Even hypothetically, what would it take to demonstrate you are wrong? How could you falsify the claim?

JACQUES: (*defensively exasperated*) Listen, it took me long enough to make this up. I’m not ready to try to falsify it yet. I’m still trying to understand what it means, what hypotheses I can derive from it, and how I can test those hypotheses. I’m not yet ready to think about proving myself wrong. I want to see where my approach leads first. I am more interested in seeing where the idea goes, in pursuing it, than in convincing you it’s right.

GAILE: I believe I can think of a way to falsify it. Let’s say there is an event that happens in United States similar to the 2011 Fukushima event – say at California’s Diablo Canyon or San Onofre nuclear plants. There is an earthquake, a tsunami, and a reactor meltdown. According to Jacques’ issue cycle theory, the homeland security enterprise would be substantially changed as the repercussions of that event ripple through the nation.

CHARLES: (*dismissively*) That is a trivial observation. It is little more than saying, “If something really horrible happens in the United States, things will change.”

BARCLAY: (*evenly*) I don’t think you’re being fair here.

CHARLES: It’s not a matter of fairness. I don’t believe we need a moderately interesting but arcane collection of ideas to tell us what we already know. The grand theory is not precise enough to give us anything more than another set of words for describing how one person sees the world of homeland security.

GAILE: (*pleased*) You are not being consistent, Professor Charles. Earlier you said you wanted everyone to be their own theorist. Now you have Jacques offering a theory and you criticize the ideas as restating the obvious. You can't have it both ways.

CHARLES: (*amused*) Well, as Emerson wrote, "A foolish consistency is the hobgoblin of little minds." I applaud Jacques for the cycle theory. However, I do not believe I am being foolishly inconsistent in trying to challenge Jacques' ideas. Science is less about what one person does, and more about the activity of the entire scientific community. What we who care about this embryonic homeland security discipline do is listen to each other, agree, disagree, ask for evidence, modify ideas, disprove ideas, extend ideas, and so on. That's how science makes progress. That's how we will make progress.

BARCLAY: (*pressing*) Are you agreeing or disagreeing with Professor Jacques?

CHARLES: Neither. I am demonstrating what I said earlier. I want every person who cares about homeland security to be their own theorist. I want them to make claims about why we have the homeland security enterprise we have, what it took to produce the enterprise, pose any research questions they have. I want them to support their claims with whatever evidence they can marshal: use data, rhetoric, analysis. I don't care. But I do care that they share those ideas with others, in writing and in conversation. And that they share with transformational openness: asking, "What do I have to believe in order to see the world like Jacques does, or Gaile, or Barclay?" I expect them to listen to me the same way: What do they have to believe to see as Charles does? As we learn to speak and listen to each other, we will remain alive to the continuously evolving theoretical and empirical cultures of homeland security. Open this theory building activity to everyone. Not just to the academic hegemony.

[*A pause for silence.*]

GAILE: (*dryly*) I feel like I should be hearing a rising chorus of strings and horns about now. Had we more time, Professor Charles, I'd ask you what evidence you would accept to refute your last claim, your own normative ideas about how we should create homeland security theory.

CHARLES: (*tickled*) That would be easy. Have the academic priesthood use their special training to come up with breakthrough ideas or solutions to homeland security's wicked problems.⁹³ If they can do that while others who are less skilled cannot, I would be willing to rethink my claim about encouraging everyone to be a homeland security theorist.

GAILE: I agree we should focus on solving the thorny problems. That's why I question whether we even need homeland security theories. There is not enough uniqueness in what we do to warrant a novel academic approach. I think homeland security as a profession is analogous to health.⁹⁴ The health profession includes innumerable disciplines, problems, bodies of knowledge, and inquiry methods; together they combine to form a meta-discipline called health. Maybe it's the same with homeland security. There is no grand theory of health. Homeland security also can do well without one.

CHARLES: I'm not willing to rule out a grand theory. But I'm more enthusiastic about discovering as many interesting homeland security theories as people can create.

GAILE: As I've said, the professional disciplines that constitute homeland security – law enforcement, the military, intelligence, emergency management, public health, fire services – give us enough ideas to work with. The same thing is true for traditional academic disciplines – like public policy, public administration, economics, sociology, biology, geography, mathematics, computer science, and so on. They offer a wealth of useful theories to people who want to improve security. We don't need new theories. We do need to get better at using the ones we already have.

JACQUES: And I believe it's worth building on the 500-year tradition of Western science. Let's apply to homeland security the tools and logics that brought us the philosophical and material

progress we enjoy today. The grand theory I propose is certainly not perfect, but I believe it can help take us to the next stage in the development of our profession.

[A very long silence.]

BARCLAY: Well, it looks like we have reached a stopping point. Shall we go?

CHARLES: Yes, let's go.

GAILE: Yes, let's.

JACQUES: Yes.

[They do not move.]

That is the way leaves fall around a tree in autumn, a tree unaware of the rain running down its sides, of the sun or the frost, and of life gradually retreating inward. The tree does not die. It waits. –
Herman Hesse

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¹ Hermann Hesse, *Magister Ludi (The Glass Bead Game)* (Bantam Books, 1982), 2.

² In this work I will occasionally use indefinite pronouns (like “everyone” or “everybody”) with singular verbs and plural pronouns. Speech sounds better to me that way. As one English usage text writes, “The problem is ...almost all the indefinite pronouns...are grammatically singular but notionally plural. Their natural tendency is to take singular verbs and plural nouns.” *Webster's Dictionary of English Usage* (Springfield, MA: Merriam-Webster, 1989), 415-416. Here, by way of example, is a sentence fragment from Jane Austen's *Mansfield Park*, “... everybody had their due importance.” For more, see “Jane Austen and other famous authors violate what everyone learned in their English class,” <http://www.crossmyt.com/hc/linghebr/austheir.html>.

³ Peter J. May, Ashley E. Jochim, and Joshua Sapatichne, “Constructing Homeland Security: An Anemic Policy Regime,” *Policy Studies Journal* 39, no. 2 (2011): 285-307.

⁴ Paul C. Light, “The Homeland Security Hash,” *Wilson Quarterly* 31, no. 2 (2007): 36-44.

⁵ I use Grand Theory in this paper to refer to the foundational conceptual structure of homeland security. Here is another definition of grand theory: “Grand theory is any theory which attempts an overall explanation of social life, history, or human experience. It is normally contrasted with empiricism, positivism, or the view that understanding is only possible by studying particular instances, societies, or phenomena.” Quentin Skinner, ed., *The Return of Grand Theory in the Human Sciences* (Cambridge, 1985) <http://www.wisdomsupreme.com/dictionary/grand-theory.php>. Grand theory was “... devised by American sociologist C. Wright Mills ... to attack what he took to be the obsessive concern of post-Second World War social science with empty conceptual elaboration... at high levels of abstraction. ... His main target was Talcott Parsons, another American sociologist and the architect of structural functionalism, against whom he insisted ‘there is no “grand theory”, no one universal scheme in terms of which we can understand the unity of social structure, no one answer to the tired old problem of social order’.” Derek Gregory, Ron Johnston, Geraldine Pratt, Michael Watts, and Sarah Whatmore, eds., *The Dictionary of Human Geography*. 5th ed. (Wiley-Blackwell, 2009), 315.

⁶ “Every theory may be said to demarcate an explanatory shell for the phenomena which it deals.... On this basis, we may distinguish macro... from micro theories according to the radius of the explanatory shell, as compared with the extensiveness of the sort of events being considered.” Abraham Kaplan, *The Conduct of Inquiry; Methodology for Behavioral Science*, Chandler Publications in Anthropology and Sociology (San Francisco: Chandler Pub. Co., 1964), 299. Robert Merton described middle range theories [what I am calling mid-range] as “theories that lie between the minor [what I am calling micro theories] but necessary working hypotheses that evolve in abundance in day-to-day research and the all-inclusive systematic efforts to develop unified theory [what I am calling grand theories] that will explain all the observed uniformities of social behaviour, organization and social change.” *Collins Dictionary of Sociology* (London: Collins, 2006), s.v. “Theories of the Middle Range,” http://libproxy.nps.edu/login?url=http%3A%2F%2Fwww.credreference.com/entry/collinsoc/theories_of_the_middle_range.

⁷ For a comprehensive perspective on what Congress considers to be homeland security problems, see the collection of Congressional Research Service documents, titled Congressional Research Service Reports on Homeland Security, maintained by the Federation of American scientists at <http://www.fas.org/sgp/crs/homesecc/index.html>. For a less ambitious list see Christopher Bellavita, “Changing Homeland Security: In 2010, Was Homeland Security Useful?” *Homeland Security Affairs* 7, Article 1 (February 2011), <http://www.hsaj.org/?article=7.1.1>

⁸ In an unpublished 2005 paper titled “Appendix to ‘Homeland Security Disciplines and the Cycle of Preparedness’,” William V. Pelfrey identified the following disciplines, activities, and professions as having some nexus with homeland security: law enforcement, emergency medical services, fire service, hazardous waste operations and emergency response, emergency dispatch communications, health services, emergency management, governmental administrators, public health, public works, business continuity, cyber-security and information technology, infrastructure protection, educational institutions and organizations, homeland security [state, federal and local], private security, loss prevention, major event security, Red Cross, volunteer and non-governmental organizations providing public assistance, public information, media management, public places and major facilities, financial institutions, prosecutors, risk management, skilled trades, transportation services, public/private utilities, and military. For a discussion of the theoretical frameworks many of those disciplines offer, see Bellavita, “Changing Homeland Security: In 2010, Was Homeland Security Useful?” 3-4.

⁹ Here are some definitions of theory, representative of the wide range of the word's meaning:

"A theory is any systematic and coherent collection of ideas that relate to a specific subject.... There is no requirement that the collection be demonstrated, and it can even be false.... String Theory in physics is highly speculative, but it's still a theory...." Steven Dutch, "What Is a Theory?" <http://www.uwgb.edu/dutchs/PSEUDOSC/WhatTheory.HTM>.

"A theory is a symbolic construction.... A theory is a way of making sense of a disturbing situation so as to allow us most effectively to bring to bear our repertoire of habits, and even more important, to modify habits or discard them altogether, replacing them by new ones as the situation demands.... [Theory] will appear as the device for interpreting, criticizing, and unifying established laws, modifying them to fit data unanticipated in their formulation, and guiding the enterprise of discovering new and more powerful generalizations. To engage in theorizing means not just to learn by experience but to take thought about what is there to be learned." Kaplan, *The Conduct of Inquiry; Methodology for Behavioral Science*, 295-296.

Theory "[in a] loose or general sense: A hypothesis proposed as an explanation; hence, a mere hypothesis, speculation, conjecture; an idea or set of ideas about something; an individual view or notion." *Oxford English Dictionary*, <http://www.oed.com/view/Entry/200431?rskey=Uxn8tb&result=1&isAdvanced=false#eid>

Theory falls "between the 'minor working hypotheses' of everyday life and the 'all-inclusive' grand theories." Barney G. Glaser, *The Discovery of Grounded Theory: Strategies for Qualitative Research Observations* (Chicago: Aldine Publishing, 1967), 32-33.

A theory is "a general understanding of how humans gain knowledge of the world around them, and an understanding of what makes the work descended from the Scientific Revolution different from the other kinds of investigation in the world.... [Theory is] a scientific strategy for investigating the world." Peter Godfrey-Smith, *Theory and Reality: An Introduction to the Philosophy of Science. Science and Its Conceptual Foundations* (Chicago: University of Chicago Press, 2003), 5, 7.

"A theory is a general principle supported by a substantial body of scientific evidence which explains observed facts. As a probable explanation for observations, a theory offers an intellectual framework for future discussion, investigation and refinement." Jennifer Bothamley, ed., *Dictionary of Theories* (London; Detroit: Gale Research International, 1993), 523.

"A theory is any systematic and coherent collection of ideas that relate to a specific subject.... All hypotheses are theories, but all theories are not hypotheses...." Dutch, "What is a Theory," <http://www.uwgb.edu/dutchs/PSEUDOSC/WhatTheory.HTM>

Theory is "[a] scheme or system of ideas or statements held as an explanation or account of a group of facts or phenomena; a hypothesis that has been confirmed or established by observation or experiment, and is propounded or accepted as accounting for the known facts; a statement of what are held to be the general laws, principles, or causes of something known or observed." *Oxford English Dictionary*, <http://www.oed.com/view/Entry/200431?rskey=Uxn8tb&result=1&isAdvanced=false#eid>.

"The words hypothesis, law, and theory refer to different kinds of statements... that scientists make about natural phenomena. A hypothesis is a proposition that attempts to explain a set of facts in a unified way.... A scientific law is a hypothesis that is assumed to be universally true.... A theory is a set of statements, including laws and hypotheses, that explains a group of observations or phenomena in terms of those laws and hypotheses. A theory thus accounts for a wider variety of events than the law does." *The American Heritage Science Dictionary* (Boston: Houghton Mifflin Co., 2005), 313.

"[In] modern science the term 'theory', or 'scientific theory' is generally understood to refer to a proposed explanation of empirical phenomena, made in a way consistent with [the] scientific method. Such theories are preferably described in such a way that any scientist in the field is in a position to understand and either provide empirical support ("verify") or empirically contradict ('falsify') it. In this modern scientific context the distinction between theory and practice corresponds roughly to the distinction between theoretical science and technology or applied science." <http://en.wikipedia.org/wiki/Theory>. "Consider the following usages of the word 'theory' [:] the Ptolemaic Theory of the solar system, the Phlogiston Theory of combustion, the Theory of Relativity, Grand Unified Theories of physics, the Theory of Continental Drift, Stress Theory, Number Theory, Music Theory, the Theory of Evolution." Dutch, "What Is a Theory?" <http://www.uwgb.edu/dutchs/PSEUDOSC/WhatTheory.HTM>.

¹⁰ Christopher Bellavita, ed., *How Public Organizations Work: Learning from Experience* (New York: Praeger, 1990), xvi; Kaplan, *The Conduct of Inquiry*, 298-302; Godfrey-Smith, *Theory and Reality*, 6.

¹¹ This is a position articulated by William Whewell (1794-1866). “The hypotheses which we accept ought to explain phenomena which we have observed. But they ought to do more than this; our hypotheses ought to foretell phenomena which have not yet been observed; ... because if the rule prevails, it includes all cases; and will determine them all, if we can only calculate its real consequences. Hence it will predict the results of new combinations, as well as explain the appearances, which have occurred in old ones. And that it does this with certainty and correctness, is one mode in which the hypothesis is to be verified as right and useful.” — William Whewell, *Philosophy of the Inductive Sciences*, Vol. 2 (1847), 62-63. [Cited at http://www.todayinsci.com/QuotationsCategories/P_Cat/Prediction-Quotations.htm.] Whewell is credited with, among other things, inventing the word “scientist,” at the behest of the poet Samuel Taylor Coleridge. See <http://plato.stanford.edu/entries/whewell/> and <http://www.oed.com.libproxy.nps.edu/view/Entry/172698?redirectedFrom=scientist#eid>.

From John von Neumann, “What is important is the gradual development of a theory, based on a careful analysis of the ... facts. ... Its first applications are necessarily to elementary problems where the result has never been in doubt and no theory is actually required. At this early stage the application serves to corroborate the theory. The next stage develops when the theory is applied to somewhat more complicated situations in which it may already lead to a certain extent beyond the obvious and familiar. Here theory and application corroborate each other mutually. Beyond lies the field of real success: genuine prediction by theory. It is well known that all mathematized sciences have gone through these successive stages of evolution. — John von Neumann “Formulation of the Economic Problem” in *Theory of Games and Economic Behavior* (1964), 8. Reprinted in John Von Neumann, F. Bródy and Tibor Vámos eds., *The Neumann Compendium* (2000), 416.

¹² See “Layers of Security” at http://www.tsa.gov/what_we_do/layers/index.shtm. For an example of contrary descriptive theory on the 20 layers of security, see “Unfolding TSA Layered Security” at <http://aviationknowledge.wikidot.com/aviation:unfolding-tsa-layered-security>. For a claim that there are twenty-one, not twenty security layers, see John Mueller and Mark G. Stewart, *Terror, Security, and Money: Balancing the Risks, Benefits, and Costs of Homeland Security* (Oxford University Press, 2011), 138. Mueller and Stewart include “international partnerships;” the TSA “Layers of Security” website does not (when last accessed on April 10, 2012).

¹³ For a summary of Kuhn’s position on what is called in this paper descriptive theory, see “Evolution of Descriptive Theory” at <http://www2.uiah.fi/projekti/metodi/124.htm>.

¹⁴ Fathali Moghaddam, “The Staircase to Terrorism: A Psychological Exploration,” *American Psychologist* 60, no. 2 (February/March 2005): 161–169.

¹⁵ “An explanation ‘answers the question ‘Why did the explanandum-phenomenon occur?’ by showing that the phenomenon resulted from certain particular circumstances....” Graham T. Allison, *Essence of Decision; Explaining the Cuban Missile Crisis* (Boston: Little, Brown, 1971), 278, note 5, citing Carl G. Hempel, *Aspects of Scientific Explanation, and Other Essays in the Philosophy of Science* (New York: Free Press, 1965), 337.

¹⁶ Homeland Security Presidential Directive (HSPD) 21: “Public Health and Medical Preparedness” (October 18, 2007), 3, <http://www.fas.org/irp/offdocs/nspd/hspd-21.htm> HSPD21.

¹⁷ George L. Kelling and James Q. Wilson, “Broken Windows: The Police and Neighborhood Safety,” *The Atlantic* (March 1982), http://www.theatlantic.com/magazine/archive/1982/03/broken-windows/4465/?single_page=true.

¹⁸ The National Incident Management System (NIMS); see www.fema.gov/pdf/emergency/nims/NIMSFAQs.pdf

¹⁹ Attributed.

²⁰ “Reality is that which, when you stop believing in it, doesn't go away.” Philip K. Dick, “How to Build a Universe That Doesn’t Fall Apart Two Days Later” (1978), http://deoxy.org/pkd_how2build.htm.

²¹ For an extended description of objective (or correspondence) truth see David, Marian, "The Correspondence Theory of Truth," Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Fall 2009 Edition), <http://plato.stanford.edu/archives/fall2009/entries/truth-correspondence/#3>.

²² I am using the phrase to mean "A metaphor for any group activity performed for personal gratification." <http://www.wordnik.com/words/circle%20jerk>

²³ This framework is adapted from Gibson Burrell and Gareth Morgan, *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life* (London: Heinemann, 1979), 21-37.

²⁴ Max Weber defined ideal types as "[a theoretical construct] formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct. In its conceptual purity, this mental construct cannot be found empirically anywhere in reality. ... It has the significance of a purely ideal limiting concept with which the real situation or action is compared" *Dictionary of Visual Discourse: A Dialectical Lexicon of Terms* (Surrey: Ashgate Publishing, 2011), s.v. "IDEAL TYPE," http://www.credoreference.com/entry/ashgtvd/ideal_type.

²⁵ For an example of homeland security as a rational reality (as defined in the text), see Richard J. Hartnett, et. al., "Augmenting the DGPS Broadcast with Emergency Information," *Homeland Security Affairs, Best Papers from the IEEE Conference on Technologies for Homeland Security* (January 2011). <http://www.hsaj.org/?article=supplement3.5>

²⁶ For an example of the structural reality of homeland security, see Samuel Clovis, "Federalism, Homeland Security and National Preparedness: A Case Study in the Development of Public Policy," *Homeland Security Affairs* 2, no. 3 (October 2006), <http://www.hsaj.org/?article=2.3.4>

²⁷ For examples of homeland security from a group perspective, see Fathali Moghaddam and James Breckenridge, "Homeland Security and Support for Multiculturalism, Assimilation, and Omniculturalism Policies among Americans," *Homeland Security Affairs* 6, no. 3 (September 2010), <http://www.hsaj.org/?article=6.3.7>, and Lulu Rodriguez and Suman Lee, "Factors Affecting the Amplification or Attenuation of Public Worry and Dread about Bioterrorist Attacks," *Homeland Security Affairs* 6, no. 1 (January 2010), <http://www.hsaj.org/?article=6.1.7>

²⁸ James O. Young, "The Coherence Theory of Truth," Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), <http://plato.stanford.edu/archives/fall2008/entries/truth-coherence/>.

²⁹ For an example of homeland security from an individual perspective, see Tom Ridge and Larry Bloom, *The Test of Our Times: America Under Siege...And How We Can Be Safe Again* (Thomas Dunne Books, 2009); and Kip Hawley and Nathan Means, *Permanent Emergency: Inside the TSA and the Fight for the Future of American Security* (Palgrave Macmillan, 2012).

³⁰ One of the characters in the text abruptly terminates the discussion of what counts as data when constructing homeland security theory. If the conversation were to continue, the characters would talk about deciding whether to use every day events, theories, concepts, metaphors, or paradigms to determine what counts as homeland security data. (Bellavita, *How Public Organizations Work*, xvi.) This would lead to a longer discussion about the appropriate modes of homeland security inquiry; a conversation that would touch on induction, deduction, abduction, multiple realities, dialectic inquiry, unbounded systems, obliquity, detour and access. (C. West Churchman, *The Design of Inquiring Systems: Basic Concepts of Systems and Organization* (New York: Basic Books, 1971); Ian I. Mitroff, *The Unbounded Mind: Breaking the Chains of Traditional Business Thinking* (New York: Oxford University Press, 1993); Francois Jullien, *Detour and Access: Strategies of Meaning in China and Greece*, trans. Sophie Hawkes (MIT Press, 2004); and Igor Douven, "Abduction," Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Spring 2011 Edition), <http://plato.stanford.edu/archives/spr2011/entries/abduction/>; John Kay, *Obliquity: Why Our Goals Are Best Achieved Indirectly* (Penguin Press, 2011). The framework for the epistemological pyramid was suggested to me by Larry Kirkhart.

³¹ “For a large class of cases—though not for all—in which we employ the word ‘meaning’ it can be defined thus: the meaning of a word is its use in the language.” Ludwig Wittgenstein, *Philosophical Investigations*, P. M. S. Hacker and Joachim Schulte, eds., 4th ed. (Wiley-Blackwell, 2009), 43.

³² Christopher Bellavita, “Changing Homeland Security: What is Homeland Security?” *Homeland Security Affairs* 4, no. 2 (June 2008) <http://www.hsaj.org/?article=4.2.1> Shawn Reese, *Defining Homeland Security: Analysis and Congressional Considerations*, R42462 (Congressional Research Service, April 3, 2012).

³³ U.S. Department of Homeland Security, *Quadrennial Homeland Security Review Report* (2010), 11-17.

³⁴ See http://en.wikipedia.org/wiki/The_School_of_Athens. See also, Raphael’s Fresco of the School of Athens <http://youtu.be/uOrG6jfBzEU>, especially from the 1:30 to the 3:40 mark.

³⁵ “Truth is one of the central subjects in philosophy. It is also one of the largest. Truth has been a topic of discussion in its own right for thousands of years. Moreover, a huge variety of issues in philosophy relate to truth, either by relying on theses about truth, or implying theses about truth. It would be impossible to survey all there is to say about truth in any coherent way.” Michael Glanzberg, “Truth,” Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Spring 2009 Edition), <http://plato.stanford.edu/archives/spr2009/entries/truth/>. For more on this practically endless topic, see also F. Fernandez-Armesto, *Truth* (Random House Pod, 2010); Simon Blackburn, *Truth: A Guide* (Oxford University Press, 2007); and Harry G. Frankfurt, *On Truth*, 1st ed. (New York: Knopf, 2006).

³⁶ René Descartes, *A Discourse on the Method*, trans. Ian Maclean (Oxford University Press, 2008), 17.

³⁷ Piet J.M. Verschuren, “Holism versus Reductionism in Modern Social Science Research,” *Quality and Quantity* 35, no. 4 (2001): 389-405.

³⁸ A character again tries to bring up modes of inquiry, but neglects to provide details about what the ideas mean. See note #30.

³⁹ Paul Feyerabend, *Against Method*, Fourth ed. (2010), Verso.

⁴⁰ Peter Facione, “Critical Thinking: What It Is and Why It Counts” (2011), www.insightassessment.com/pdf_files/what&why2006.pdf; Tim van Gelder, “Teaching Critical Thinking: Some Lessons from Cognitive Science” *College Teaching* 53, no. 1 (2005): 41-46; Linda Kiltz, “Developing Critical Thinking Skills in Homeland Security and Emergency Management Courses,” *Journal of Homeland Security and Emergency Management* 6, no. 1 (2009); Matthew L. Collins and Stacy L. Peerbolte, “An Exploratory Research Design Further Demonstrating the Need for the Integration of Critical Thinking Skill Curricula in Homeland Security and Emergency Management Higher Education Academic Programs,” *Journal of Homeland Security and Emergency Management* 8, no. 2 (2011).

⁴¹ Chris Argyris, “Teaching Smart People How To Learn,” *Harvard Business Review* (May-June 1991): 148-158.

⁴² Orion F. White, Jr., and Cynthia J. McSwain. 1983. “Transformational Theory and Organizational Analysis,” in *Beyond Method: Strategies for Social Research*, ed. Gareth Morgan (Sage Publications, Inc., 1983), 292-305.

⁴³ For a carefully discussed extension of this position, see R. McDermott, “Methodology for Homeland Security,” *Journal of Homeland Security and Emergency Management* (July 2010). <http://www.homelandsecurity.org/journal/Default.aspx?t=346>.

⁴⁴ “Everywhere science is enriched by unscientific methods and unscientific results, while procedures which have often been regarded as essential parts of science are quietly suspended or circumvented... The separation of science and non-science is not only artificial but also detrimental to the advancement of knowledge. If we want to understand nature, if we want to master our physical surroundings, then we must use all ideas, all methods, and not just a small selection of them.” Feyerabend, *Against Method*, 305-306

⁴⁵ Peter Godfrey-Smith “If we want to understand how science works... the first thing we need to do is work out what exactly we are trying to explain. Where does science begin and end? What kind of activity counts as 'science'? Unfortunately this is not something we can settle in advance. There is a lot of disagreement about what counts as science....” Godfrey-Smith, *Theory and Reality*, 2.

Kaplan agrees: “I ... forgo a definition [of the scientific method] because I believe there is no one thing to be defined.” Kaplan, *The Conduct of Inquiry*, 27.

“...I think science is not about data; it's not about the empirical content, about our vision of the world. It's about overcoming our own ideas, and about going beyond common sense continuously. Science is a continuous challenge of common sense, and the core of science is not certainty, it's continuous uncertainty. I would even say the joy of taking what we think, being aware that in everything we think, there are probably still an enormous amount of prejudices and mistakes, and try to learn to look a little bit larger, knowing that there is always a larger point of view that we'll expect in the future.” Carlo Rovelli, “Science Is Not About Certainty: A Philosophy of Physics,” *Edge* (2012), <http://www.edge.org/conversation/a-philosophy-of-physics>.

The question of what constitutes basic science appears very straightforward to the *Oxford English Dictionary*: “A branch of study which is concerned either with a connected body of demonstrated truths or with observed facts systematically classified and more or less colligated by being brought under general laws, and which includes trustworthy methods for the discovery of new truth within its own domain.” *Oxford English Dictionary*, 2nd edition (1989), <http://www.oed.com/view/Entry/172672>.

⁴⁶ “How and why do we accept one theory in preference to others? ...We choose the theory which best holds its own in competition with other theories; the one which, by natural selection, proves itself the fittest to survive.... A theory is a tool which we test by applying it, and which we judge as to its fitness by the result of its application.” Karl Popper, *The Logic of Scientific Discovery*, 2nd ed. (Routledge, 2002), 91.

⁴⁷ The *Quadrennial Homeland Security Review* report defines homeland security and the homeland security enterprise: “Homeland security is a concerted national effort to ensure a homeland is safe, secure, and resilient against terrorism and other hazards where American interests, aspirations, and way of life can thrive.” “The homeland security ‘enterprise’ refers to the collective efforts and shared responsibilities of Federal, State, local, tribal, territorial, nongovernmental, and private-sector partners—as well as individuals, families, and communities—to maintain critical homeland security capabilities. It connotes a broad-based community with a common interest in the safety and well-being of America and American society.” U.S. Department of Homeland Security, *Quadrennial Homeland Security Review Report* (2010), 13, 12.

⁴⁸ Attributed to William Arthur Ward <http://www.brainyquote.com/quotes/quotes/w/williamart110212.html>. The correct quote is “The pessimist complains about the wind; the optimist expects it to change; the realist adjusts the sails.”

⁴⁹ Donald A. Schon, *The Reflective Practitioner: How Professionals Think In Action*, 1st ed. (Basic Books, 1984).

⁵⁰ Anthony Downs, “Up and Down With Ecology: The ‘Issue-Attention Cycle,’” *The Public Interest* 28 (Summer 1972): 38-50; Christopher Bellavita, “Changing Homeland Security: The Issue-Attention Cycle,” *Homeland Security Affairs* 1, no. 1 (June 2005), <http://www.hsaj.org/?article=1.1.1>; B. Guy Peters and Brian W. Hogwood, “In Search of the Issue-Attention Cycle,” *Journal of Politics* 47, no. 1 (February 1985): 238-253. For a visual example, see John Sides, “On Haiti, America’s Short Attention Span Strikes Again,” *Salon.com* (2010), http://www.salon.com/2010/04/30/haiti_short_attention_span/singleton/.

⁵¹ This depiction of the cycle modifies the cycle’s presentation in the Anthony Downs article, cited in note 50. Pre-event refers to the period and activities before an event. Event refers to the major event that triggers the next phase of the cycle. Alarm signifies national or other significant stakeholder attention to the event. Demand means the insistence by officials and the public that the causes and consequences of the event be addressed. Awareness of difficulty indicates the growing knowledge that causes and consequences will not quickly be remedied. Changing priorities describes the shift of attention to different problems. Post-event refers to the transformation of the issue to a new pre-event status.

⁵² See Note 5 for the working definition of grand theory.

⁵³ “[It] is useful to distinguish between the notions ‘complex’ and ‘complicated’. If the system—despite the fact that it may consist of a huge number of components—can be given a complete description in terms of its individual constituents, such a system is merely *complicated*. Things like jumbo jets or computers are complicated. In a *complex* system, on the other hand, the interaction among constituents of the system, and the interaction between the system and its environment, are of such a nature that the system as a whole cannot be fully understood simply by analyzing its components. Moreover, these relationships are not fixed, but shift and change, often as a result of self organization. This can result in novel features, usually referred to in terms of emergent properties. The brain, natural language and social systems are complex.” Paul Cilliers, *Complexity and Postmodernism: Understanding Complex Systems*, 1st ed. (Routledge, 1998), viii.

⁵⁴ For a comprehensive list of the agencies and people who constitute the homeland security enterprise, see DHS, “Appendix A: Roles And Responsibilities Across The Homeland Security Enterprise.” *Quadrennial Homeland Security Review Report* (2010), A1-A8.

⁵⁵ Robert F. Ulanowicz, *A Third Window: Natural Life Beyond Newton and Darwin* (West Conshohocken, PA: Templeton Foundation Press, 2009); Raphael D. Sagarin and Terence Taylor, eds. *Natural Security: A Darwinian Approach to a Dangerous World* (Berkeley: University of California Press, 2008); Rafe Sagarin, *Learning From the Octopus: How Secrets from Nature Can Help Us Fight Terrorist Attacks, Natural Disasters, and Disease* (Basic Books, 2012).

⁵⁶ A complex adaptive system is “a system in which large networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing, and adaptation via learning or evolution.” Melanie Mitchell, *Complexity: A Guided Tour* (Oxford University Press, 2009), 13. See also John H. Miller and Scott E. Page, *Complex Adaptive Systems: An Introduction to Computational Models of Social Life* (Princeton University Press, 2007).

⁵⁷ For a detailed analysis of how the homeland security enterprise intelligence system is sustained, see Dana Priest and William M. Arkin, *Top Secret America: The Rise of the New American Security State*, 1st ed. (Little, Brown and Company, 2011).

⁵⁸ D. Kettl, *System Under Stress: Homeland Security and American Politics*, 2nd ed. (CQ Press, 2007); Janet Napolitano, “Secretary of Homeland Security Janet Napolitano’s 2nd Annual Address on the State of America’s Homeland Security: Homeland Security and Economic Security” presented at the National Press Club, January 30, 2012, Washington, DC, <http://www.dhs.gov/ynews/speeches/napolitano-state-of-america-homeland-security.shtm>; Paul C. Light, “The Homeland Security Hash” *Wilson Quarterly* 31, no. 2 (2007): 36-44. Presenting homeland security’s first decade as a series of version was suggested to me by Ted Lewis.

⁵⁹ “What is the ‘Glass Bead Game’?... Hesse speaks of ‘a game of thoughts called the Glass Bead Game’...: ‘I hear music and see men of the past and future. I see wise men and poets and scholars and artists harmoniously building the hundred-gated cathedral of Mind.’... The Glass Bead Game is an act of mental synthesis through which the spiritual values of all ages are perceived as simultaneously present and vitally alive.... [The] game is... a symbol of the human imagination....” Hermann Hesse, *The Glass Bead Game: (Magister Ludi)*, 1st ed. (New York: Picador USA, 2002), viii-ix.

⁶⁰ Homeland Security Council, *National Strategy for Homeland Security* (2007), 31-39, 44.

⁶⁵ “A core challenge in diagnosing why some [social-ecological systems] are sustainable... is the identification and analysis of relationships among multiple levels of these complex systems at different spatial and temporal scales. Understanding a complex whole requires knowledge about specific variables and how their component parts are related. Thus, we must learn how to dissect and harness complexity, rather than eliminate it from such systems. This process is complicated, however, because entirely different frameworks, theories, and models are used by different disciplines to analyze their parts of the complex multilevel whole. A common, classificatory framework is needed to facilitate multidisciplinary efforts toward a better understanding of complex [systems].... A framework is... useful in providing a common set of potentially relevant variables and their subcomponents to use in the design of data collection instruments, the conduct of fieldwork, and the analysis of findings about... complex [systems].” Elinor Ostrom, “A General Framework for Analyzing the Sustainability of Social-ecological Systems,” *Science* 325, no. 5939 (2009): 420.

For the distinction Ostrom makes among framework, theory, and model, see Elinor Ostrom, “Institutional Rational Choice,” in *Theories of the Policy Process*, 2nd Edition, ed. Paul A Sabatier, Chapter 2 (Westview Press, 2007), 25-26

⁶⁶ D. Snowden and M Boone, “A Leader’s Framework for Decision Making,” *Harvard Business Review* (November 2007): 70.

⁶⁷ For additional information about the Cynefin framework, see David Snowden, “Origins of Cynefin,” *Cognitive Edge*, <http://cognitive-edge.com/library/more/articles/the-origins-of-cynefin1/>. See also the entry for Cynefin at <http://en.wikipedia.org/wiki/Cynefin>

⁶⁸ An eight minute video overview of the Cynefin framework can be found at <http://www.youtube.com/watch?v=N7oz366Xo-8>

⁶⁹ I learned that the US Department of Agriculture’s National Finance Center (NFC) manages many, if not, most of the payroll systems used by the DHS. DHS is not the only agency that uses the Department of Agriculture; the NFC website boasts that its “customer base is comprised of more than 140 Federal organizations, representing all three branches of the Government.” https://www.nfc.usda.gov/About_NFC/About_NFC_home.html. My guess is the NFC has figured out how to make a complicated process comparatively simple, and has shared their success with other agencies. But I’m just guessing.

⁷⁰ For a description of the Suspicious Activity Reporting System, see “The Nationwide SAR Initiative” at <http://nsi.ncirc.gov/>. For a discussion of the problems created by the data generated, see G.W. Schulz and Andrew Becker, “Finding Meaning in Suspicious Activity Reports,” NPR, September 7, 2011, <http://www.npr.org/2011/09/07/140237086/finding-meaning-in-suspicious-activity-reports>.

For a brief introduction to the more generic “big data problem,” see “DHS Secretary Janet Napolitano: The ‘Big Data’ Problem,” *Homeland Security News* March 2011), <http://www.homelandsecuritynews.info/2011/03/dhs-secretary-janet-napolitano-the-big-data-problem/>. “Many of you probably deal with a version of [the Big Data Problem] in your own work: your research brings in reams of data, but what is essential is the ability to glean insight, and discern patterns and trends from a mass of information. It is about discerning meaning and information from millions – billions – of data points. And when it comes to our security, this is one of our nation’s most pressing science and engineering challenges. I mentioned the two million airline passengers we process every day. Now add the more than 50,000 cargo containers that come every day through hundreds of air, land, and sea ports. At the same time, DHS is part of the nation’s Intelligence Community, *which receives more terabytes of data each day than the entire text holdings of the Library of Congress*. [emphasis added] The National Counterterrorism Center’s 24-hour Operations Center receives 8,000 to 10,000 pieces of counterterrorist information every day. We receive data about all of this, and it is clearly too much to suggest that the simplistic “connect the dots” analogy accurately represents what an analyst must do. Very quickly, you can see that “Big Data” – more so than the lack of data – becomes the most pressing problem. At the same time, the threats implicated by the data are not static.”

⁷¹ In the context of the conversation, socially constructing reality refers to the communication process humans use to develop a shared subjective reality; over time, subjective reality can become reified and take on the attributes of objective reality – meaning people tend to forget what part of “reality” they made up. There is much more to the concept than this; see Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* (Anchor, 1967). An overview of the ideas can be found at http://www.sociosite.net/topics/texts/berger_luckman.php.

⁷² Rorty’s quote is cited in W. Desmond, *Art, Origins, Otherness: Between Philosophy and Art* (Albany, NY: State University of New York Press, 2003), 280.

⁷³ For one attempt to do this, see Reese, *Defining Homeland Security: Analysis and Congressional Considerations*.

⁷⁴ For illustrations of simple and complicated homeland security problems, see Christopher Bellavita, “Changing Homeland Security: Shape Patterns, Not Programs,” *Homeland Security Affairs* 2, no. 3 (October 2006), <http://www.hsaj.org/?article=2.3.5>. From a different conceptual framework, simple and complicated problems can be categorized as “tame” problems. See H. Rittel and M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4 (1973): 155–169.

⁷⁵ “[A] Black Swan... is an event with the following three attributes. First, it... lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it [retrospectively] explainable and predictable.” Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*, 1st ed. (Random House, 2007), xvii-xviii.

⁷⁶ George W. Bush, Homeland Security Presidential Directive 8/HSPD-8 (Washington, DC, 2003), <http://www.fas.org/irp/offdocs/nspd/hspd-8.html>. Barack Obama, Presidential Policy Directive 8/ PPD-8: National Preparedness (Washington, DC, 2011), http://www.dhs.gov/xabout/laws/gc_1215444247124.shtm. Christopher Bellavita. 2011. “The National Preparedness Goal Occupies Wall Street,” *Homeland Security Watch*. October 4, 2011, <http://www.hlswatch.com/2011/10/04/the-national-preparedness-goal-occupies-wall-street/>.

⁷⁷ Gedeon Naudet, James Hanlon, and Jules Naudet, *9/11* (Paramount, 2010). The specific scene described in the narrative can be viewed (around the 46 minute mark) at <http://www.youtube.com/watch?v=RjzQTEtv6-w>.

⁷⁸ “A complex system is a lightly constrained system, in which agents (anything which acts) co-evolve with the system itself; the system constrains the agents, but the agents constantly modify the system by the nature of their interaction with it. Managing complex system ... involves a process of navigation where the map by its nature is incomplete and the topology is constantly changing.” David Snowden, “Complexity, Precision and Meaning,” *Cognitive Edge* (2008), <http://cognitive-edge.com/blog/entry/3759/complexity-precision-and-meaning/>. See also The Cynefin Framework, <http://www.youtube.com/In?v=N7oz366Xo-8>.

⁷⁹ Lisa Schnirring, “H1N1 Lessons Learned Vaccination Campaign Weathered Rough Road, Paid Dividends,” *CIDRAP*, April 30, 2010. <http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/news/apr3010campaign.html>. Tom Russo, “Pandemic Vaccine Distribution Policy for the Twenty-First Century” *Homeland Security Affairs* 8, Article 4 (February 2012), <http://www.hsaj.org/?article=8.1.4>.

⁸⁰ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster in the Future of Offshore Drilling* (Washington, DC: United States Coast Guard, 2011); *BP Deepwater Horizon Oil Spill: Incident Specific Preparedness Review* (Washington, DC: British Petroleum, 2010). Deepwater Horizon Accident Investigation Report.

⁸¹ Snowden and Boone, "A Leader's Framework for Decision Making," 75. Snowden claims people tend to interpret situations based on their personal preference for action. People who are socialized in bureaucracies tend to see problems as "a failure of process." "Deep experts" see problems as a result of failure to provide enough time or resources to do analysis. People who are "natural complexity workers" tend to seek ideas and opinions from a wide variety of sources. And "of course the fascists love a crisis because then they can be given absolute command of everybody who has to do what they're told." When people are confronted with a significant decision, they "are in a disordered space, assessing the situation according to their preference for action." The Cynefin Framework, <http://www.youtube.com/In?v=N7oz366Xo-8>

⁸² Snowden and Boone, "A Leader's Framework for Decision Making"; Robert Kegan and Lisa Laskow Lahey, *Immunity to Change: How to Overcome It and Unlock the Potential in Yourself and Your Organization*, 1st ed. (Harvard Business School Press, 2009); Leonard J. Marcus, Barry C. Dorn, and Joseph M. Henderson, "Meta-Leadership and National Emergency Preparedness: A Model to Build Government Connectivity," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 4, no. 2 (2006): 128–134.

⁸³ Appendix II.1 "Characteristics And Qualifications Of An Effective Crisis Leader," in *Deep Water: The Gulf Oil Disaster in the Future of Offshore Drilling*, 57-61.

⁸⁴ Gary A. Yukl, *Leadership in Organizations*, 2nd ed. (Englewood Cliffs, N.J: Prentice Hall, 1989), 149-172; 194-198.

⁸⁵ "One of the most powerful tools arising from complex systems research is a set of computational techniques that allow a much wider range of models to be explored.... [Scientific]... validity... must be earned by carefully considering the ability of the new models to help us understand and *predict* [emphasis added] the questions that we hold most dear." (5) "Recognizing and understanding causality is one of the big challenges for agents within, and modelers of, complex systems.... *Predictive agents... need to have an understanding of the causal implications of their actions.... Modeling how agents simplify complexity so that they can predict an act is an important topic.*" [emphasis added] (237), in Miller and Page, *Complex Adaptive Systems*.

⁸⁶ The law of the situation – a proto-complexity strategy – was suggested early in the 20th century by Mary Parker Follett: "From one point of view, one might call the essence of scientific management the attempt to find the law of the situation. With scientific management the managers are as much under orders as the workers, for both obey the law of the situation. Our job is not how to get people to obey orders, but how to devise methods by which we can best *discover* the order integral to a particular situation." Mary Parker Follett, Mary Parker, "The Giving of Orders," in *Scientific Foundations of Business Administration* (Baltimore: Williams and Wilkins Co., 1926); reprinted in *Classic Readings in Organizational Behavior*, J. Steven Ott, ed. (Pacific Grove, Calif: Brooks/Cole, 1989), 259.

More than 75 years later, another author extended Follett's point: "There is a quality even meaner than outright ugliness or disorder, and this meaner quality is the dishonest mask of pretend order, achieved by ignoring or surpassing the real order that is struggling to exist and to be served." Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 2002), 21.

⁸⁷ The December 2011 *Strategic National Risk Assessment* excluded similar threats from its initial assessment: "Only events that have a distinct beginning and end and those with an explicit nexus to homeland security missions were included. This approach excluded: Chronic societal concerns, such as immigration and border violations, and those that are generally not related to homeland security national preparedness, such as cancer or car accidents; and, Political, economic, environmental, and societal trends that may contribute to a changing risk environment but are not explicitly homeland security national-level events (e.g., demographic shifts, economic trends). These trends will be important to include in future iterations of a national risk assessment, however." *The Strategic National Risk Assessment in Support of PPD 8: A Comprehensive Risk-Based Approach Toward a Secure and Resilient Nation* (Washington, DC: Department of Homeland Security, 2011), 2.

⁸⁸ “Complex ideas may, perhaps, be well-known by definition, which is nothing but an enumeration of those parts or simple ideas, that compose them. But when we have pushed up definitions to the most simple ideas, and find still some ambiguity and security; what resource are we then possessed of? By what invention can we throw light upon these ideas, and render them altogether precise and determinate for intellectual view?” David Hume, “A Treatise of Human Nature,” in *Great Books of the Western World*. Vol. 35 (Chicago: Encyclopedia Britannica, Inc., 1952), 471. “The necessary connexion betwixt causes and effects is the foundation of our inference from one to the other. The foundation of our inference is the transition arising from the accustomed union. These are, therefore, the same.” David Hume, “A Treatise of Human Nature,” Sect. XIV of *The Idea Of Necessary Connexion*, http://www.gutenberg.org/files/4705/4705-h/4705-h.htm#2H_4_0035.

⁸⁹ “But I shall certainly admit a system as empirical or scientific only if it is capable of being *tested* by experience. These considerations suggest that not the *verifiability* but the *falsifiability* of a system is to be taken as a criterion of demarcation. In other words: I shall not require of a scientific system that it shall be capable of being singled out, once and for all, in a positive sense; but I shall require that its logical form shall be such that it can be singled out, by means of empirical tests, in a negative sense: *it must be possible for an empirical scientific system to be refuted by experience*. Popper, *The Logic of Scientific Discovery*, 18 (emphasis in original).

⁹⁰ “The most common misunderstanding about science is that scientists seek and find truth. They don't—they make and test models.... Building models is very different from proclaiming truths. It's a never-ending process of discovery and refinement, not a war to win or destination to reach. Uncertainty is intrinsic to the process of finding out what you don't know, not a weakness to avoid.” Neil Gershenfeld, “Truth Is a Model,” in *This Will Make You Smarter: New Scientific Concepts to Improve Your Thinking*, ed. John Brockman (Harper Perennial, 2012), 72-73.

⁹¹ “*In so far as a scientific statement speaks about reality, it must be falsifiable: and in so far as it is not falsifiable, it does not speak about reality.*” Popper, *The Logic of Scientific Discovery*, 316 (emphasis in original)

⁹² One government report suggests people can be trained to lead during a crisis: “Many Government Agencies and private corporations ‘grow’ leaders from within. They also often bring in proven leaders from outside to provide new leadership and direction for the organization; however, the skills of organization and the ability to manage and lead are only baseline competencies when a crisis arises. The outcome of a crisis or the success of a response to the crisis is directly related to effective crisis leadership. Some leaders are naturally suited for such a role, but often are not the ones who find themselves confronting a crisis or are not the ones placed in the position of leadership when the crisis occurs. Leaders involved in crisis management may find themselves on national television, with little or no media training or experience for their leadership position. Crisis managers are required to make critical and binding decisions without the benefit of lengthy study or peer-reviewed advice. The crisis dictates the pace, tempo, and duration that drives the decision making process. *Leaders not trained and prepared to function effectively in a crisis* can create an image of incompetence, chaos, or disorganization, even if the incident is being managed competently and effectively. In most cases, the leader in a crisis is the “face” of the organization he or she represents; in some cases it may be virtually the only time the public is aware of the organization. The reputation of that organization will largely be determined by the performance of the crisis leader.” Appendix II.1 “Characteristics And Qualifications Of An Effective Crisis Leader,” 57 [emphasis added] in *Deep Water: The Gulf Oil Disaster in the Future of Offshore Drilling*.

⁹³ A starting list of problems to work on can be found at Congressional Research Service Reports on Homeland Security, maintained by the Federation of American scientists at <http://www.fas.org/sgp/crs/homesecc/index.html>. Also, Bellavita, “Changing Homeland Security: Shape Patterns, Not Programs,” 9; Bellavita, “Changing Homeland Security: In 2010, Was Homeland Security Useful?” 1.

⁹⁴ This comparison was brought to my attention by Jason Nairn. Jason P. Nairn, “State and Local Homeland Security Officials: Who Are They and What Do They Do?” (master’s thesis, Naval Postgraduate School, September 2011), <https://www.hsdl.org/?view&did=691550.pdf>.



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