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*Article***Using Event Structure Analysis to Understand Planned Social Change**

William Stevenson  
Boston College  
Boston, Massachusetts, USA

Heidi Zinzow  
University of Georgia  
Athens, Georgia, USA

Sanjeev Sridharan  
Westat  
Rockville, Maryland, USA

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**Abstract**

In this article, the authors explore the application of Event Structure Analysis in understanding the linkages between events in planned social change. An illustrative example from the Comprehensive Strategy for Serious, Violent and Chronic Juvenile Offenders is used to highlight the key features of Event Structure Analysis.

**Keywords:** event structure analysis, social change, qualitative analysis

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**Introduction**

Analyzing the process of planned social change guided by institutions such as governments is a difficult endeavor. Government instituted change involves coordination among government agencies at various levels, community activists, private interests, and change recipients. These coordination efforts typically develop into an extremely tangled web of relationships. One approach to understanding this complex tangle of events involves an analysis of the history of the process. There are a number of qualitative analysis techniques available for the analysis of the history of a social process. For example, narratives that describe the process can be collected (Reissman, 1993), or critical incidents that occur can be analyzed to reveal the assumptions of the actors (Angelides, 2001). Here we discuss a relatively unknown technique, event structure analysis (Heise & Durig, 1997) that is used to analyze history as a sequence of events, and apply it to the analysis of a case study of planned social change.

Event structure analysis (ESA) views social processes as a successive series of events. Events are happenings that are significant in understanding the history of the process. The analyst using ESA

assumes that events may be causally linked to each other, and parallel series of events may occur simultaneously. Some events may be critical turning points in the process. Some events lead to multiple streams of events, and events may converge on a significant event. Creating a diagram of how these events are linked to each other should give the analyst insights into the social process involved in planned social change.

Event structure analysis is particularly useful for analyzing changes brought about by government. Government programs often involve a structured set of procedures in which problem definition, planning, implementation, and evaluation are undertaken. It would appear that social programs run by large bureaucratic organizations such as governments would be easy to evaluate, as these organizations rely on rules and procedures to accomplish goals. Evaluation should be the process of checking off sub-goals leading to larger goals as they are accomplished. In terms of ESA, the analysis of the implementation of social programs should be trivial. A diagram of the history of the events should show a linear path from planning to implementation to evaluation. Those who have been involved in the implementation of government programs, however, know that attempts at social change are unpredictable and strongly affected by the political and economic context in which change takes place. Programs must be tailored to the particular setting, local actors may become involved in the process, either for planned or unplanned reasons, and outcomes can become unpredictable as resources fail to materialize and actors pursue their own agendas.

Planned social change, then, leads to many unplanned outcomes. What begins as a planned set of goals becomes interweaving streams of events as various actors become involved and interact with each other. Government at the national level has to interact with government at the state and local level and community activists can become advocates or opponents of government programs. Actions can set off chains of events with possibly unpredictable outcomes. Coordination is necessary across organizations and individuals. ESA is particularly appropriate for untangling these webs of causally linked events, leading to insights into the evaluation of government programs.

Here we illustrate the use of ESA by examining a case study of the implementation of a Comprehensive Community Initiative (CCI). We draw from data that was collected as a part of the national process evaluation of the Comprehensive Strategy for Serious, Violent and Chronic Juvenile Offenders ("the Comprehensive Strategy"). Since events are intrinsically embedded in process, it follows that an analysis of planning and implementation events will lead to a greater understanding of social change processes that occur throughout the course of this collaborative initiative.

### **Planned social change as streams of events**

Comprehensive Community Initiatives (CCIs) such as the Comprehensive Strategy initiative pose many challenges to evaluation due to their inherent complexity and flexibility. The usual causal analysis methodology for evaluating social programs is to see if programs or social interventions cause a change in a social problem. Analysts employing this methodology use the language of cause and effect and transform social problem interventions into independent variables that cause changes in social problems operationalized as dependent variables. Many have begun to question whether this view of social methodology is too limited (Abell, 1987, 1993; Abbott, 1988, 1990, 1995; Griffin, 1993). For example, Abbott (1988) has proposed that there is a danger of thinking that statistical models are models of social behavior. According to Abbott (1988) we can become victims of thinking of the social world as examples of "general linear reality" in which a number of independent variables affect one or more dependent variables. In this skewed view of reality, there is no history of events changing relationships between cause and effect, there is no social context that may influence relationships of cause and effect, and there is no possibility of considering how events can influence a series of other events.

ESA is a method that responds to the challenges of analyzing a complex social process such as the implementation of CCIs. ESA (Heise & Durig, 1997) is a rule-driven, formal technique of narrative analysis that clarifies causal linkages between events. It is formal in the sense that it uses a set of logical rules to analyze the complex, interweaving sets of events embedded in narratives of social processes. Through the use of ESA's associated computer program, a researcher is prompted to enter chronological event sequences and causally link them according to logical rules. The analyst's interpretation is represented in a diagram consisting of parallel, diverging, and converging event sequences. ESA is both rigorous and interpretive; it preserves the complexity of social change processes, and allows for a dynamic, causal interpretation that can be replicated and generalized.

ESA provides the tools for this analysis of converging and diverging events. ESA is a form of "narrative positivism" (Abbott, 1992) in which formal rules are applied to the analysis of a narrative of events. An analyst using ESA tries to combine the thick description of the interpretive mode of inquiry with the rigor of the causal generalizations produced by an explanatory mode of inquiry (Griffin & Ragin, 1994). A consideration of context and contingencies that produce events leads to an interpretive understanding of the process, while the logical principles of an ESA analysis force analysts to be explicit in their reasoning, leading to the possibility of replication and generalization.

The approach embodied by ESA can be distinguished from other qualitative techniques for the analysis of social change. For example, narratives can be collected from participants in a change process. These narrative stories can be analyzed by a number of techniques such as semiotics, textual, or conversational analysis. Critical incidents, events that are significant and meaningful in a social situation, can be gathered (Angelides, 2001). Normally, however, there is no attempt to disaggregate narratives or connect critical incidents into causally linked sequences of events. Personal narratives are sometimes valued for their interpretive insight without a concern for using formal methods that allow replication of the analysis (Reissman, 1993). It is, of course, perfectly legitimate to consider a narrative or a number of narratives of the same events as valid and differing interpretations of events. ESA, however, typically is used to produce a single narrative that reflects the understanding of the researchers and participants.

### **An Event Structure Analysis of planned social change**

ESA was applied to a case study at a site implementing the Comprehensive Strategy for Serious, Violent and Chronic Juvenile Offenders, published by the Office of Juvenile Justice and Delinquency Prevention in 1993. This initiative provides a research-based framework for combating juvenile crime by targeting prevention efforts on youth who are at risk of delinquent behavior, by intervening in early delinquent behavior, and by responding effectively to youth who become involved in serious, violent, and chronic offenses. The Comprehensive Strategy's principal components—risk-focused delinquency prevention and graduated sanctions—are intended to provide a "continuum of care" that both prevents and interrupts the progression of delinquent and criminal careers. The Comprehensive Strategy achieves this goal through a systematic community-level and research-based planning approach to crime and delinquency reduction.

As emphasized by both its designers and trainers, the Comprehensive Strategy provides a *framework*, with an implicit systematic process, for a community to diagnose and address its local juvenile problems. The Comprehensive Strategy guides the process of communities adopting, planning for, and "implementing" the framework for addressing their juvenile problems. The planning process involves several interrelated and ongoing steps:

1. mobilize the community, its key leaders and other stakeholders and familiarize them with the goals, principles, and elements of the Comprehensive Strategy;

2. conduct community assessments (of risk factors, existing systems and resources, etc.);
3. develop strategic plans that identify appropriate services, programs, and approaches to address the community's identified needs;
4. specify mechanisms to coordinate and implement them; and
5. implement the plans, with ongoing monitoring of their program-specific goals and overall effectiveness at reducing risk factors and juvenile problem behaviors.

Technical assistance was provided for over 40 sites across the country to guide them through these phases. By undertaking and institutionalizing this process—mobilize, assess, plan, and implement—communities adopt the Comprehensive Strategy framework.

### Methodology

Data from site visits, stakeholder surveys, and telephone interviews were consolidated to develop a narrative account of the Comprehensive Strategy planning process in one intensive case study site, a small northeastern city. The narrative account we created follows Stevenson and Greenberg (1998, pp. 742-743): "A narrative is an analytic construct that is used to unify a group of events into a single story...A narrative explanation relies on these unfolding interconnections to investigate why something happened in the change process and how individuals understood those events." A timeline was also created to reflect the events within the narrative. The narrative and timeline were distributed to the site coordinator and to the consultant who had shepherded the assembly and production of the strategic plan. These individuals were asked to resolve inconsistencies in the event sequence and to verify the timing and occurrence of all recorded events.

The narrative was then analyzed using *Ethno2*, the event structure associated computer program (Heise, 2001). After entering a chronological sequence of events, the researcher is prompted to link the events in causal chains. The program poses a series of yes/no questions to make the researcher clarify whether a previous event is required for each subsequent event. It then reflects these linkages in a diagram that can be tested for its logical structure. During the "testing" mode, the program proceeds through the event sequences, forcing the analyst to be precise about the relationships among events. ESA highlights places where the event sequence does not follow the program's logical structure. For example, the program assumes that an event "depletes" its prerequisites, meaning that two events cannot be linked to the same prerequisite.

The analyst is prompted to consider various solutions to depletion, including altering the causal structure or maintaining dual outcomes. At this point, the researcher may be compelled to revisit the data or data sources to add previously unrecorded events or to elucidate linkages between events. In this way, the analyst is encouraged to justify his or her interpretation of event sequences and to further clarify the relationships between events.

It is important to note that ESA is not an artificial intelligence program that makes decisions for the analyst. The program simply prompts the analyst to enter events, and then asks if the events are linked to each other based on three assumptions:

1. an event cannot occur until all of its prerequisites have occurred;
2. an event depletes or uses up its prerequisites;

3. an event is not repeated until the conditions that created it are used up by some other event (Heise, 2001).

The analysts have to decide whether to override these rules as part of the analysis. For example, if one event leads directly to two subsequent events, then assumption two is violated, and the program will query the analysts to make sure that they understand their decision. ESA differs from other computer programs such as Atlas.ti or The Ethnograph that assist in qualitative analysis. These other programs assist in the coding of textual data and allow you to link concepts to each other. ESA, by contrast, allows you to convert a sequence of events into a "grammar of action" (Heise, 2001). The basic assumption of ESA is that the analyst has the knowledge of the sequence of events, and Ethno simply helps in seeing the implications of this knowledge.

### **The narrative**

The narrative used for this analysis is as follows:

The setting is a small, densely populated city in the northeastern United States. Most service providers and professionals live outside the community, and there is little industry to support the economy. This city has the highest property taxes in the State, and rent is considered unaffordable.

The Comprehensive Strategy process began for our focal city when the State Department of Children, Youth, and Families (DCYF) received funding for five sites in the State. In 1998, both the director of a local youth-serving organization (who later became the Site Coordinator, SC in Figure 1) and the mayor attended a planning meeting in which the State suggested combining the city's planning process with a neighboring community. (The youth director was involved due to the fact that his organization already received several grants from the Governor's Justice Commission, was the only organization solely tasked with serving youth in the community, and was on the mayor's "mailing list.") The mayor wanted the city to remain autonomous and for the community to take the process on for itself. Therefore, the city did not begin the planning process along with the other sites.

In July 1999, a representative from DCYF met with key leaders to discuss the coordinator and the planning team positions. Several months passed and the mayor had reached the point where he could not find anyone to take on the effort and was pressed to return the money to DCYF. During September 1999, the youth director lobbied the mayor's office to undertake the Comprehensive Strategy, feeling that his organization could take the lead. The mayor agreed, and the city began the planning process.

On September 1, the youth director, now the site coordinator, attended the State meeting where representatives from all sites reported on their progress. At this meeting, the site coordinator met the DCYF representative. The site coordinator set up meetings with representatives from DCYF and the Governor's Justice Commission to plan the beginning of the Comprehensive Strategy. In the interim, the Task Force from the lead organization began working with a representative from OJJDP, who had visited their site for a previous grant. The State Justice Commission awarded \$40,000 for the planning process, which allowed the lead organization to fund meetings and a consultant. DCYF also awarded \$60,000 for the implementation process. The site coordinator began recruiting members for the planning team, building on the existing, all volunteer Task

Force. These events all took place during the Fall of 1999. Subsequently, planning and implementation took place, but we limit our analysis here to the beginning of the initiative.

## Results

We will illustrate event structure analysis using the event sequence analysis feature on the first few events of the narrative. As described in the methods section, the events were entered in chronological order. We then proceeded to *Ethno2*'s (Heise, 2001) linking function. For each event, the program prompted the analyst to answer whether or not the previous event was a prerequisite for this event to occur. For example, to begin this analysis the program posed the question, "Does DCYF receiving funding *require* the site coordinator receiving prior State grants *or a similar event*?" To this, we answer "no" and the events are not linked as DCYF funding was not dependent on the site coordinator receiving prior State grants. The program then proceeds with the question, "Does the youth director (SC) and the mayor attending the planning meeting *require* DCYF receiving funding *or a similar event*?" In this instance, we answer "yes" because our data indicate that DCYF's receipt of funding prompted, and was necessary for, the State to hold a Comprehensive Strategy planning meeting. The program then asks if attendance at the meeting was also linked to the youth director receiving State grants. Again, the answer is "yes," since the youth director's organization was the organization tasked with serving youth and was already receiving grants for these efforts so the event, "youth director and mayor attend meeting," is linked to both prerequisite events (see Figure 1). This is an example of a convergence of events. After this, the program proceeds to the next event, asking the same question of prior events and so on. Depending on the analyst's preference, it is possible for the program to present other methods for assessing event linkages. For example, one can choose for *Ethno2* to pose counterfactual arguments. That is, the program can ask, "Suppose an event like X *does not occur*. Can Y *occur anyway*?" Using different perspectives to analyze causal sequences can encourage the researcher to think more complexly about the relationships among events.

As the events are linked, they are charted to provide a visual representation of the analysis (see Figure 1). On completion of the linking process, it is possible to enter the "testing" mode at which point the chart is tested for its logical structure. For example, the program questions whether the event "youth director and the mayor attend the planning meeting" (described in Figure 1 as "SC and Mayor attend planning meeting") can lead to *both* "DCYF and city representatives discuss the planning team" *and* "State suggests combining with neighboring planning processes." The program initially assumes that the meeting attendance event is "depleted" by DCYF and the city discussing the team, and can therefore no longer be used as a prerequisite for the State's suggestion of combination. The analyst must choose between two solutions offered: either the meeting attendance was *not* a prerequisite for the planning team discussion, *or* the meeting attendance event was not "used up" by the planning team discussion.

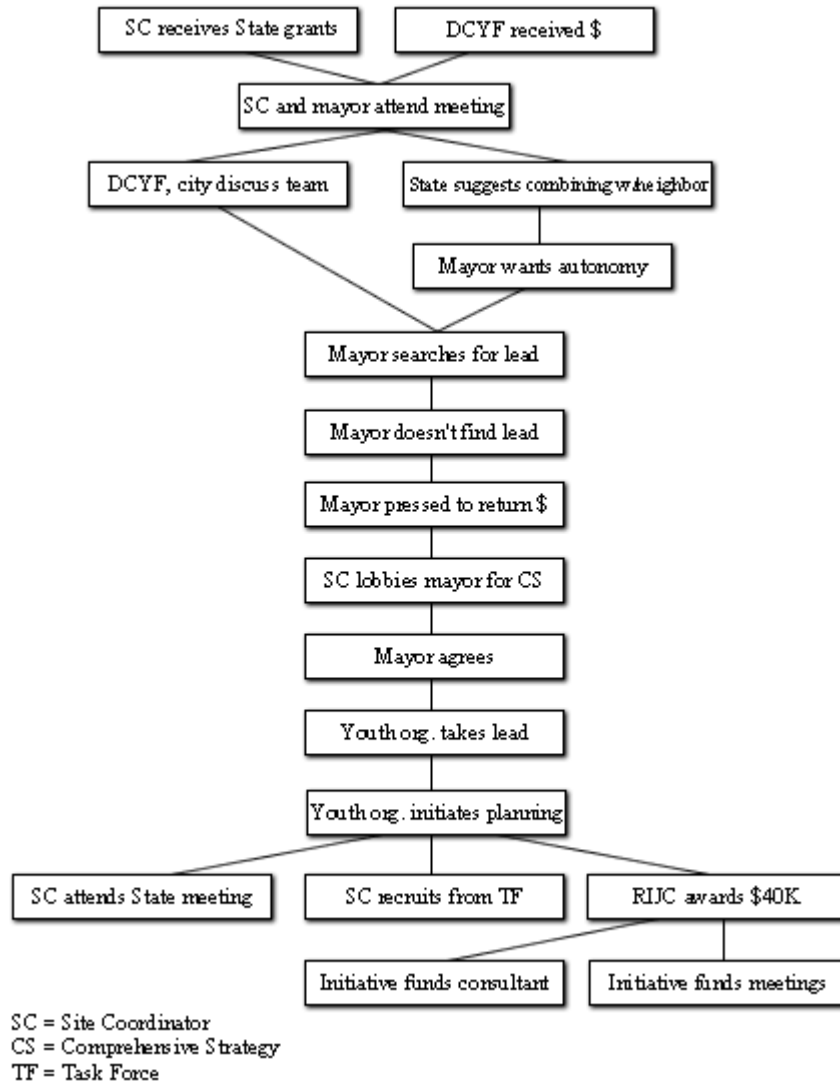


Figure 1. Event Sequence Chart for Central Falls Planning

This process helps to clarify how events are linked. In this instance, we would ideally be able to return to our data sources and site-level informants to inquire as to whether these events were indeed linked, or if there are additional events that serve as prerequisites for the actions in question. This example demonstrates how the program can assist the researcher in determining which event relationships should be rigorously questioned and confirmed through further investigation.

Within the small subset of events analyzed for this example, event structure analysis did indeed stimulate a deeper understanding of event relationships in this city's Comprehensive Strategy planning process. First of all, it pointed out areas of the narrative in need of further elaboration, implicating the value of returning to original data in a focused manner. For example, the narrative originally laid out the events so the mayor's not finding a lead for the Comprehensive Strategy directly followed the mayor's desire for the city to remain autonomous from its neighbor. However, when pressed to link these events using ESA, the researcher must consider if one event led directly to another. Since the linkage did not appear extremely clear, we felt compelled to add the event, "mayor searches for a lead" as a prerequisite for the

"mayor not finding a lead." This example demonstrates how, through ESA, the researcher may consider implied events that were not explicit in the narrative. This leads to a richer understanding of the process of change. It also guides the researcher in returning to the original data sources to confirm this implied happening and to determine if any additional events took place.

Another discussion between the researchers that arose at this point was centered on how to define an event. Though "mayor not finding a lead" appears to be a "non-event," it led to a significant occurrence, the mayor being pressed to return funding to DCYF. Therefore, this "non-event" was retained as an event in the sequence. Again, it would be useful to return to original sources to determine if there are missing events that could better portray the sequence leading up to a pressure to return funding. However, this illustration makes an interesting point in that the lack of an event can be just as influential as an event happening. There are several delays throughout the planning process that can be attributed to the lack of a necessary happening. Therefore, the plan was not completed in the expected manner. Incorporating these non-events is one of the challenges in conducting ESA and in depicting an accurate structuring of event sequences.

Finally, another strength of using ESA to analyze a process such as the collaborative planning process that took place for the Comprehensive Strategy is that it highlights key turning points, parallel streams of action, and causal sequences of events. In the section we have analyzed here, an example of a key divergence, or turning point, would be "youth organization initiates planning". This event spawned several ensuing streams of events, as can be witnessed in Figure 1. Also in our focal sample, we can see that parallel chains of events, including the youth director's attendance at the State meeting; DCYF's and the city's discussion of the planning team; and the mayor's assertion of autonomy, converged on a single key path whereupon the mayor searched for leadership and eventually charged the youth director with leading the entire planning process. In speaking with several stakeholders, it was apparent that without the site coordinator's enthusiasm and determination, the initiative might never have succeeded in Central Falls. If we were to analyze the remainder of the narrative with this method, we could clarify the significance of the site coordinator's role in enabling much of the planning process (e.g., recruiting membership, scheduling meetings, reaching out to the community when stakeholders burned out from the intensity of the planning). It is these types of "informal" events that can be critical to maintaining momentum, instigating collective action, and producing collaborative products.

In conclusion, this illustration has demonstrated some of the strengths of applying event structure analysis to the examination of collaborative actions such as planning a Comprehensive Community Initiative. It can lead to more rigorous data collection and interpretation, highlight critical event sequences, and reflect the complexity of collaborative processes.

## **Discussion**

In this article, we have described how event structure analysis can be a valuable tool for analyzing complex processes of planned social change such as the Comprehensive Community Initiatives. Through the use of ESA, a researcher can perform more rigorous, focused data collection and interpretation with a concentration on interrelationships among events. Insights into key actors and entities, turning points, and challenges may be generalized to future initiatives.

Analyzing the implementation of a social program as a series of events has all the limitations of any qualitative analysis. First, it is difficult and time-consuming to carefully reconstruct a history of events. Many actors have to be interviewed and re-interviewed before the analysts develop confidence in their understanding of what events are important and how they are linked. Second, the analysts have to make a judgment about how events are linked to each other. Different actors may have differing perceptions



about how events are linked, and the analysts will have to make a determination as to what is the most plausible story. Third, it is difficult to generalize from a case study. If a number of initiatives are studied at once, the analysts may have more confidence in the results. However, when attempting to make generalizations, event history analysts do not have the advantages of random sampling of a population and the large databases generated by more conventional quantitative techniques such as survey research. In making generalizations, analysts will have to argue that history will repeat itself, while acknowledging that the particular social context of the study provides strong boundaries around the generalizability of the results.

### Conclusions

The present article has demonstrated the utility of event structure methods in understanding the role of multiple events in the development of comprehensive community initiatives. We view this article as a first step: future applications should focus on the institutional mechanisms and the types of social networks (Stevenson & Greenberg, 2000) that promote collaborative productive systems. We believe that such a method can be productively applied in the analysis of planned social change.

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