# Formalizing Goldstone and Tilly 2001

In their essay “Threat (and Opportunity): Popular Action and State Response in the Dynamics of Contentious Action”, Goldstone and Tilly challenge the idea that the occurrence of protest mobilization responds purely to the formation of opportunities within the state. They contend that the actions of protesters, and the subsequent reaction of the state, are themselves capable of changing the political opportunity and threat in such a way as to influence the likelihood of further protest.

The authors construct a formal model of the interaction of the political opportunity structure and the existential and repressive threat supplied by the regime. The formal model supports theory building by making the authors’ assumptions explicit and ensuring that the included mechanisms are internally consistent. The authors then go on to describe *informally* the way protest actions influence regime behavior, and the subsequent effect on political opportunities and threats. They then make claims about the dynamic observable implications of this theory.

In this paper, I extend Goldstone and Tilly’s formal model to include the remaining *informal* theory presented in their essay. Doing so reveals ambiguities in the informal theory and suggests ways in which they may be resolved, such that each proposed mechanism is *structurally consistent* with the others. I then simulate this model to test the *dynamic consistency* of the theory – or it’s ability to produce the indicated behavior. Doing so suggests the need for further modifications to the theory and how it is interpreted.

This work contributes to development of the theoretical matter concerned, and adds an example of formalization for theory building that may serve as a resource for other scholars.

**Formal Modeling for Theory Building**

It is an academic stereotype to say that scientific rigor is achieved solely through observation. We can, however easily point out the need for rigorous theory building, in addition to rigorous theory testing. Some theories are clearly better than others, even before they are put to the test. The attributes that make for good theory include clarity, parsimony, falsifiability, internal compatibility of propositions, and consistency between propositions and predicted observable outcomes. For simple theories, we can achieve each of these through verbal argument. As the complexity of a theory grows, however, the tools of formalization and simulation become increasingly helpful for ensuring robustness.(Davis, Eisenhardt, and Bingham 2007; Freese 1980)

## The existing formal model

Goldstone and Tilly begin the work of formalizing their theory by postulating that the gains expected from protest (G) are a function of the repressive cost of protest (C), and the likelihood-adjusted (O) advantages (V) to protest’s success:

To improve readability, in this paper I will use elaborated names of variables. The above equation thus is also expressed as:

Thoughout the paper, I will also represent the structure of these equations graphically, as seen below. Diagramming the equations in this way highlights the causal mechanisms proposed by the theory and helps to make the structure of the overall system more explicit. In this diagram, arrows show the direction of theorized causal influence, with the plus (+) and minus (-) signs indicating the direction that this influence takes. Thus an increase in the **Probability of success** leads to an *increase* in **Expected net gain from protest**, while an increase in **Cost of protest** yields a corresponding *decrease* in **Expected net gain from protest**, all else being equal.



Goldstone and Tilly elaborate this structure by providing additional components that contribute to each of the proposed components:

In these equations, **Current threat** is interpreted to be “harms under the existing regime” (184, 3)[[1]](#footnote-1), whereas **Repressive threat** is the “immediate risk involved with the act of protest itself” (184,2). We add these equations to our existing model diagram by adding links upstream in what will become a ‘causal chain’ of factors influencing the expected gain from protest, as seen below:



## Expanding the existing structure

This structure forms the entirety of the formal model elaborated by Goldstone and Tilly, but only describes a part of the theory presented within the paper.

To ensure the structural consistency of the propositions laid forth in the remainder of the paper, I will build up formal structures for these propositions. To do so requires interpretation, and to resolve ambiguities in the theory’s presentation where multiple interpretations are possible, I discuss why one should be preferred over the other.

The first piece of additional theory is the influence that the **Expected net gain from protest** has on the actual level of protest. Goldstone and Tilly explain “protest actions are expected if gains (G) are greater than zero” (185, 2). This I formalize as a binary variable:



### Regime Levers

Goldstone and Tilly next describe the various levers that the regime has to influence the likelihood of protest, namely their ability to manipulate the levels of the **Current threat**, and the **Repressive Threat** (185, 5). The authors describe the process of making “concessions to alleviate current threat” (186, 1) that suggests we model the **Current threat** as some **Initial level of current threat**minus the **Concessions** that have accumulated since that initial time.



When we come to formalize influence on the **Repressive threat**, the task is not quite so straightforward. The paper describes this as “the level of repression that follows on protest action”(185, 5) suggesting that after each protest event, a particular response is chosen and implemented, with little inertia. At the same time, this level provides a form of deterrence, which itself requires a more persistent form.

Here formalization has given us a first opportunity to address an ambiguity in the verbal presentation of theory. The persistent, deterrent component of **Repressive Threat** is qualitatively different from the actual actions taken following a particular protest activity. The first depends upon individuals’ perception or expectation of the threat that would be applied following future protest, which itself is informed both by the making of statements and by past behavior.

The simplest resolution to this ambiguity is to suggest that the **Expected Repressive Threat** is a level that adjusts to the currently observed **Repressive response**, proportional to how big the gap is between observed and expected behavior.



These levels form the first true state variables in our model, and will enable us to simulate behavior changing over time.

### Regime Costs

Our next task in the formalization is to understand the way in which the cost of regime action in either of the two dimensions influences which action will be taken. Here we come upon another ambiguity of the paper:
“Both concessions to alleviate
current threats, and repressive threats to respond to (and deter) protest
actions are costly” (186, 1) – but

Dynamic Consistency

There is a challenge in

Simulating the formalized model then tests if the hypothesized results of the theory are consistent with the mechanisms postulated

For example (Sastry 1997) showed that…

(Sterman 1985)

(Davis et al. 2007)

Simulation can also identify hypothetical observable outcomes for theory testing.

The idea that some theories can be better than others *even before they are compared with reality* is essentially what we’re getting at. Doing theory better.

3. New observable implications

The process of formalization

The paper itself gives us a start at formalization of the theory

Documentation for Rahaandad and Sterman 2012?

1. Where direct quotes are taken, or concepts are drawn from text, I give page and paragraph number from (Goldstone and Tilly 2001) in format (page, paragraph). [↑](#footnote-ref-1)